GRADUATE BULLETIN 1999-2001
<table>
<thead>
<tr>
<th>Programs</th>
<th>Degrees</th>
<th>Departmental application requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental science</td>
<td>Master of Science (MS)</td>
<td>BS/BA in any natural science; pre requisites: chemistry, physics, geology, biology, ecology, calculus and statistics; 2 reference letters from science faculty; goal statement</td>
</tr>
<tr>
<td>Geology</td>
<td>Master of Science (MS)</td>
<td>Undergraduate major in geology or equivalent</td>
</tr>
<tr>
<td>Geosciences</td>
<td>Master of Arts (MA)</td>
<td>GPA 3.0 last 60 hours; names of 3 references; a brief biographical sketch</td>
</tr>
<tr>
<td>History</td>
<td>Master of Arts (MA)</td>
<td>Undergraduate major in history or equivalent</td>
</tr>
<tr>
<td>Industrial engineering</td>
<td>Master of Science (MS)</td>
<td>GRE (general) required if undergraduate degree not accredited by ABET</td>
</tr>
<tr>
<td>Liberal studies</td>
<td>Master of Arts (MA)</td>
<td>GRE (general)</td>
</tr>
<tr>
<td>Mathematics</td>
<td>Master of Science (MS)</td>
<td>GPA 3.0 last 60 hours; essay; personal interview; application deadlines: October 1 for fall, April 1 for summer</td>
</tr>
<tr>
<td>Mathematics-applied</td>
<td>Doctor of Philosophy (PhD)</td>
<td>Undergraduate major in math or equivalent</td>
</tr>
<tr>
<td>Mechanical engineering</td>
<td>Master of Science (MS)</td>
<td>GRE (advanced)</td>
</tr>
<tr>
<td>Mechanical engineering</td>
<td>Doctor of Philosophy (PhD)</td>
<td>GPA 3.0 last 60 hours; GRE (general)</td>
</tr>
<tr>
<td>Music</td>
<td>Master of Music (MM)</td>
<td>Accredited music bache lor's degree</td>
</tr>
<tr>
<td>Music education</td>
<td>Master of Music Education (MM):</td>
<td></td>
</tr>
<tr>
<td>Nursing</td>
<td>Master of Science in Nursing (MSN):</td>
<td></td>
</tr>
<tr>
<td>Physical education</td>
<td>Master of Education (MED):</td>
<td>GRE, GMAT, LSAT, 3.0 GPA; 1 year of practice recommended; statistics; NF, requires an additional application</td>
</tr>
<tr>
<td>Physical therapy</td>
<td>Master of Physical Therapy MPT:</td>
<td>Prerequisites may be required</td>
</tr>
<tr>
<td>Physics</td>
<td>Master of Science (MS)</td>
<td>Turkey drop-in; department applied; specific prerequisite course work; contact department for application dates</td>
</tr>
<tr>
<td>Political science</td>
<td>Master of Arts (MA):</td>
<td>GRE (general) GPA 3.0 in the major</td>
</tr>
<tr>
<td>Psychology-community/clinical</td>
<td>Doctor of Philosophy (PhD):</td>
<td>GRE (general) 4 reference letters; departmental application; application deadline: February 1</td>
</tr>
<tr>
<td>Psychology-human factors</td>
<td>Doctor of Philosophy (PhD):</td>
<td>GRE (general) 4 reference letters; departmental application; application deadline: March 1</td>
</tr>
<tr>
<td>Public administration</td>
<td>Master of Public Administration (MPA):</td>
<td>GRE (general) or equivalent test; 3.0 GPA; 2 year work experience or health professional degree; MPH program application; 3 reference letters; statement of goals</td>
</tr>
<tr>
<td>Public health</td>
<td>Master of Public Health (MPH):</td>
<td>GRE (general) or equivalent test; 3.0 GPA; 2 year work experience or health professional degree; MPH program application; 3 reference letters; statement of goals</td>
</tr>
<tr>
<td>School psychology</td>
<td>Specialist in Education (EdS):</td>
<td>GRE (general) 3 reference letters; statement of goals; application deadline: March 1</td>
</tr>
<tr>
<td>Social Work</td>
<td>Master of Social Work (MSW):</td>
<td>GRE (general) 3 reference letters; statement of goals; application deadline: March 1</td>
</tr>
<tr>
<td>Sociology</td>
<td>Master of Arts (MA):</td>
<td>12 hours intermediate/advanced Spanish; 12 hours advanced for native speakers</td>
</tr>
<tr>
<td>Spanish</td>
<td>Master of Arts (MA):</td>
<td>GRE (general) teacher certification and teaching experience; letters of recommendation; 300 word paper; application deadline: May 1</td>
</tr>
<tr>
<td>Special education</td>
<td>Master of Education (MEd):</td>
<td>Letter of application 3 reference letters</td>
</tr>
<tr>
<td>Sports administration</td>
<td>Master of Education (MEd):</td>
<td>Letter of application 3 reference letters</td>
</tr>
</tbody>
</table>

Addresses for exam information and applications:

**GRE**
Graduate Record Examinations
Educational Testing Service
P.O. Box 6000
Princeton, NJ 08541-6000 USA
www.gre.org/

**GMAT**
Graduate Management Admissions Test
Educational Testing Service
P.O. Box 6103
Princeton, NJ 08541-6003 USA
www.gmat.org/

**Miller Analogies Test**
Controlled Testing Center Supervisor
Ybe Psychological Corporation
SSS Academic Court
San Antonio, TX 78204-2498 USA

**TOEFL**
Educational Testing Service
P.O. Box 6103
Princeton, NJ 08541-6000 USA
http://www.toeic.org/

NOTICE OF NONDISCRIMINATION: Wichita State University does not discriminate in its programs and activities on the basis of race, religion, color, national origin, sex, age, or disability. The following person has been designated to handle inquiries regarding nondiscrimination policies: Director, Office of Equal Employment Opportunity; Wichita State University, 1845 Fairmount, Wichita, Kansas 67260-0143; telephone (316) 978-3371.

WICHITA STATE U. LIBRARY
## Wichita State University • 1999-2001 Graduate Bulletin

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The official University address is:
Wichita State University
1845 Fairmount
Wichita, Kansas 67260-0004
www.wichita.edu

The Graduate School telephone number is (316) 978-3095.

Notice of Nondiscrimination
Wichita State University does not discriminate in its programs and activities on the basis of race, religion, color, national origin, sex, age, or disability. The following person has been designated to handle inquiries regarding nondiscrimination policies: Director, Office of Equal Employment Opportunity, Wichita State University, 1845 Fairmount, Wichita, Kansas 67260-0145; telephone (316) 978-3371.

The University reserves the right to revise or change rules, changes, fees, schedules, courses, requirements for degrees, and any other regulations affecting students whenever considered necessary or desirable. The University reserves the right to cancel any course for insufficient registration and to phase out any program.
Academic Calendar

Fall Semester 1999
Aug. 16-21........................Fall semester registration
Aug. 23.............................Classes begin
Sept. 6.............................Labor Day holiday
Sept. 20.............................Final date for filing Application for Degree card in Graduate School Office
Oct. 15.............................Midterm point
Oct. 29.............................Final date for withdrawal with nonpenalty grades
Nov. 19-25..........................Early registration period for spring semester
(preceded by registration for fall semester
(exact dates published in the Schedule of Courses)
Nov. 24-28..........................Thanksgiving recess
Dec. 10.............................Final date for all degree requirements to be met and reported to the Graduate School,
                                      including: oral defense, comprehensive exam, incomplete grades, bound thesis*
                                      All departmental requirements must have been met*
Dec. 9.............................Last day of classes
Dec. 10.............................Study day
Dec. 11-17..........................Final examinations
Dec. 18.............................Fall semester ends

Spring Semester 2000
Jan. 10-15..........................Spring semester registration
Jan. 17.............................Martin Luther King, Jr. Day, holiday
Jan. 18.............................Classes begin
Feb. 14.............................Final date for filing Application for Degree card in Graduate School Office
March 10.............................Midterm point
March 20-26........................Spring recess
March 31.............................Final date for withdrawal with nonpenalty grades
April 16-23..........................Early registration period for fall semester
                                      (exact dates published in the Schedule of Courses)
May 5.............................Final date for all degree requirements to be met and reported to the Graduate School,
                                      including: oral defense, comprehensive exam, incomplete grades, bound thesis*
                                      All departmental requirements must have been met*
May 8.............................Last day of classes
May 9.............................Study day
May 10-16..........................Final examinations
May 17.............................Spring semester ends

* These dates may be subject to change.
* Graduate School deadlines to insure graduation that semester
Summer Semester 2000
May 22-June 2
Presession and workshops
May 29
Memorial Day, holiday
May 30-June 2
Summer Session registration
June 5
Classes begin, first four-week term
June 21
Final date for filing Application for Degree card in Graduate School Office
June 30
Last day of first four-week term
Registration for second four-week term
July 3
Classes begin, second four-week term
July 4
Independence Day holiday
July 21
Final date for all degree requirements to be met and reported to the Graduate School, including: oral defense, comprehensive exam, incomplete grades, bound thesis*
All departmental requirements must have been met*
July 28
Summer Session ends

Fall Semester 2000
Aug. 14-19
Fall semester registration
Aug. 21
Classes begin
Sept. 4
Labor Day, holiday
Sept. 18
Final date for filing Application for Degree card in Graduate School Office
Oct. 13
Midterm point
Oct. 27
Final date for withdrawal with nonpenalty grades
Nov. 18-26
Early registration period for spring semester (exact dates published in the Schedule of Courses)
Nov. 22-26
Thanksgiving recess
Dec. 4
Final date for all degree requirements to be met and reported to the Graduate School, including: oral defense, comprehensive exam, incomplete grades, bound thesis*
All departmental requirements must have been met*
Dec. 7
Last day of classes
Dec. 8
Study day
Dec. 9-15
Final examinations
Dec. 16
Fall semester ends

* These dates may be subject to change.
### Spring Semester 2001

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 8-13</td>
<td>Spring semester registration</td>
</tr>
<tr>
<td>Jan. 15</td>
<td>Martin Luther King, Jr. Day, holiday</td>
</tr>
<tr>
<td>Jan. 16</td>
<td>Classes begin</td>
</tr>
<tr>
<td>Feb. 12</td>
<td>Final date for filing Application for Degree card in Graduate School Office</td>
</tr>
<tr>
<td>March 9</td>
<td>Midterm point</td>
</tr>
<tr>
<td>March 19-25</td>
<td>Spring recess</td>
</tr>
<tr>
<td>March 30</td>
<td>Final date for withdrawal with nonpenalty grades</td>
</tr>
<tr>
<td>April 17-23</td>
<td>Early registration period for fall semester (exact dates published in the Schedule of Courses)</td>
</tr>
<tr>
<td>May 4</td>
<td>Final date for all degree requirements to be met and reported to the Graduate School, including: oral defense, comprehensive exam, incomplete grades, bound thesis* All departmental requirements must have been met*</td>
</tr>
<tr>
<td>May 7</td>
<td>Last day of classes</td>
</tr>
<tr>
<td>May 8</td>
<td>Study day</td>
</tr>
<tr>
<td>May 9-15</td>
<td>Final examinations</td>
</tr>
</tbody>
</table>

### Summer Semester 2001

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 21-June 1</td>
<td>Presession and workshops</td>
</tr>
<tr>
<td>May 28</td>
<td>Memorial Day, holiday</td>
</tr>
<tr>
<td>May 29-June 2</td>
<td>Summer Session registration</td>
</tr>
<tr>
<td>June 4</td>
<td>Classes begin, first four-week term</td>
</tr>
<tr>
<td>June 20</td>
<td>Final date for filing Application for Degree card in Graduate School Office</td>
</tr>
<tr>
<td>July 4</td>
<td>Independence Day holiday</td>
</tr>
<tr>
<td>July 20</td>
<td>Final date for all degree requirements to be met and reported to the Graduate School, including: oral defense, comprehensive exam, incomplete grades, bound thesis* All departmental requirements must have been met*</td>
</tr>
<tr>
<td>July 27</td>
<td>Summer Session ends</td>
</tr>
</tbody>
</table>

* Graduate School deadlines to ensure graduation that semester.

These dates may be subject to change.
General Information

1998-99 University and Academic Officers

Donald L. Begg, President, effective January 1999
Ted D. Ayres, General Counsel and Associate to the President
James J. Rhatigan, Vice President for Academic Affairs
Elizabeth H. King, Vice President for University Advancement
Roger D. Lowe, Vice President for Administration and Finance
Anthony R. Ross, Interim Vice President for Student Affairs
Michael Vincent, Dean of the Graduate School
Gerald H. Graham, Dean of the W. Frank Barton School of Business
Joe M. Engelhardt, Dean of the College of Education
William J. Wilhelm, Dean of the College of Engineering
Walter J. Myers, Dean of the College of Fine Arts
Peter A. Cohen, Dean of the College of Health Professions, effective January 1999
David C. Glenn-Lewin, Dean of Fairmount College of Liberal Arts and Sciences
Jacqueline J. Snyder, Dean of Academic Outreach
Kathy A. Downes and Philip C. Howze, Interim Deans of Libraries
Bill Belknap, Director of Intercollegiate Athletic Association, Inc.

Board of Regents

State of Kansas

Clay Blair III, Mission Hills
Harry W. Craig, Jr., Topeka
William R. Docking, Arkansas City
Kenneth C. Havner, Hays
Murray D. Lull, Smoky Hill Center
Sylvia L. Robinson, Kansas City
Robert V. Tallington, Iola
Sidney T. Warner, Cimarron
Tom W. Bryant, Interim Executive Director, Topeka

1998-99 Graduate Council

Michael Vincent, Dean of the Graduate School
Susan Kovar, Associate Dean of the Graduate School
Harold Popp, College of Fine Arts
Kirk Lancaster, Natural Sciences and Mathematics

Hal Edwards, Communicative Disorders and Sciences, and Kinesiology and Sport Studies
Samuel Yeager, Social Sciences
Tonya Huber, Curriculum and Instruction; and Administration, Counseling, Educational, and School Psychology
Don Christensen, W. Frank Barton School of Business
Dwight Murphye, Master of Business Administration
Donna Hawley, College of Health Professions
Anthony Ghythe, Humanities
M. Edwin Sawan, College of Engineering
Gary Greenberg, Doctoral Programs
Christopher Power, Student Affairs

Wichita State University Profile

Wichita State University is distinguished from other state-supported schools in Kansas by its urban setting. Wichita State's location in the largest city in Kansas enhances the traditional classroom experience by providing students greater opportunities in resources, contacts with business and government leaders, employment, and internships.

With an enrollment of some 15,000, of which more than 3,000 are graduate students, Wichita State prides itself on specialized attention to each student. Although the University's students come from every state in the Union and 80 foreign countries, more than 87 percent are from Kansas representing every county in the state.

Because of its urban setting, Wichita State University has two student bodies—traditional and nontraditional. The average student age is 28, about one-third are married and 46 percent work full or part-time. Although the nontraditional students are in the majority, there are 7,000 traditional students, ages 18 to 23, who devote themselves full-time to school and campus activities.

Wichita State University offers more than 60 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 56 master's degrees which offer study in more than 100 areas; a specialist in education degree; and doctoral degrees in applied mathematics; chemistry; communicative disorders and sciences; human factors psychology and community/clinical psychology; educational administration; and aerospace, electrical, industrial and mechanical engineering. A listing of the programs and degrees offered at Wichita State University is located on the inside front cover.

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 two-week pre-session and two four-week sessions held concurrently with the regular eight-week session. During the traditional sixteen-week semester, an increasing number of courses is offered on an eight-week, four-week, or shorter format.

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. Wichita State's research and public service funding—through the National Institute for Aviation Research, the Hugo Wall School of Urban and Public Affairs, the Self-Help Network, the Center for Economic Development and Business Research, and the Elliott School of Communication and its Interdisciplinary Communication Research Institute—directly benefits the people of the Wichita metropolitan area and has economic and educational impact throughout Kansas.

An important resource to the Wichita area business community, Wichita State supports business and industry through programs such as those offered by the Mid-America Manufacturing Technology Center. 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 School of Urban and Public Affairs 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 105-year heritage. More than 60 pieces of sculpture...
by internationally known artists adorn the campus. *Personages Oseaux*, 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 20 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.

More than 150 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.

WSU is a Division I institution and fields teams in tennis, cross-country, basketball, track, golf, crew, soccer, and bowling, men's baseball and women's volleyball and softball.

**Mission Statement**

In 1991, the Kansas Board of Regents approved the following mission statement for Wichita State University:

Wichita State University is committed to providing comprehensive educational opportunities in an urban setting. Through teaching, scholarship, and public service, the University seeks to equip both students and the larger community with the educational and cultural tools they need to thrive in a complex world, and to achieve both individual responsibility in their own lives and effective citizenship in the local, national, and global community.

High quality teaching and learning are fundamental goals in all undergraduate, graduate, and continuing education programs. Building on a strong tradition in the arts and sciences, the University offers programs in business, education, engineering, fine arts, and health professions, as well as in the liberal arts and sciences. Degree programs range from the associate to the doctoral level and encompass 75 fields of study; non-degree programs are designed to meet the specialized educational and training needs of individuals and organizations in south central Kansas.

Scholarship, including research, creative activity, and artistic performance, is designed to advance the University's goals of providing high quality instruction, making original contributions to knowledge and human understanding, and serving as an agent of community service. This activity is a basic expectation of all faculty members at Wichita State University.

Public and community service activities seek to foster the cultural, economic, and social development of a diverse metropolitan community and of the state of Kansas. The University's service constituency includes artistic and cultural agencies, business and industry, and community educational, governmental, health, and labor organizations.

Wichita State University pursues its mission utilizing the human diversity of Wichita, the state's largest metropolitan community, and its many cultural, economic, and social resources. The University faculty and professional staff are committed to the highest ideals of teaching, scholarship, and public service, as the University strives to be a comprehensive, metropolitan university of national stature.

**History**

Wichita State began as Fairmount College, a Congregational institution, in 1895. The college also continued the college preparatory program of Fairmount Institute which began in 1892. In 1926, by a vote of the citizens of Wichita, the college became the Municipal University of Wichita, 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, Wichita State University is one of six state universities governed by the Kansas Board of Regents.


**The City of Wichita**

Wichita, the largest city in Kansas and part of a metropolitan area of 500,000, offers the cultural and economic advantages of a big city, but maintains the friendly atmosphere of a smaller town. Home of Boeing, Cessna, Learjet, and Raytheon, Wichita is known as the “Air Capital of the World,” is a regional medical center, and also is home to energy and agricultural industries. Public and private schools offer diverse learning opportunities, and numerous cultural activities provide family entertainment year round. Native American, Hispanic, Asian, and Middle Eastern groups are typical of Wichita's multicultural and ethnic diversity.

In The Wichita Symphony Orchestra plays brown-bag concerts in addition to its regular season offerings, and theatre troupes perform presentations ranging from Broadway musicals to Shakespeare in the Park. Art museums, historic Cowtown, Botanica Gardens, the Omnisphere Space Center, Lake Afton Public Observatory, international fairs, water fun parks, and the zoo provide entertainment and culture for people of all ages.

In Wichita, the industrial and educational center of Kansas, enjoys a diversified economy. Your neighbors may work at one of the large aircraft plants, they may have careers related to agriculture or energy, or they may be health care professionals in one of the area's regional medical centers.

In Wichita provides outstanding career opportunities in a variety of fields. In addition to the aircraft industry, many other high tech companies such as Symbol Logic, UNISYS, Vulcan Chemicals, Cargill, IFR, NationsBank, Southwestern Bell, Electro tech, and Microtech are located in the Wichita area. Also Taco Tico and Koch Industries are major local employers with their corporate headquarters in Wichita.

In many of the companies in Wichita have generous tuition reimbursement plans. Thus, they provide their employees with an excellent opportunity to pursue additional graduate education while building their careers.

In short, Wichita is a very "livable" city. The variety of affordable housing suitable for families both near the University and in the surrounding region and abundant, moderate-priced child care facilities and recreational areas add to its attractiveness. Wichita is stimulating, pleasant, and enjoyable, and offers something for everyone.
The Graduate School

Offices: 107 Jardine Hall
Michael Vincent, dean
Susan Kovar, associate dean
Margaret Wood, assistant to the dean

The Graduate School at 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.

The Graduate School provides opportunities to pursue advanced study in 56 master’s and 10 doctoral programs. More than 3,000 students—roughly one of every five WSU students—are graduate students. The University, classified by the Carnegie Foundation as a Doctoral I institution, annually grants approximately 35 doctoral degrees and more than 600 master’s degrees. The Graduate School is a member of the Council of Graduate Schools and the Midwestern Association of Graduate Schools and is an affiliate member of the National Association of Graduate and Professional Students.

Academic graduate programs at Wichita State include master’s, specialist, and doctoral programs. Doctoral degrees are awarded in applied mathematics, chemistry, communicative disorders and sciences (logopedics); educational administration; human factors psychology; community-clinical psychology; and in aerospace, electrical, industrial, and mechanical engineering.

The graduate faculty consists of the University president, the 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 faculty at Wichita State, by virtue of their qualifications, contribute to graduate education by teaching and advising graduate students; by guiding master’s theses and doctoral dissertations; by participating in examinations and evaluations; by engaging in a program of research, scholarship, or creative activity; and by sharing in the administration of their programs and in the governance of the Graduate School. All regular graduate faculty hold the terminal degree in their discipline.

The Graduate Council consists of the dean of the Graduate School, 10 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 the dean 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

Notice of nondiscrimination. Applicants for admission and employment, students, parents, and employees are hereby notified that Wichita State University does not discriminate on the basis of race, religion, color, national origin, sex, age, or disability in admission or access to, or treatment or employment in, its programs and activities. Any person having inquiries concerning Wichita State University’s compliance with the regulations implementing Title VI, Title IX, Section 504, and Americans with Disabilities Act, or any other laws, may contact the Assistant Secretary for Civil Rights, U.S. Department of Education, regarding the institution’s compliance with these regulations.

The WSU Catalog is available in other formats. Inquiries should be addressed to the Office of Disability Services.

Student Responsibility

Students at Wichita State University have the following responsibilities:

1. To consult their advisors 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 approved program.
3. To file an Application for Degree card in the dean’s office of the appropriate college.
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 advisors, 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 prerequisites are met. Failure to comply with this procedure may result in administrative withdrawal.
9. To graduate and comply with the principles in the following statement:

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 University standards must expect to face disciplinary action on the part of the institution, which may include remand, probation, or suspension, consistent with campus provisions for due process.

The Student Code of Conduct provides guidelines for students' behavior as well as an overview of the discipline process. The code is published in the Student Handbook, which is available in the Office of Student Life, 105 Grace Wilkie Hall. It is also available on the WSU website (www.wichita.edu) under University Policy and Procedures Manual.

Academic Honesty
Opportunities for learning at 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 and 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 done in the classroom or in preparation for class

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 people. Serious cases may result in discipline at the college or university level and may result in suspension or dismissal. Dismissal from a college for academic dishonesty constitutes dismissal from the University. 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.

Access to Records (Privacy Law)
The Family Educational Rights and Privacy Act of 1974 (FERPA) is a Federal law which provides that the institution will maintain the confidentiality of student education records.

Wichita State University accords all the rights under the law to students who are declared independent. Those rights are: 1) the right to inspect and review the student's education records; 2) the right to request the amendment of the student's education records to ensure that they are not inaccurate, misleading, or otherwise in violation of the student's privacy or other rights; 3) the right to consent to disclosures of personally identifiable information contained in the student's education records, except to the extent that FERPA authorizes disclosure without consent; 4) the right to file with the U.S. Department of Education a complaint concerning alleged failures by Wichita State University to comply with the requirements of FERPA; and 5) the right to obtain a copy of Wichita State University's student records policy. You can obtain a copy of the policy from the Registrar's office.

No one outside the institution shall have access to or will the institution disclose any information from students' education records without the prior written consent of the student(s) except to personnel within the institution who have a legitimate educational interest, to persons or organizations providing students financial aid, to accrediting agencies carrying out their accreditation function, to persons in compliance with a judicial order, and to persons in an emergency in order to protect the health or safety of students or other persons. All these exceptions are permitted under the Act.

Within the Wichita State community, only those members, individually or collectively, acting in the students' 'legitimate educational interests' are allowed access to student education records. These members include personnel in the offices of Admissions, Registrar, Controller, Computing Center, Dean of Students, Financial Aid, Career Services, Cooperative Education, Planning, Testing, Library, College deans, academic advisors, and other administrative and academic personnel within the limitation of their need-to-know. "Legitimate educational interests" means 1) the information or records requested is (are) relevant and necessary to accomplishment of some task or determination; and 2) the task or determination is an employment responsibility of the inquirer or is a properly assigned subject matter for the inquirer's employment responsibility.

Social Security number and student status data may be provided to other state agencies for use in detection of fraudulent or illegal claims against state monies.

Public Notice Designating "Directory Information"
At its discretion the institution may provide "Directory Information" to anyone in accordance with the provisions of the Act.

Wichita State University hereby designates the following student information as public or "Directory Information:"

Name, address(es), telephone numbers, dates of attendance, classification (freshman, sophomore, etc.), course load (full-time, half-time, less than half-time) class type (day, day/ evening, weekend only) prior institution(s) attended, major field(s) of study, awards, honors (includes Dean's list), degrees conferred (including dates), past and present participation in officially recognized sports and activities, physical factors (height, weight of athletes).

Currently enrolled students may withhold disclosure of "Directory Information" (on an all or none basis) to non-institutional persons or organizations. You have an option to protect your privacy and not have such information as your address and telephone number released. Forms requesting the withholding of this information are available in the Registrar's Office, 117 Jardine Hall, and are returned to that office. Otherwise, the University assumes that you approve of disclosure of that information. The com-
completed form must be received at the Registrar's Office by the end of the second week of the Fall Semester if you do not want to be included in the Campus Directory, which is published each Fall and which is available to people outside WSU. Requests to withhold “Directory Information” must be filed annually. Other than the Campus Directory, the University does not give or sell lists of students to private companies.

Family Educational Rights and Privacy Act
1. Definitions

A. Consent: Consent shall be in writing and shall be signed and dated by the student giving consent. It shall include: (a) specification of records to be released; (b) purposes for such release; and (c) parties or class of parties to whom such records may be released.

B. Directory Information: That information described in Section 99.3 of the “Final Rule on Education Records, Privacy Rights of Parents and Students.” The information is defined by the code as: “Information relating to a student: Name; current address, level and school, date of birth, major field of study, participation in officially recognized activities and sports, height and weight of members of athletic teams, dates of attendance, degrees and awards received, and the most recent previous educational institution attended by the student. The names and address(es) of the student’s parent(s) or guardian(s) may be disclosed when used for an official University news release about the student’s receipt of degrees or awards or about participation in officially recognized activities or sports.”

C. Disclosure: Permitting access or the release, transfer, or other communication of education records of the student or the personally identifiable information contained therein, orally, or in writing, or by electronic means, or by any other means to any party.

D. Education Records: Those records that are directly related to and that are maintained by the University or by a party acting for the University.

Excluded from the category of “education records” are the following and to which the law does not guarantee the right of student access:

1) Records created by an individual staff member that are not revealed to any other individual except to a person who might substitute for, or replace, the original staff member.

2) Medical and psychological records that are maintained only in connection with provision of treatment to the student and that are not available to persons other than those providing treatment except that such records may be personally reviewed by a physician or other appropriate professional of the student’s choice and with the student’s written consent.

3) Records of the WSU Police Department maintained solely for law enforcement purposes, which are maintained separately, and which are not disclosed to individuals other than law enforcement officials sharing the same territorial jurisdiction.

4) Records that contain only information relating to a person after that person was no longer a student at the University. An example would be information collected by the University or the Alumni Association pertaining to the accomplishments of its alumni.

5) Employment records of any person if it maintained in the normal course of business and used only for purposes relating to the employment, unless the person is employed at the University only because of her/his status as a student (that is, student hourly). In such cases, student employment records are education records but are to be maintained separately from other education records.

E. Legitimate Educational Interests: The interests of University personnel who have a demonstrably legitimate need to review records in order to fulfill their official professional responsibilities. Such responsibilities must involve the University in its primary educational and scholarly functions and/or secondary administrative functions of maintaining property, disbursing funds, keeping records, providing living accommodations and other services, sponsoring activities, and protecting the health and safety of persons or property in the University community. If a question arises concerning the legitimacy of a request to review records, such question shall be referred to the vice president for student affairs.

F. Parent: Includes a parent, a guardian, or an individual acting as a parent of a student in the absence of a parent or guardian.

G. Personally Identifiable Information: Includes the name of the student; the student’s parent or other family member; the address of the student; personal identifiers, such as social security or student numbers; personal characteristics or other information that would make the student’s identity easily traceable.

H. School Official: Faculty, staff, student employees or committees (when the members of the committee are appointed or elected to an officially constituted committee) that perform a function or task on behalf of, and at the request of, the University, its faculty, colleges, schools or divisions.

I. Student: For purposes of this policy, anyone who is or has been enrolled at Wichita State University, with the following exception:

A person who has applied for admission to, but has never been in attendance at a component unit of the University (such as the various schools and colleges of the University), even if that individual is or has been in attendance at another component unit of the University, is not considered to be a student with respect to the component to which an application for admission has been made.

J. Unit Custodian of Student Records: Except as otherwise designated in this policy, the head of each academic or administrative unit is responsible for the education records within the unit.

2. Student Access to Education Records

A. A student has the right and shall be accorded the opportunity to inspect, review, and receive copies of his or her educational record, except as provided for below. The University must comply with the students request within a reasonable period of time, not to exceed 45 days after the request.

B. The student has the right to a reasonable request for explanation of the records and to copies of the records where necessary to provide full inspection and review. Such copies will be provided at the student’s request and expense; however, the charge to the student for any such records may not exceed $25 per page. The University may not charge a fee to search for or retrieve a record. If any question arises as to the identity of the requesting student, the student shall be asked to provide his or her University I.D. card and/or other positive identification.

D. The University is not required to afford inspection and review of the following records:

1) Financial records of the student’s parents submitted as part of the financial aid process:
(2) Confidential letters and statements of recommendation that were placed in the student’s education records prior to January 1, 1975, if such letters were submitted with an understanding of confidentiality, and are used only for the purpose for which they were specifically intended.

(3) Confidential letters and statements of recommendation received after January 1, 1975, for which the student has signed a waiver of the right to access and which pertain to: (a) admission to this or any other educational institution or agency; (b) application for employment; or (c) receipt of an honor or honorary recognition so long as these letters are used solely for the purposes for which they were specifically intended.

E. An individual who is an applicant for admission to the University, or to one of its component parts, or who is a student in attendance at the University, may waive his or her right to inspect and review confidential letters and confidential statements of recommendation, except that the waiver may apply to confidential letters and statements only if:

(1) The applicant or student is, upon request, notified of the names of all individuals providing the letters or statements;

(2) The letters or statements are used only for the purpose for which they were originally intended; and

(3) Such waiver is not required by the University as a condition of admission to or receipt of any other service or benefit from the University.

All waivers under this paragraph must be executed by the individual, regardless of age, rather than by the parent of the individual. All waivers must be in writing and signed by the student.

If an education record contains information on more than one student, the student may inspect only the information on himself or herself.

3. Waiver of Rights

The University may request, but not require, students to waive rights under this policy; the waivers must be in writing and signed by the student. Applicants for admission to the University and eligible students may waive rights to review confidential letters of recommendation only if:

(1) The applicant or student, upon request, is notified of the names of all persons providing letters;

(2) The letters are used only for the purpose for which they were originally intended:

(3) The waiver is not required as a condition of admission or for any other service or benefit of the University.

Waivers may be made with respect to specified classes of education records and/or persons or institutions.

The student may revoke any waiver in writing, the revocation to apply only to documents received or entered into the record after the date of execution of the revocation.

4. Disclosure of “Personally Identifiable” and “Directory” Information

The University shall obtain the written consent of the student before disclosing personally identifiable information from the education records of a student, other than directory information, except as otherwise provided in this policy.

The University may, without the consent of the student, disclose directory information, as described earlier. If a student wishes to have such information withheld, he/she must notify the Registrar. If a student wishes to prevent the publication of such information in the University telephone directory, he/she must notify the Registrar.

The University may disclose personally identifiable information without the consent of the student to school officials within the institution determined to have legitimate educational interests; to authorities to comply with a judicial order or subpoena, provided the University makes a reasonable effort to notify the student in advance of compliance; to financial aid personnel in conjunction with an application for financial assistance; to organizations conducting studies for accrediting functions; and to appropriate persons in a health or safety emergency. Disclosure of personally identifiable information without the consent of the student may also be made when required by law or government regulation.

The University may disclose personally identifiable information from the education records of a student without a student’s consent in connection with a student’s request or receipt of financial aid, provided the disclosure is needed: (1) to determine the eligibility of the student for financial aid; (2) to determine the amount of financial aid; (3) to determine the conditions which will be imposed; or (4) to enforce the terms or conditions of the financial aid.

The University may disclose personally identifiable information from the education records of a student to appropriate parties in connection with an emergency if knowledge of the information is necessary to protect the health or safety of the student or other individuals. Disclosures for this purpose shall take into account: (1) the seriousness of the threat to the health or safety of the student or individuals; (2) the need for the information to meet the emergency; (3) whether the parties to whom the information is disclosed are in a position to deal with the emergency; and (4) the extent to which time is of the essence in dealing with the emergency.

The University Student Health Service is required to report to the Kansas Department of Health the names of students who have certain communicable diseases such as hepatitis, tuberculosis, and venereal disease. The Health Service is also required to report to local law enforcement officials the name of any student who is wounded with a deadly weapon.

5. Release of a Student’s Grades

Board of Regents policy provides that the University may not withhold the written record of grades earned by any dependent student when the University receives a written request for any such grades from a student, a student’s parents, or a student’s legal guardian. The student will be notified in writing of any disclosure of his or her grades made to his or her parents or legal guardian. Dependency, for this purpose, is defined by the Internal Revenue Code of 1954, Section 152. Should the student be financially indebted to the University, the transcript request will not be honored and the person submitting the request will be so notified.

6. Notice to Third Parties

The University must inform the parties to whom personally identifiable information is given that they are not permitted to disclose that information to others without the written consent of the student and that the information is to be used only for the purpose(s) intended.

7. Providing Copies of Disclosed Records

When the unit custodian discloses personally identifiable information from the education record of a student, the unit custodian shall, at the student’s request and expense, provide a copy of the disclosed record to the student, unless otherwise specified by this policy.

8. Destruction of Records

Each office which maintains education records shall adopt its own policy with
If a student believes that the University is not in compliance with the Privacy Act, he/she must submit the complaint, in writing, to the Office of the Vice President for Student Affairs.

If a student wishes to file a complaint with the federal government concerning the University's failure to comply with the Privacy Act, he/she must submit the complaint, in writing, to the Office of the Vice President for Student Affairs.

Courses

Courses carrying graduate credit are listed in the Graduate Bulletin. Only courses numbered 500 and above can carry graduate credit, and only for students previously admitted to the Graduate School. Courses numbered under 500 carry undergraduate credit only and may be
institution in another country whose requirements for the bachelor's degree are substantially equivalent to an American four-year bachelor's degree. The basis on which credits are awarded for the bachelor's 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.

Two admission statuses, degree and non-degree, are available in the Graduate School to accommodate qualified students desiring to pursue graduate degrees as well as those simply desiring to earn graduate credit for personal and professional reasons. To be considered for degree or non-degree graduate status, students must submit a completed Application for Admission and appropriate transcripts (as described below) to:

Graduate School
107 Jardine Hall
Wichita State University
1845 Fairmount
Wichita, KS 67260-0004

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 taken in time to allow enrollments for graduate credit. International applicants applying from their home country have earlier deadlines: April 30 for Fall and August 31 for Spring.

Because of faculty and facility limitations, there are restrictions on the number of students admitted to some graduate programs 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 for Fall admission, early application is recommended. Preference usually is given to degree program applicants.

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.

**Degree Admission**

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 to the Graduate School and the application fee.

**Full standing**

Minimum Graduate School admission requirements for full standing are listed below.

For master's and specialist programs:
1. A bachelor's 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-bachelor's graduate work.
3. No more than nine hours of background deficiencies in the major field of graduate study desired.

For doctoral programs:
1. Previous degree(s) from regionally accredited institutions.
2. A grade point average of at least 3.000 in the last 60 hours or nearest two years when the bachelor's degree is the admissions credential. Applicants with a master's degree or with completed graduate course work must have attained at least a 3.250 grade point average.
3. Scores on the General Aptitude Test of the Graduate Record Examination (within the last five years).

**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 non-degree category will result if the necessary conditions are not satisfied. Students admitted with conditions are not eligible for federally funded financial aid.

**Probationary status**

Students who do not meet the minimum academic requirements for full-standing degree program admission may be admit-
Non-Degree Admission

Persons who already possess a graduate degree, who do not want to seek a graduate degree at Wichita State University at this time, or who wish to take graduate courses for professional advancement or personal satisfaction, should apply for non-degree admission. Students originally admitted to a non-degree category may later request the department to consider a transfer to degree status, or reapply for admission if the degree program is in a different department. A maximum of 12 hours of graduate credit taken while in a non-degree category may be counted towards a degree program. Provided students have obtained the approval of their major departments and the graduate dean. There is no application fee for non-degree admission.

Category A

Admission to this category provides students the opportunity to take courses at Wichita State for which they have the prerequisites. Students in this category are not restricted and may take courses at the 800-level or above. Non-degree applicants seeking graduate certificates must be admitted under this category. Upon satisfactory completion of a course, credit is placed on a Wichita State graduate transcript. However, only credit earned in courses numbered 500 and above is counted as graduate credit work. Students applying for admission in this category must meet the following requirements:

1. A bachelor's degree from a regionally accredited institution.

Degree admission

Early application is recommended when you are seeking admission to a graduate degree program. See the Graduate Program Requirements list for information on admission. A completed application packet must contain the materials identified below.

Includes in your application packet:

1. A completed and signed application form
2. A check or money order payable to Wichita State University
   American citizen $25
   Non-resident alien $40 (see 4 below)
3. Two (2) official transcripts in sealed envelopes from the institutions where you have completed other academic work

International Applicants

Admission of international applicants to a graduate program at WSU is a two-part process. The first part determines your academic admissibility based upon the application form and transcripts or mark-sheets you provide. You will be notified by the Graduate School of your eligibility for admission. If you are recommended for admission, your application will begin the second part of the admission process.

The second part requires that you demonstrate sufficient English proficiency (TOEFL) and financial resources (WSU Statement of Financial Responsibility) to support your graduate work in America. If you want to learn about studying...
English at WSU as part of your graduate application, write to:
Intensive English Language Center
Wichita State University
1645 Fairmount
Wichita, Kansas 67260-3122
USA

Statement of Financial Responsibility
We can accept only the WSU Official Financial Statement for International Graduate School Applicants form. Bank statements or letters from relatives or employers are not acceptable and will delay your admission.

Transcripts
Two (2) official copies of your undergraduate transcript translated into English are required. If the transcript does not indicate the award of a bachelor’s degree or its four-year equivalent degree, official copies of your degree statement or diploma are required.

If you have completed any graduate work or have attended an American university, you also need to submit two (2) official transcripts showing that work.

We must receive official transcripts or mark sheets showing the actual award of the degree before we can evaluate applicants from abroad.

Entrance Examinations
Test of English as a Foreign Language (TOEFL) scores must be sent by the Educational Testing Service (ETS) if your native language is not English. Waivers will be considered if you have attended another university in the United States as a full-time student in academic courses for a minimum of one year or unless your bachelor’s degree was awarded from a U.S. university within two years of your proposed semester of admission at WSU. Photocopies of your TOEFL scores are unacceptable.

An official copy of your TOEFL score—less than two years old—showing a minimum score of 550 for the paper-based test or 213 on the computer-based test is required. The following departments currently require a score higher than the minimum score:

<table>
<thead>
<tr>
<th>Department</th>
<th>Paper-based</th>
<th>Computer-based</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry</td>
<td>570</td>
<td>230</td>
</tr>
<tr>
<td>Communications</td>
<td>600</td>
<td>250</td>
</tr>
<tr>
<td>English/Creative Writing</td>
<td>600</td>
<td>250</td>
</tr>
<tr>
<td>Gerontology</td>
<td>575</td>
<td>230</td>
</tr>
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<td>250</td>
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<tr>
<td>Political Science</td>
<td>600</td>
<td>250</td>
</tr>
<tr>
<td>Public Administration</td>
<td>560</td>
<td>220</td>
</tr>
<tr>
<td>Public Health</td>
<td>570</td>
<td>230</td>
</tr>
</tbody>
</table>

To register or order a score report, write to:
Educational Testing Service
Princeton, New Jersey 08540
USA

Deadlines for Application for Admission for International Applicants
Living Outside the United States
Application semester Fall Spring Summer
Application deadline 4/30 8/31 2/28
Must receive completed application form, $40 application fee, and acceptable transcripts or mark sheets
International hold deadline 6/1 10/1 4/1
Must receive official and acceptable TOEFL score from Educational Testing Service and notarized WSU Statement of Financial Responsibility

Some programs have earlier application dates. Please refer to the Program Requirements chart on the inside front cover of the Graduate Bulletin.

Financial Opportunities
International applicants who quality 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. Students admitted on probation or placed on academic probation following admission are not eligible for assistantship or fellowship awards.

Enrollment
International students must enroll as a full-time student (at least nine hours of graduate credit course work) each semester. Enrollment during the first semester must be in the program to which the student is admitted unless written permission to gain admission and enroll in a different program is obtained from the original department.

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 semester. Exceptions to this policy require the concurrence, in writing, of the institution issuing the original I-20.

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 dissertation, thesis, and other independent study activities) are terminal require-
ments for a degree) can be used in a degree program. Some departments have additional departmental requirements that must be met before enrolling in independent study courses. Students should consult the appropriate departmental personnel before enrolling.

**Graduate Certificate Programs**

Graduate certificates are awarded to students who desire interdisciplinary coursework to complement their graduate degree program or to students who, for academic, personal, or professional reasons, desire graduate-level education not leading to a graduate degree program.

Students seeking graduate certificates must be admitted to the Graduate School in a degree program or in non-degree A status. All Graduate School policies relative to admissions apply. Admission criteria particular to a specific certificate program and certificate program requirements are listed in the individual department's section of the Graduate Bulletin.

**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 by the set deadline.
6. Removal of all incomplete grades by the deadline specified.
7. Completion of terminal program requirements such as thesis, dissertation, comprehensive examination, etc.
8. Submission of the bound thesis/dissertation or a bindery receipt by the deadline specified.
9. A cumulative graduate grade point average of at least 3.00 for all WSU courses on the Plan of Study (no grades below C) and for all graduate work taken at Wichita State University.
10. Enrollment in the semester of graduation unless all degree requirements are met prior to the first day of classes of the semester of graduation.

**Graduate Credit for Seniors (Senior Rule)**

Seniors at Wichita State or other bachelor's-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 3.000 or above in their major field and in upper-division courses and who are within 10 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 is needed from the student's major advisor, 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 other institutions must be admitted as undergraduates (possibly as guest students) through the University admissions office.

The completed Senior Rule application, application for admission to Graduate School, and supporting transcripts must be received in the Graduate School office no later than two weeks prior to the semester of intent.

**Cooperative Education Courses**

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 work experiences closely related to their academic majors. Cooperative education places students locally and nationally.

Enrollment in cooperative education courses for graduate credit can be made only through those departments who have an approved course, numbered 781 and titled Cooperative Education. No other course titles such as independent study, special topics, etc. can be used for cooperative education enrollment.

Graduate students desiring to participate in the Cooperative Education Program should first consult with their major department and the Graduate School. The Cooperative Education office is located in 125 McKinley Hall (316) 978-3688.

**Advisors**

Various patterns exist for advising graduate students. Some departments have a central plan for new graduate students, after which individual advisors are assigned. Other departments assign new graduate students to advisors early in their graduate program. In all instances, advisors should be familiar with Graduate School rules and regulations as well as program and department requirements. While graduate students have the primary responsibility to know the rules and regulations and to fulfill the program requirements toward their graduate degree, advisors' knowledge and expertise can smooth their students' progress toward the degree.

Graduate students admitted in a degree program category are assigned faculty advisors when admitted to the Graduate School. Course work taken without the advisor's expressed approval is not automatically applicable toward a degree.

Students in non-degree status in designated departments are also assigned faculty advisors for consultation purposes. Students should consult their advisors for information on course prerequisites, content, and similar matters.

Students admitted to non-degree undesignated status are not assigned faculty advisors and should be aware of this limitation when enrolling.

An advisor assigned at the time of admission to a doctoral program will assist the student in completing initial tasks such as enrollment, coordination of examinations, submission of a Plan of Study, and the formation of a Supervisory Committee. Depending on individual department procedures, the advisor may chair an Advisory Committee which also will be involved in the advising activities above. It also is possible for the advisor to be named as Chairperson of the Supervisory or Dissertation Committee.

**Enrollment, Drops, and Adds**

Procedures for enrollment are established by the registrar. Graduate students must enroll according to the procedures published in the Schedule of Courses for any given term. Adherence to the enrollment procedures 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 reactivate their file and to clear any problems relating to their planned enrollment.
Once a student has enrolled and paid, 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. Only partial refunds are made after certain cutoff dates. Enrollments or adds normally will not be approved after the 20th class day. Drops of classes with a W grade are also subject to a time limit established by the registrar.

The Graduate School, (316) 978-3095, has more information about deadlines of these items.

*S/U and Audit Enrollments*

Certain approved courses numbered 500 and above that carry graduate credit for a student are graded S/U (satisfactory/unsatisfactory) for all students enrolled. Such courses are identified in the Schedule of Courses, or students enrolling in special offerings for graduate credit will be informed of S/U grading by the instructor if this system is to be used. No more than six hours of work graded S may be used toward the requirements for a graduate degree. Students wishing to transfer graduate course work graded S/U to a degree program at another institution should inquire of that institution's willingness to accept credit graded in this manner before enrolling.

Graduate students may take any course for which they have the prerequisites and which is open to them on the basis of their admission category on an audit (no credit) basis. The tuition and fees are no different for auditing courses than for taking them for credit, but a student's load (total credit hours) does not include audit enrollments. Courses taken on the audit basis may not be repeated for credit. Use of the audit basis for a course must be declared at the time of enrollment.

*Senior Citizen Enrollment*

People wishing to enroll under the Senior Citizens Program in courses numbered 800 and above must first obtain the written permission of the instructor.

*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 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.

**Incompletes, Probation, Dismissal, and Repeats**

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.

Students desiring credit for an incomplete grade assigned Spring 1999 or later for regular courses (excluding research, dissertation, thesis, and so forth) must complete their work within two semesters, excluding summer. If the work is not completed within those semesters and credit is desired, students must enroll in the course(s) as a repeat. If they enroll in the course again, the I will be changed to a W, and the grade earned during the repeat semester will become the grade of record. Faculty members may define other conditions for the removal of incomplete grades within the general framework indicated here.

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 graduate grade point average.

Students admitted to full standing in the Graduate Bulletin may declare 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.

**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. Load (total credit hours) does not include audit enrollments.

Students enrolling in all or a majority of courses that carry graduate 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 10 hours during an eight-week Summer Session. Students may petition the Graduate School before enrollment for exceptions to this policy.

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. Graduate students holding assistantships during a fall or spring semester are expected to enroll in at least 9 credit hours of course work. Exceptions to allow full-time (20 hours of work per week) graduate assistants to be enrolled in 6-8 hours may be approved by the department.

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

Faculty Restrictions
Faculty members of Wichita State University who hold the rank of assistant professor or higher cannot earn graduate degrees from Wichita State except for 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
1. 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.

2. To remain in good standing in a graduate degree program, students must maintain a grade point average of at least 3.000 in all courses on the student’s WSU Plan of Study (excluding transfer work) and for all graduate work taken at WSU. Demonstrated suitability for professional practice, as determined by faculty, is also a consideration for remaining in good standing in graduate programs leading to advanced certificates or other endorsements indicating advanced professional practice or achievement.

3. Upon the advice and consent of the major department, a maximum of six semester hours or work in one earned master's degree program may be applied to a second master's degree. Such hours must meet the time limit requirement.

4. Graduate students must be enrolled in the semester of graduation unless all degree requirements are met and reported to the Graduate School prior to the first day of classes of the semester of graduation.

Credits Required
All master's degrees require a minimum of 30 credit hours of graduate credit work, including 78 hours in courses numbered 700 and above, excluding workshops. Some programs require more than 30 credit hours, in which cases at least 60 percent of the courses must be numbered in the 700 level or above, excluding workshops. The total number of hours for the doctoral degree varies with the department offering the program, including the division between course work and dissertation hours. At least 60 percent of the hours beyond the master's degree must be in courses numbered 800 and above. Specific program requirements are listed in the individual department's section of the Graduate Bulletin.

Plan of Study
In order to officially define a program of study for a graduate degree, students must submit the Plan of Study form, dated and signed by the student and advisor, to the Graduate School prior to the deadline for filing an acceptable 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. (a) 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 its advanced degree requirement, and (c) the credit is applicable in terms of content to the student's program of study.

2. Master's and specialist degree programs requiring fewer than 40 hours may include no more than one-third of the total hours or 12 hours whichever is
greater, of graduate work completed at another accredited graduate school (exclusive of hours in a previous master's degree). 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. Doctoral programs, with the permission of the student's department, may include a maximum of one-third of the coursework hours required, exclusive of acceptable hours in a master's degree.

4. 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 transcript provided in support of the student's 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.

5. Courses considered for transfer must have been completed at an accredited graduate school and must carry a minimum grade value of 3.00 on a 4.000 point scale. Grades lower than B including B- will not be accepted.

6. Graduate credit earned through correspondence courses cannot be accepted to meet degree requirements.

7. 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 advisor and listed on an approved Plan of Study.

Graduate credit cannot be earned under a credit by examination program, and correspondence courses cannot be accepted for graduate credit.

Teacher Certification

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, (316) 978-3304.

Degree Card Filing

An Application for Degree card must be filed with the Graduate School within four weeks (20 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 two weeks (ten 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 by the second week with an indication of intent to enroll for the second four weeks. If, after a student files a degree card, the degree is incomplete, 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 and reported to the Graduate School, students need not enroll for the following semester.

Time Limits

Courses started more than six years before the semester in which the master's degree work is completed may not be used as part of a degree program. For doctoral programs requiring a master's degree for admission, the doctorate must be completed within six years from the effective date of admission. In those programs permitting admission directly after the bachelor's degree, the doctorate must be completed within nine years after the semester of admission.

In some cases where the time limits are exceeded courses may be validated. To have courses validated, students must submit to the Graduate School a Validation Request Form. The instructor must identify on the form the process that will be used to certify 8 or better performance by the student. Transfer courses and work that originally received a grade of C or not may not be validated. Courses completed 10 or more years before the degree is granted, even if previously validated, may not be used to meet degree requirements.

Residency

The doctoral student is required to spend at least two contiguous semesters (summers excluded) as a full-time resident student.

Thesis or Research Credit

When a thesis is part of a student's master's degree program, and for all doctoral students, thesis or dissertation or research project credit must show on their graduate transcripts. The transcript will normally carry the grade of B until the thesis or dissertation is completed. Students have met the requirements of the supervisory committee and the Graduate School. An S (satisfactory) or grade of B or better is required for an acceptable thesis/dissertation. Thesis or dissertation hours in excess of the minimum required for the degree will be graded S.

Students writing a thesis or dissertation or engaged in research must be enrolled in courses entitled "Thesis," "Dissertation," or "Research" each semester in which they receive advice, counseling, or research direction from their advisors. This includes the semester of graduation unless all degree requirements are met prior to the first day of classes of the semester of graduation. Enrollment is for the number of hours that accurately reflects demands of the students on University faculty and facilities.

Thesis Preparation

Three copies of the thesis/dissertation must be bound on white 8 1/2 x 11 inch paper. All copies must be on 20-24 weight bond with a minimum rag content of 25 percent. The Graduate School will transmit two copies to the University Library. The third bound copy will be presented to the student by the academic department that supervised the work.

For additional information about the preparation of the thesis, the student is referred to the Guide to the Preparation of Theses and Dissertations, produced by the Graduate School, which can be purchased in the WSU Bookstore.

Examinations, Committee Structure

Preliminary examinations are administered by several departments to determine stu-
Schedule

Students present the petition to the dean's office. The petitioning procedure is as follows:

1. The student requests made to the Office of the Controller. The waiver petitioning procedure is as follows:
2. The student presents the petition to the Controller's office. The waiver petitioning procedure is as follows:
3. The student is notified of the action taken.
4. The student submits enrollment schedule changes or withdrawals in accordance with dates and regulations published in the Schedule of Courses for the semester.

Fee Waiver Policy

During the first week of classes, 100% refunds will be granted for all changes in registration. Students who will not need a fee waiver form for any changes in their enrollment. Refunds will be made automatically at the Controller's fee payment window.

Beginning with the second week, a waiver form will be required with student requests made to the Office of the Controller. The waiver petitioning procedure is as follows:

1. Student requests a petition from the Tuition and Fees office and provides the information requested.
2. Student presents the petition to the Controller's office for consideration.
3. Student is notified of the action taken on the petition by the dean's office.
4. Student submits enrollment schedule change or withdrawal form to the Controller's office.

Financial Information

Basic Fees

The current fees, listed below for 1998-99, are subject to change by the action of the Kansas Board of Regents or the state legislature.

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<thead>
<tr>
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<th>Each semester and Summer Session</th>
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<tbody>
<tr>
<td></td>
<td>Non-Resident</td>
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<tr>
<td>Graduation tuition</td>
<td>$95.95</td>
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<tr>
<td>Per credit hour</td>
<td></td>
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<tr>
<td>Graduate student fee</td>
<td>$10.50</td>
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<tr>
<td>Per semester</td>
<td>$15.00</td>
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<tr>
<td>Registration fee—all students</td>
<td>$15.00</td>
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<tr>
<td>Per semester</td>
<td>$15.00</td>
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The student fee, required of all students enrolled on the Wichita State campus, supports the Educational Opportunity Fund, parking, student union, athletics, Heskett Center, student health services, forensics, Student Government Association, University Forum Board, student publications, and other student activities.

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 credits and do not add credits will be charged the proportional percentage of the week they drop the credits. The percentages are published in the Schedule of Courses.

Students who drop and add credits will not be required to pay additional tuition/fees if the following conditions are met:

(a) The drop and add occurs in one transaction.
(b) There is an equal number of credit hours added as are being dropped.
(c) The credits being added are taken during the same period of the semester as the credits being dropped. Credit hours from workshops and other irregular courses cannot be offset against regular semester courses or vice versa.

Refunds of tuition fees will be granted for withdrawals in accordance with dates and regulations published in the Schedule of Courses for the semester.

Graduate Assistantships, Fellowships, Scholarships, and Loans

Application forms and detailed information regarding financial opportunities for graduate students are available in the Graduate School, 107 Jardine Hall. Students wishing to be considered for assistantships, fellowships, scholarships, or other forms of financial aid should indicate their interest to their graduate coordinator or department chair as soon as possible after notification of admission.

Assistantships

Each year Wichita State awards a number of assistantships for advanced study. Grants are made in most departments offering advanced degrees. 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 admitted on probation or placed on academic probation following admission are not eligible for assistantship awards. Senior Rule students are not normally considered for assistantship awards. Recipients of graduate assistantships may not work more than a total of twenty
hours per week and may not hold other remunerative employment without the written approval of the department chairperson and Dean of the Graduate School.

A graduate teaching assistantship may qualify the recipient for up to a 100 percent waiver of tuition. Potential applicants for graduate teaching assistantships who are non-native speakers of English must first attain a score of 50 or above on the Test of Spoken English (TSE) SPEAK. The department chairperson or graduate coordinator should be contacted for further information. The actual dollar amount of an assistantship varies according to the length of the appointment, the number of hours worked per week, and the funding base within each department. At Wichita State, assistantships for twenty hours of work per week for a nine-month period range from $4,500 to $12,000.

Fellowships and Scholarships

Wichita State awards fellowships and scholarships to graduate students, as described below. Inquiries about these awards and additional eligibility requirements should be made to the Dean of the Graduate School, 107 Jaydene Hall, Wichita State University, 1845 Fairmount, Wichita, Kansas 67260-0004.

Dora Wallace Hodgson Outstanding Graduate Student Awards. Established in 1995 through a donation to the WSU Endowment Association from the Dora Wallace Hodgson estate, awards are given annually for the following categories: Outstanding Doctoral Dissertation, Outstanding Master's Thesis, Outstanding Doctoral Student, Outstanding Master's Student, and Outstanding First Year Graduate Student. Students nominated for any of the Dora Wallace Hodgson Awards must meet general eligibility requirements including: good standing in a degree-level program, nomination by a faculty member, approval by their graduate coordinator or department chair and the dean of their college.

Michael P. Tilford Graduate Fellowship. The Michael P. Tilford Graduate Fellowship, established in memory of former WSU Graduate School Dean Michael P. Tilford, is awarded to a currently enrolled full-time graduate student in good academic standing in any graduate degree program. Preference is for a minority student who is a U.S. citizen. Financial need is considered. Deserving students are nominated by faculty.

Dr. Laien L. and Verna Nye Camien Fellowship. The Dr. Laien L. and Verna Nye Camien Fellowship is awarded to a fully admitted graduate student in good academic standing in a graduate degree program in social science, foreign language, or education. Deserving students are nominated by faculty.

The WSU Endowment Association and City of Wichita Assistantships. In addition to the regular teaching and research awards, a number of graduate assistantships are provided by Wichita State University Endowment Association and the City of Wichita. These awards include full-time study or a combination of research assistantship and study equivalent to full-time study. The awards 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.

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Funds have been provided by the Student Government Association for part-time students with financial need. Cash awards are made on a yearly basis. Applications, which may be obtained at the Graduate School office, are due June 1. A financial statement form is part of the application. For information and/or application, contact the Graduate School office.

Loans

Wichita State grants loans to graduate students as described below.

Deitine Maggard, Jr., Graduate Student Loan Fund. Funds have been provided through 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 is responsible for the coordination and supervision of the Division of Student Affairs. Issues involving enrollment services, student life, development, programs, problems, and activities on the Wichita State University campus are addressed by the staff of the division.

The Office of Enrollment Services includes undergraduate admissions, financial aid, and scholarships.

The Office of Student Life, 105 Grace Wilkie Hall, is responsible for services for people with disabilities, fraternities and sororities, student organizations and student involvement programs, the child development center, women's resource center, residence halls, career services, student health, campus recreation, volunteer opportunities, counseling center, and for encouraging scholastic achievement. The shared mission of these many offices and programs is to enhance the quality of campus life at WSU.

An assistant vice president is responsible for Operation Success, Project Discovery, Upward Bound, the Ronald E. McNair Post-Baccalaureate Achievement Program, and Upward Bound Regional Math Science, the federal TRIP programs for students.

Career Services

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

Individual career counseling is available to assist students and alumni/alumni with planning and decision making. Assessment instruments, including the Strong Interest Inventory, are offered for self-assessment. Workshops, presentations, and classroom instruction are offered to enable people to learn about the responsibilities of various career fields, to prepare 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 (CRC).

The CRC also houses a lab which provides computers for students to prepare job search documents such as resumes and cover letters. The computers also provide access to the World Wide Web for career research, as well as for on-line registration and interview sign-up.

Degree candidate and alumni/alumni job search services include computerized
Counseling and Testing

The Counseling and Testing 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 also are part of the center’s function. The credit by exam program and the National Testing program are administered directly by the Counseling and Testing Center. The National Testing program includes certification tests for community professionals, CLEP tests, and entrance exams for colleges and graduate schools.

Disability Services

The Office of Disability Services provides supportive services for students who experience physical or mental disabilities. Students qualified for this service can receive a handbook of services by contacting the office:

Office of Disability Services
Wichita State University
1845 Fairmount
Wichita, Kansas 67260-0132
(316) 978-3309

Services are designed on an individual basis and may include the following: note taking, assistance to class, library assistance, test proctors, assistance typing papers, and braille notes. Some auxiliary aids are available for students to use. Textbooks also can be recorded on tape when requested.

Disability Services encourages students to be as independent as possible on campus and to use those services which help maximize learning.

Housing and Residence Life

On-campus housing is available for more than 1,000 students in Fairmount Towers, Brennan Hall, and Wheatshocker Apartments. Fairmount Towers, housing primarily freshmen and sophomores, is a traditional residence hall with on-site dining facilities. Wheatshocker Apartments is located on the east side of campus. Each apartment is equipped with a kitchen, bathroom, and data connections. The number of bedrooms ranges from one to four, and students can choose either furnished or unfurnished units. Married couples and students with children are welcome in Wheatshocker.

Brennan Hall, on the north side of campus, provides suite arrangements with residents of adjacent rooms sharing a bathroom. A modest community kitchen is available.

All three facilities offer attractive amenities, including computer rooms, laundry facilities, and study areas. Utilities, including basic cable service and local telephone service, are included in the rent. Students can park in lots adjacent to their home and walk to class. All facilities operate information desks and are routinely patrolled by security staff.

Student who live in Fairmount Towers or Brennan Hall will need to choose one of the meal plan options.

To apply for on-campus housing, students need to complete an application card and contract and pay an application and prepayment/reservation to reserve a room or apartment. Students are encouraged to apply early since space is limited.

For more information, contact Housing and Residence Life
Wichita State University
1845 Fairmount
Wichita, Kansas 67260-0132
(316) 978-3693

Office of International Programs

International Programs, 303 Grace Wilkie Hall, serves the special needs of approximately 1,400 international students from more than 90 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 new international students prepares them for entrance into the American academic systems and way of life.

International Programs also sponsors the Friendship Family Program, the Global Education Program, and other activities that promote interaction between American and international 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.

Student Development and Multicultural Programs

The main office of Student Development and Multicultural Programs is in 105
beginning of each regular semester. Information is available at Student Health Services and the Office of Student Life.

Student Health Services welcomes all students regardless of insurance coverage or no insurance coverage. The goal is to provide students with appropriate health care to enable them to function at their optimum level of wellness.

Student Organization Registration
Student organizations may be granted the privileges of University recognition if they are registered with the Center for Student Leadership and approved by the Student Government Association (SGA). To be approved, each organization must provide a completed WSU Student Organization form, lists of officers with addresses, copies of constitutions and bylaws, and advisor's name and address to the Center for Student Leadership. Once an organization has provided all necessary information, it may be granted official recognition by SGA which means it may use Wichita State in its name, use University rooms or grounds for meetings, post announcements on University bulletin boards, request funds from student fees in accordance with established procedures and guidelines of SGA statutes, and be listed as a WSU organization in the Undergraduate Catalog, Campus Directory, and other University publications. Records of recognized organizations are maintained in the Center for Student Leadership.

For more information regarding student organization registration, contact the Center for Student Leadership, 008 Rhatigan Student Center, (316) 978-3022.

Undergraduate Studies

The University is interested in helping WSU students meet their educational career goals. The Office of Undergraduate Studies and Student Services is a resource to students who are in academic difficulty or who are contemplating leaving the University. Students who do not know how to negotiate the University system are encouraged to call or visit this office. The office maintains an inventory of campus programs and services available to help students succeed while at the University. For assistance, contact:

Office of Undergraduate Studies and Student Services
105 Grace Wilkie Hall
Phone: (316) 978-3295
E-mail: wuline@wsuvm.uc.twsu.edu

WSU Child Development Center
The WSU Child Development Center is located at 3026 East 21st Street North, at the NW corner of Hillside and 21st Street. It is a licensed child care center for children of WSU students, faculty, staff, and community. A diverse staff of degreed teachers and student assistants facilitate developmentally appropriate activities—art, language, music, science, and literature—in an international environment. The child care center is open Monday through Friday from 7 a.m. to 6 p.m. (excluding University holidays) for children six weeks to six years old. Full- and part-time care is available in addition to drop-in care on a space available basis. Child care assistance is available for WSU student parents who demonstrate financial need; applications are available in the Financial Aid Office.

For more information, call (316) 978-3109.

Research Support

Center for Economic Development and Business Research
The Center for Economic Development and Business Research, a service of the W. Frank Barton School of Business, engages in business and economic research for a wide variety of clients in both private and public sectors. The center collects, analyzes, and disseminates information to support activities of government, education, business, and economic development organizations.

The center maintains a comprehensive database of economic indicators including population, personal income, employment, construction, and census data. Activities focus on issues related to the economic health of the region. The center publishes the Kansas Economic Report and a supplemental monthly, Kansas Economic Indicators.

Center for Women's Studies
The Center for Women's Studies coordinates scholarly and curricular activities related to the study of gender and culture. Although within Fairmount College of Liberal Arts and Sciences, the center participates in course offerings, research projects and other educational activities with many other academic units both within and beyond Fairmount College. The center is responsible for administering the BA in women's studies, as well as the minor, and supervises the work of students pursuing a concentration in women's studies in various undergraduate and graduate areas. In addition, the center serves as an informational resource for University students and faculty, as well as for the greater Wichita community.

Institute for Rehabilitation Research and Service
The Institute for Rehabilitation Research and Service (IRRS) was established in 1995 to promote a spirit of interdisciplinary cooperation among WSU faculty with rehabilitation-oriented interests. It is committed to improve the quality of life of persons with disabilities through basic and applied research, and service delivery program enhancement in concert with Wichita rehabilitation agencies.

National Institute for Aviation Research
Aviation research at the University dates from 1928, when aeronautical engineering students and Professor Alexander Petrof constructed the first wind tunnel, spurred by a $1,000 donation by Clyde Cessna. In 1951, the Walter Beech Memorial Wind Tunnel, financed in part by a $100,000 grant from Mrs. Olive Ann Beech, was dedicated. The National Institute for Aviation Research (NIAR) was organized at WSU in 1985, and has become a valuable resource to the worldwide aviation industry, which is so important to the Kansas economy. Current facilities encompass more than 74,000 square feet, and the 15 laboratories and associated equipment are valued at more than $20 million. The vision of NIAR—To conduct research, transfer technology, and enhance education for the purpose of advancing the nation’s aviation industries—reflects continuation of historic emphasis on linking research, technology application, and education.

The institute serves the needs of industry and government and supports educational programs of the University, providing a site and facilities for both faculty and student research in support of the College of Engineering and Fairmount College of Liberal Arts and Sciences. As a Kansas Technology Enterprise Corporation (KTEC) designated Center of Excellence, NIAR stresses the importance of the National Institute for Aviation Research and Service (NIAR) was established in 1995 to promote a spirit of interdisciplinary cooperation among WSU faculty with rehabilitation-oriented interests. It is committed to improve the quality of life of persons with disabilities through basic and applied research, and service delivery program enhancement in concert with Wichita rehabilitation agencies.

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which emanate from NIAR laboratories.

The Aerodynamic Laboratories have research capabilities for basic aerodynamics, confirmation testing of current and advanced designs, flow visualization, and development of advanced testing methods. The most famous wind tunnel, the Walter H. Beech Memorial Wind Tunnel, is capable of speeds up to 160 mph — with a 7 x 10 foot test section — and features state-of-the-art instrumentation and data processing capabilities. Besides traditional airplane studies, nontraditional research such as testing of buildings, trucks, an Olympic hopeful bicyclist, and futuristic large wind turbines for electric power generation have been conducted in this facility. In addition, a 2 x 3-foot flow visualization water tunnel, a 3 x 4-foot low-speed tunnel, and Mach 2 and Mach 4 supersonic tunnels are available.

The Computational Fluid Dynamics and Acoustics Laboratory provides computational expertise and software and hardware to solve complex fluid dynamics flow and aerodynamic noise problems and complements experimental research. The Crash Dynamic Laboratory, with a 75-foot long crash sled capable of 52-g peak load testing, conducts aircraft seat certification testing to FAA standards. The entire crash impact occurs in one-quarter second, during which time thousands of measurements are recorded and analyzed.

The Composites and Advanced Materials and Structures Laboratories have received national recognition for expertise in determining the structural properties of new lightweight composite materials through the NASA-Industry AGATE general aviation program. This laboratory features a large, high-pressure, high-temperature autoclave, ovens, pultrusion, braiding, filament winding and resin-transfer-molding capabilities, as well as extensive monitoring and measurement instruments.

The Structures Laboratory is well equipped to conduct mechanical properties testing, including environmental effects on new composite materials. Projects include aircraft and bicycle components, composite material qualifications for ongoing FAA certification programs, engine inlets, and the Aladdin, a complete quarter-scale research airplane designed by a statewide student team which won a NASA General Aviation Award

The Airframe Design and Analysis Laboratory works with computer models of aircraft structures, aircraft seats, and biodynamic data (simulations of the human body) to improve seat and restraint (safety belt) systems.

The Center for Technology Application (CTA) provides support for manufacturers in the application of technologies to reduce costs and maintain world-class competitiveness. Training in computer-aided design (CAD), and Quality, including ISO 9000 are provided. The CAD/CAM (Computer Aided Design/Computer Assisted Manufacturing) group conducts training workshops in both CADAM and CATIA software. CTA also operates the Wichita Field Office of the Mid-American Manufacturing Technology Center (MAMTC), a state and federally supported technology transfer program which helps small and medium size manufacturers become and remain competitive.

Other units of NIAR include Avionics, Cryogenics and Superconductivity, Human Factors-Ergonomics, Human Factors - Perception and Performance, Aircraft Icing, Computing and Software Engineering, Mechatronics and Systems Integration, Metrology, Manufacturing Processes, Propulsion, and Research Machine Shop.

**Student Support.** All NIAR laboratories are utilized for academic instruction for undergraduate and graduate students in addition to being used for government and industry research projects. Student research assistants gain valuable real-world research and development experience to complement their academic classroom studies, and receive pay to assist in meeting the expenses of education. More than 60 undergraduate student assistants and 50 graduate research assistants are supported annually. Many graduate students utilize NIAR laboratories and equipment to conduct their thesis and dissertation research.

**Student Awards.** Undergraduate students have received national awards for their participation in NASA's General Aviation Programs Competition. A statewide team of students from Kansas won first place in 1995, second place in 1996, and first place in 1997. A quarter-scale of the 1997 winning design is currently being fabricated by students in the Composites Laboratory. In 1998 the Kansas team won first place in the first NASA General Aviation "Design It, Build It, Fly It" Competition and received a $10,000 award.

Many student projects from the NIAR wind tunnels have received awards at regional American Institute for Aeronautics and Astronautics (AIAA) competitions.

**Cooperative Research Relationships.** NIAR has many cooperative relationships. It is one of five Kansas Technology Enterprise Corporation (KTEC) university-based Centers of Excellence. NIAR is a member of the FAA Center of Excellence for Airworthiness Assurance in partnership with six other major universities. NIAR has a key role in NASA's Advanced General Aviation Transport Experiment (AGATE), a multi-year program in partnership with companies which design and build single-engine and business jet airplanes. The Aircraft Design and Manufacturing Research Center (ADMC) was formed in partnership with Kansas aviation companies, KTEC, Kansas State University, the University of Kansas, and Pittsburg State University. A new Manufacturing Innovation and Development (MIND) partnership was created recently to speed innovation in manufacturing processes. NIAR is a member of the Kansas Industry-Universities-Government Engineering Education Consortium. Through these affiliations, the institute has gained a national reputation for leadership in research partnerships that include industry, state, and federal participation.

**Research Administration.** The Office of Research Administration assists the faculty in developing research, training, and service proposals for external funding. The office collects, maintains, and provides information regarding the programs, interests, and needs of government agencies, private foundations, and businesses; facilitates communication between the faculty and prospective sponsors; coordinates the preparation and submission of project proposals; provides general administration support for grants and contracts received; and monitors compliance with federal, state, and university policies.

**Small Business Development Center**

The Small Business Development Center (SBDC) was established in October 1983. The SBDC provides free one-on-one management assistance, resource referrals and business information, and low-cost training to small business owners, including potential business owners and inventors. The WSU SBDC serves 13 counties of south-central Kansas.

**Social Science Research Laboratory**

The Social Science Research Laboratory houses 19 terminals, an NCS optical bubble scanner, two line printers connected
to the WSU mainframes, and TWSU BBS
(The Wichita State University Bulletin
Board System).

The lab offers several services:

- **Test Grading Services.** They grade exams
  for instructors who wish to use bubble
  sheets as answer sheets for their exams.
  Differential item weighting and up to
  three different forms of the test are sup-
  ported. Results for each student, includ-
  ing the items each student missed, a raw
  score, a percent score, and other statistics,
  are generated for the instructor. Addi-
  tionally, a complete item analysis and
  overall statistical information about the
  exam are available for the instructor.

- **Other Scanning Services.** They also pro-
  vide service and consultation for those
  using bubble sheets for data collection in
  their research projects.

  **SPTLE.** The lab organizes, administers,
  and scores the Student Perception of
  Teaching Effectiveness. The instructor is
  provided a profile of students' percep-
  tions of their teaching skills. Upon
  request, consultation is offered regarding
  the profile analysis.

  **Terminals.** The terminals are available
  for both student and faculty use.

  **TWSU BBS.** This computer bulletin
  board is for WSU faculty, staff, students,
  and anyone else interested in bulletin
  boards. The purpose of TWSU BBS,
  among other things, is to (a) provide
  information about Wichita State Univer-
  sity, including schedules, the University
  Calendar, special events, and other infor-
  mation; (b) direct people to individuals
  who can answer questions about WSU;
  (c) provide shareware and public domain
  software; and (d) provide a wide variety of
  network conferences and other e-mail
  services.

**University Press of Kansas**

The University Press is operated jointly
by six state Kansas universities: the Uni-
versity of Kansas, Kansas State Univer-
sity, Wichita State University, Emporia
State University, Fort Hays State Univer-
sity, and Pittsburg State University.
Founded July 1, 1957, it was the first uni-
versity press in the United States to func-
tion on a statewide level under specific
sponsorship of all of the state's universi-
ties. Offices are located on the campus of
the University of Kansas.

**Hugo Wall School of Urban and Public Affairs**

The Hugo Wall School of Urban and Pub-
c Affairs was created in 1993 to enhance
the urban mission of Wichita State Uni-
versity as articulated by the Board of
Regents.

The school conducts instruction, re-
search, and service programs, integrat-
ing these three essential University func-
tions in responding to the needs of stu-
dents and the urban environment. Aca-
demic programs in criminal justice,
gerontology, minority studies, public
administration, and social work make up
the academic core of the Hugo Wall
School. The school's service programs
include seminars for area city and coun-
ty managers, professional development
for area public manager personnel, certifi-
cation training for the city clerks and
municipal finance officers of Kansas, and
municipal leadership workshops for local
elected officials.

The school's research and community
service programs include the Kansas Pub-
lic Finance Center, Midwest Criminal
Justice Institute, Kansas and Nebraska
Regional Community Policing Training
Institute, and the Center for Urban Stud-
ies.

**Kansas Public Finance Center**
The mission of the Kansas Public Finance
Center is to develop and help implement
public strategies that will promote eco-
nomic vitality in Kansas and to advance
the study of public scholarly research on
the theory and practice of public finance,
including public budgeting, financial man-
agement, and economic development; to
strengthen the ability of WSU faculty to
provide specific advice to private and pub-
lic policy-makers about economic vitality
and public finance; and to develop and dis-
seminate financial analysis methodologies
and techniques appropriate for the public
sector based, in part, on private sector practices.

**Midwest Criminal Justice Institute**
The Midwest Criminal Justice Institute
(MCJI) was created in the Hugo Wall
School in 1997 to provide specialized
education and training to regional crimi-
nal justice professionals. Eight-hour semi-
nars are offered monthly by nationally
renown instructors who teach on substan-
tive topics such as crime prevention
through environmental design, geographic
criminal profiling, restorative justice,
and other contemporary criminal justice
innovations. In addition to a substantive
focus, the MCJI features day-long interac-
tive seminars for criminal justice execu-
tives, and a two-week executive leader-
sip seminar each summer. WSU stu-
dents are permitted to apply MCJI semi-
nar attendance toward elective criminal
justice college credit although additional
fees (and some restrictions) are required.

**Regional Community Policing
Training Institute**
The Kansas and Nebraska Regional Com-
munity Policing Training Institute was
created under a cooperative agreement
between the Office of Community Orient-
ed Policing Services, U.S. Department of
Justice, and WSU. This twelve-month
renewable project provides community
policing training, technical assistance,
and access to updated research and poli-
cy information to policy agencies in
Kansas and Nebraska. While the primary
focus is on rural agencies, resources and
services are available to all agencies with-
in the region. Project partners are the
Wichita Police Department, Kansas Asso-
ciation of Chiefs of Police, and Wichita
Crime Commission.

**Center for Urban Studies**
The Center for Urban Studies performs
research and policy analysis for govern-
ment and community institutions. The in-
stitute faculty and professional staff
also develop, manage, and teach work-
shops and short courses for certification
of professionals, continuing education,
and development of leadership and gov-
ernance skills. Educational and analyti-
cal activities at the institute promote excel-
ence in government and community
improvement. To the extent possible, the
institute develops parallel products for
academic, professional, and community
application.

**WSU Center for Energy Studies**
The WSU Center for Energy Studies con-
ducts energy-related research with
emphasis on applications within the state
of Kansas. Currently, the major focus of
the research conducted in the center is
related to various aspects of electric
power and energy. However, research
to alternate and fossil energy
sources is also within the scope of the
center's activities. The industry-support-
ed Power Electronics and Power Quality
Research Laboratory is also a part of the
Center for Energy Studies. The center is
housed in the WSU Department of Elec-
trical and Computer Engineering.

**Special Academic Programs**

**Academic Outreach**
The Division of Academic Outreach man-
ages credit instruction outside the city
limits of Wichita, handles industrial/cor-
porate relations in Wichita and south cen-
Center for Entrepreneurship

Housed in Devlin Hall, the Center for Entrepreneurship is part of the W. Frank Barton School of Business. It encourages entrepreneurial thinking and activities through quality education, research, and community involvement to better serve its customers and stakeholders. The center provides a comprehensive curriculum in entrepreneurial studies at both the undergraduate and graduate level.

Consistently recognized as one of the top ten schools for entrepreneurship, the center offers a Bachelor of Business Administration in Entrepreneurship through the Barton School's Department of Marketing and Entrepreneurship. The entrepreneurship major offers students challenging and exciting courses emphasizing the formal study of entrepreneurship. The degree program requires completion of the University's general education courses and business core courses as well as courses specifically required for the entrepreneurship major. The business core courses include meaningful exposure to accounting, finance, economics, management, and marketing. The major also requires the student to research and write an involved business plan and to understand risk analysis, problem solving, and how to develop a business strategy for a new or growing venture. In addition, graduate students may select entrepreneurship courses in both the MBA and Master of Science in Business degree programs. Scholarships are available for both undergraduate and graduate study.

Additional programming includes workshops/seminars, a visiting lecture series, co-sponsorship of the Metro Awards, a high school conference, the Kansas Family Business Forum, and two student organizations, the Association of Collegiate Entrepreneurs (ACE) and Students in Free Enterprise (SIFE).

Cooperative Education Program

Cooperative education is an academic program for undergraduate and graduate students who wish to combine classroom studies with academically related paid employment. Cooperative education places students both locally and nationally.

By utilizing off-campus resources and expertise, cooperative education places students in business, government, industry, 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 hired in cooperative education positions must enroll in specially designated co-op courses and work with a faculty advisor from within the appropriate departments. Each placement is assessed by the faculty advisor 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 advisor. During the work period, students are expected to meet project requirements assigned by their advisor. Academic credit generally counts toward University degree requirements.

Cooperative education offers both alternating and parallel placements. Students who select the alternating option must complete a semester of full-time enrollment in course work before entering a second alternating position. Alternating placements carry the status of full-time students and enjoy the accompanying privileges.

Students selecting the parallel option are required to carry a minimum of six hours of course work in addition to their co-op course. Students may enroll in parallel 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) 978-3688. Students are required to complete an application for admission, attend orientation, and schedule an interview with the appropriate co-op coordinator.

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 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.

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, facilities, and services, the University Libraries support teaching and research at WSU. The growing collections of more than three million items include books and periodicals, microforms, government publications, corporate annual reports, scores, videotapes, audio recordings, and CD-ROMS. In 1991, Ablah Library became an official United States Patent and Trademark Depository Library, the only such depository in Kansas.

Library facilities include an open stack arrangement, seating for more than 800 people, group and faculty study carrels, electronic carrels containing listening and viewing equipment, microform reading and printing equipment, and photocopiers, and typewriters. Additionally, computer terminals and printers are provided to access the library’s online catalog and electronic databases.

The University’s libraries offer a variety of services, including convenient hours as well as dial-in access to the online catalog and a number of the library’s periodical indexes. Reference librarians are available to help students and faculty locate information and use the computerized systems. These librarians also perform literature searches in numerous remote computerized databases. When materials are not owned, interlibrary loan services will locate and borrow materials from other institutions.

The Department of Special Collections houses the University Archives, rare books, historical Kansas maps, and a rapidly growing manuscript collection of more than 700,000 documents. This collection includes papers of the abolitionist William Lloyd Garrison, the Kantor Collection of the Civil War Sanitary Commission, and local history collections.

Cable Television
Wichita State University operates WSUTV, which is carried by area cable television systems on channel 28 in Wichita, Bel Aire, Eastborough, Kechi, McConnell, and Park City. In most other outlying areas, WSU-TV can be seen on channel 40. Programming is provided by The Bloomberg Report, a 24-hour news and information channel with particular emphasis on business/financial reports. With its unique multi-screen format, news is available virtually on demand. The upper right-hand two-thirds of the screen features video of an anchor giving news reports and the rest of the screen shows text reports that are updated continually.

Additional programming consists of 18 to 22 telecourses per semester, offered for academic credit by the various colleges at WSU. Local programming is also produced, featuring a monthly arts magazine, faculty profiles, distinguished guest speakers, and other campus events.

In addition to full-time staff, approximately 15 students are involved in the operations of the channel and the production of programs. Facilities are located in the Media Resources Center.

Computing Center
The University Computing and Telecommunications Services organization serves the students, faculty, and staff of the University by providing contemporary computing and telecommunications resources for instruction, research, and administrative information systems. These services are supported by a campus high-speed fiber optic network that connects every building on campus to the central computing facility located in Jabara Hall. Campus resources are available over the campus network and access to the Internet is available free to all students and faculty from the campus network. Residence halls are equipped with campus network connections for each student for campus and Internet access. A remote dial-in access service, ShockNet2, is also available for a nominal charge for students not living on campus.

Jabara Hall, the science laboratory and classroom building, provides state-of-the-art facilities for computing at Wichita State and allows open computer access to students as well as faculty.

The central computing facility, located in the north portion of the building, occupies three floors, two of which are accessible to the public. The first floor houses two open computer labs with more than 80 contemporary networked computer systems, a central print room, user services, and the academic support areas.

The hours for the computer labs are: Monday-Thursday, 7 a.m.-midnight; Friday, 7 a.m.-6 p.m.; Saturday, 10 a.m.-8 p.m.; and Sunday, 12 p.m.-8 p.m. The labs have computer consultants available for microcomputer software, mainframe resources, and Internet access help. The labs provide free print services from any workstation. High-resolution document scanners are also provided for student use.

Laser high quality printing and color printing services are available for a small fee. The second floor contains the administrative, microcomputer repair, and microcomputer networking and software offices, as well as a technology training room for faculty and staff development. The third floor houses the University’s mainframe, network servers, and technical support offices.

The computing facilities support an IBM mainframe computer system that is primarily used for administrative systems. The campus network supports Fast Ethernet between buildings and switched Ethernet within the buildings to the desktop. The campus has more than 4,000 networked microcomputer systems for campus classrooms, laboratories, and offices. Additional information concerning computing and technology is available from the University’s website (www.wichita.edu).

Harvey D. Grace Memorial Chapel
Harvey D. Grace Memorial Chapel, located in the heart of the campus near Morrison Hall and the Rhatigan Student 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 and is a frequent location for student weddings.

Heskett Center
The Heskett Center, a multipurpose, dance, physical education, and recreation complex, is named in honor of the parents of 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, circuit training room, combatives room, 25-meter indoor swimming pool with separate diving well, seven handball-tennis courts, indoor climbing wall, and a 200-meter indoor jogging track which sur-
ounds five basketball 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. Students must show a current Shocker ID card to use the activity areas for recreation or classes.

**KMUW Radio Station**

KMUW Radio Station broadcasts at 89.1 FM. The 100,000-watt station is one of nearly 600 member stations of the National Public Radio (NPR) network. KMUW is also affiliated with Public Radio International (PRI) and Kansas Public Radio (KPR). KMUW's mission is to provide high-quality cultural and informational broadcast services to the greater Wichita area as part of the university's urban mission of community service. KMUW also provides training and professional experience for WSU students.

**Learning Resource Center**

Wichita State offers students a variety of academic success resources through the programs of the Learning Resource Center (LRC). Courses are offered to help students improve their reading comprehension and speed, critical thinking skills, library research skills, study strategies, and standardized test-taking skills. Complete descriptions of courses offered at the center are included under "Academic Resources for Success" in the College of Education section of the Undergraduate Catalog.

In addition to formal course work, the Learning Resource Center offers free workshops and media programs to WSU students, including study skills workshops; videotapes for study skills and for algebra review; and computer preparation programs for the Graduate Record Exam and the Pre-Professional Skills Tests. The LRC may be contacted for information about other no-cost programs offered for special student populations such as on-call study skills advisors, vocabulary preparation workshops, and conversation groups for students who need to increase their English speaking skills.

**Marcus Center for Continuing Education**

Many educational services are offered at 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. The center also is available as a rental facility.

**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, and operates WSU-TV, the University's cable television station.

Facilities and resources include an interactive television (ITV) classroom, instructional design consulting and production, a multimedia lab, complete photographic darkroom laboratories, a graphic design studio, a professional television production studio, satellite conference downlinks, compressed video and desktop videoconferencing facilities, and the campus cable TV network.

The MRC has designed and installed and maintains 25 minimally equipped classrooms and 12 fully equipped master classrooms. More master classrooms are being installed each semester.

A wide array of media equipment systems is available for classroom use by students and faculty. These include video recording systems and projection equipment. A collection of 1,000 videotapes is available as well.

**WSU Metropolitan Complex**

The WSU Metropolitan Complex was acquired by the University in 1997. Located at 5015 East 29th Street North, the 75,000-square-foot building serves the University and the community as a meeting, classroom, and rental facility. The Metropolitan Complex Office, the Office of University Conferences and Non-Credit Programs, Small Business Administration, and two classrooms presently are housed in the building. The Speech and Hearing Clinic, Fine Arts "Black Box Theater," and Wichita Radio Reading Service will move in 1999.

The Metropolitan Complex features an auditorium which seats 1,754 and three other meeting rooms. All are available for rent. Call (316) 978-3258 for further information.

**Rhatigan Student Center**

The Rhatigan Student Center (RSC) is the community center for Wichita State University. Through its facilities and services, the student center serves students, faculty, staff, alumni, and guests of the University.

The RSC 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, on the first floor of the RSC, stocks all required textbooks, computer software and hardware at educational prices, art supplies, general reading material, Hallmark® cards, Shocker souvenirs, and gifts. The RSC has a Recreation Center on the lower level for leisure use. It includes pinball, video games, bowling, billiards, snacks, locker rental, disc jukebox, an engraving shop, laminating services, and a barber/beauty shop. The Recreation Center also is the home of the nationally ranked WSU varsity bowling teams. Additionally, the RSC has a 450-seat 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 RSC, as well as most University facilities for out-of-classroom use. Additionally, the Reservations Office manages the University Information Center (UIC) on the first floor of the RSC. Call the UIC at (316) 978-INFO (4636) for any information about WSU.

Through the Student Activities Council (SAC), students are provided an opportunity to learn and develop leadership skills while planning a variety of programs for the campus. The Student Activities Council is the main programming body on campus; it organizes more than one hundred events annually, including Shocktoberfest and Hippodrome. The RSC is also home for the Student Government Association, Student Ombudsman, Ecumenical Christian Ministries, and the Center for Student Leadership.

The RSC is supported through revenues generated from within the operation and student fees.

**Speech-Language-Hearing Clinic**

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 fee-for-service basis to people in Wichita and the surrounding communities and to University students, staff, and faculty. The clinic is open 8 a.m.-5 p.m. Monday through Friday for scheduled appointments: call 978-3289. Upper division students, graduate stu-
Sports and Recreation

Sports and recreation facilities for students at Wichita State include a regulation 18-hole golf course; the 10,429-seat Hal Levitt Arena which is used for intercollegiate basketball games, volleyball matches, and major entertainment events; Cessna Stadium; the 5,665 seat Eck Stadium-Tyler Field, home to the Shockers baseball and football programs; a family program; mini-excursions for children of WSU students; and Sciences provides services. All work is done with eight lighted courts, home to WSU's tennis program; and the new 802-seat C. Howard Wilkins Softball Complex for intercollegiate softball for women.

Wichita State is a member of the Missouri Valley Conference and consistently ranks nationally in baseball 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; programs and excursions for children of WSU students, faculty, and staff; a family program; mini-classes and workshops; outdoor recreation, and aquatics.

Edwin A. Ulrich Museum of Art

The Edwin A. Ulrich Museum of Art is recognized among university museums for its outdoor sculpture collection and for the quality of its exhibition program. In addition to galleries which hold exhibitions from the museum's collection, the museum hosts seven special exhibitions a year, each of which runs for approximately six weeks. Call (316) 978-3664 for information on current exhibitions.

The museum is named in honor of Edwin A. Ulrich, a retired businessman who contributed funds to the University designated for the construction of the museum building. Ulrich also gave a collection of artwork by the American marine painter, Frederick Judd Waugh (1851-1940).

The museum opened in 1974 and over the years has developed an active exhibition program. As a visual laboratory for the students of the University as well as the community, the exhibition program presents a blend of traditional artwork, often from the museum collection, with more experimental work. Exhibitions have featured artists such as David Hockney, Romare Bearden, Morris Louis, Isabel Bishop, David Salle, Sandy Skoglund, Jesus Moroles, Faith Ringgold, and Elizabeth Murray, along with collections of electronic and neon artists and Kansas Naive artists. In cooperation with the faculty of the College of Fine Arts the museum is the setting for concerts, lectures, and demonstrations by visiting artists as well as WSU faculty.

The art collection, owned by Wichita State University Endowment Association and managed by the professional staff of the museum, now numbers more than 8,000 objects. Nineteenth and 20th century European and American art, paintings, drawings, sculpture, and prints form the core of the collection. The museum organizes traveling exhibitions of work from the collection. Solo exhibitions by Frederick Waugh, Gordon Parks, and Ernest Trova, and theme exhibitions such as Twentieth Century American sculpture have traveled to museums both in this country and abroad.

A major aspect of the collection is the 58 piece outdoor installation of the Martin H. Bush Sculpture Collection, named in honor of the founding director of the museum. The collection contains a cross-section of 19th and 20th century sculptures by artists such as Auguste Rodin, Henry Moore, Louise Nevelson, George Rickey, Lynn Chadwick, and Luis Jimenez, among others. The centerpiece of this outdoor collection is the mural Personnages Cieux by the Spanish artist Joan Miro, located on the face of the museum building. Consisting of nearly one million pieces of Venetian glass and marble, the mural depicts whimsical circular characters that inhabit the imagination of the artist.

Wichita Radio Reading Service

Operating on a subcarrier frequency of KMWU, the Wichita Radio Reading Service (WRRS) programs readings of printed material to more than 2,000 print-disabled individuals. More than 100 volunteers supply the readings, with additional programming from the In-Touch Network. National Public Radio, and Public Radio International.

Wiedemann Hall

Wiedemann Hall houses the first organ built in North America by the world-renowned firm of Marcussen and Son, Denmark. The hall, which was dedicated in 1986, is the ideal acoustic 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 broadcasting, recording, and televising.

The building is named for the late community philanthropist and music lover Gladys H.G. Wiedemann who in 1983, as president of the K.T. Wiedemann Foundation, Inc., donated the great Marcussen organ.

Bloomfield Foyer, a gift of the Sam and Rie Bloomfield Foundation, Inc., graces the entrance to Wiedemann Hall.

In WSU's prestigious Rie Bloomfield Organ Series, world-renowned organ recitalists perform on the internationally recognized Marcussen Organ.
W. Frank Barton School of Business

Office Hours: 100 Clinton Hall
Gerald H. Graham, dean
Nancy A. Bereman, associate dean
Donald G. Christensen, director, graduate studies in business

School of Accountancy, (316) 978-3215—Douglas Sharp, director

Departments
Economics, (316) 978-3220—Jen-Chi Cheng, chairperson
Finance, Real Estate, and Decision Sciences, (316) 978-3219—Richard L.B. LeCompte, chairperson
Management, (316) 978-3214—Manoj Gupta, chairperson
Marketing and Entrepreneurship, (316) 978-3367—Robert H. Ross, chairperson

Graduate Faculty
School of Accountancy
Professors: James W. Deskins, Michael F. Foran, Bill D. Jarnagin, Philip T. May
Associate Professors: Linda F. Christensen, Nancy J. Foran, Douglas Sharp (director)
Assistant Professor: Jeffrey J. Bryant

Economics
Professors: Dong W. Cho, Philip L. Hersch, Martin M. Perline, Samuel C. Webb
Associate Professors: Jen-Chi Cheng (chairperson), James E. Clark, Maurice Pfannesteil, William T. Terrell
Assistant Professors: Qing Li, Kyung So Im

Finance, Real Estate, and Decision Sciences
Professor: Dwight D. Murphy
Associate Professors: Donald G. Christensen (director, graduate studies in business), Mohammed Dadashzadeh, Manoj Gupta, Richard L.B. LeCompte (chairperson), Awanthi Sethi
Assistant Professors: Ta-Tao Chuang, John Conlee, Sue Abdinnour-Helm, Stephen Henry

Management
Endowed Professor: Gerald H. Graham (R.P. Clinton Distinguished Professor of Management, occupies the R.P. Clinton Endowed Chair of Management; dean, Barton School of Business)
Professors: Dharma deSilva, Cynthia Lengnick Hall
Associate Professors: John A. Belt, Nancy A. Bereman (associate dean, Barton School of Business), Manoj Gupta (chairperson), Mark Lengnick-Hall, Martha Sanders
Assistant Professors: Larry Inks, Timothy Pett, James A. Wolff

Marketing and Entrepreneurship
Professor: Charles L. Martin
Associate Professors: Donald W. Hackett (director, Center for Entrepreneurship), Dean E. Headley, Frederic B. Kraft, Robert H. Ross (chairperson)
Assistant Professor: Vincentia Claycomb, Terry Noel, Stephen Porter

The mission of the W. Frank Barton School of Business is to add value to students and to advance the practice of business through:

- offering undergraduate and graduate programs
- conducting basic, applied, and instructional research
- performing service that facilitates economic and personal development, and capitalizing on our metropolitan location.

The vision of the W. Frank Barton School of Business is to be recognized as the best source of high quality business education, prospective employers, scholarly research, and business development services in the community, state, and region.

Consistent with the University's role as the Regents' urban institution, the Barton School aggressively pursues regional and national prominence for its academic and professional programs.

This mission is influenced by the location of the school 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 are 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.

Within this context, the faculty of the school have adopted the following educational goals of the Barton School which are listed below under the headings of Students, Faculty, Programs. For each grouping, a preamble states the basic values of the Barton School faculty.

Students: Students are the reason for the Barton School's existence. It is the faculty's responsibility to create programs and a learning environment that ensure the ultimate success of students. We, the faculty, want our students to evaluate positively their Barton School experiences, both while enrolled in courses and afterwards.

Goals: To ensure that students completing Barton School programs possess skills that make them competitive with students from the best business programs in the region. To increase quality and quantity of students.

Faculty: Faculty are the means by which the University creates a learning environment. The quality of the faculty and the opportunities provided to faculty for continuous improvement are of paramount importance to the success of the Barton School.

Goal: To have faculty who are widely recognized for their commitment to students and scholarship.

Programs: The programs offered by the Barton School link it to its multiple constituencies. The rich diversity of these programs reflects the University's unique metropolitan mission.

Goal: To increase the recognition of the Barton School through programs that are relevant, competitive, and up-to-date.

The school is a member of the American Assembly of Collegiate Schools of Business: its undergraduate and graduate programs are accredited by this organization.

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

Master of Professional Accountancy

The Master of Professional Accountancy program at 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 graduate coordinator of the School of Accountancy to learn the approximate length of time it would take to earn the degree. For example, if your bachelor's degree is in accounting, then basically you would have one more year of full-time study to obtain the MPA degree.

Admission Requirements

Admission to the MPA professional curriculum is available to (1) qualified students who have not yet completed a bachelor's degree, and (2) qualified students who have completed a bachelor's 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 bachelor's 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: Acc 210, 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 lacking no more than nine hours of preprofessional curriculum, 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 a regionally 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 Bachelor's 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 Wichita State University, plus additional nonbusiness courses for 62 semester hours. The following courses are specifically required by the School of Accountancy and may be counted within this 62 hours:

   Courses       Hrs.  
   Econ. 201Q and 202Q, Principles of Economics I and II .......... 6  
   Upper-division economics course  3
   Econ. 231, Introductory Business Statistics  3
   Comm. 111, Basic Public Speaking  3
   Eng. 210, Composition Business, Professional, and Technical Writing 3
   Math. 111, College Algebra  3
   Math. 144, Business Calculus  3

2. The candidate must complete a minimum of 25 hours of the following Barton School of Business core requirements:

   Courses       Hrs.  
   Accr. 210, Financial Accounting I  3
   Accr. 220, Managerial Accounting I  3
   Accr. 260, Introduction to Information Processing Systems  3
   DS 350, Introduction to Production Management  3
   DS 495, Management Information Systems  3
   Fin. 340, Finance  3
   Mgmt. 361, Concepts of Administration  3
   Mgmt. 430, Business and Society  3
   Mkt. 300, Marketing  3

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

   Courses       Hrs.
   Preprofessional Accounting Core
   Accr. 310, Financial Accounting and Reporting: Assets  3
   Accr. 320, Accounting for Decision Making and Control  3
   Accr. 410, Financial Accounting and Reporting: Equities  3
   Accr. 436, Introduction to Federal Income Tax  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. The GMAT should be taken during, or just prior to, this semester.

A bachelor's degree will be awarded at the time of conferring the MPA degree.

Professional Curriculum

Candidates in the professional curriculum who have completed the minimum preprofessional curriculum outlined above, must complete 56 credit hours in the following courses while maintaining an overall grade point average of 3.00 or better.

   Courses       Hrs.
   Accr. 560, Accounting Information Systems  3
   Accr. 610, Financial Accounting and Reporting: Special Entities and Complex Issues  3
   Accr. 620, Accounting for Strategic Support and Performance Evaluation  3
   Accr. 630, Taxation of Business Entities  4
   Accr. 640, Principles of Auditing  4
   Remaining Barton School of Business core requirements  5-9
   Accr. 815, Financial Accounting and Reporting: Contemporary Issues  3
   Accr. 855, Management Control Systems  3
   Accr. 835, Tax Research and Selected Topics  3
   Accr. 840, Advanced Principles of Auditing  3
   Accr. 860, Advanced Accounting Information Systems  3
   Mgmt. 885, Strategic Management  3
   Graduate electives outside accounting  9
   Other graduate electives (accounting or nonaccounting)  6

   As a minimum, the candidate's program must include 30 graduate-level hours, including 15 hours of accounting courses numbered 800 or above and a
total of 21 semester hours of courses numbered 800 or above—excluding any courses which represent business core knowledge. A minimum of 154 credit hours (undergraduate and graduate) is required.

* See list of courses under Preprofessional Curricu­lum Core courses taken after admission to the MPA program must be grade-level equivalent courses.

** Electives must be selected to conform with AACSB standards for master’s in accounting programs. See the graduate coordinator of the School of Accountancy for assistance in making selections.

Degree Requirements—

Students Possessing a Bachelor’s Degree at Time of Admission

Total degree requirements for students granted admission after completion of a bachelor’s 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 bachelor’s degree, including 15 semester hours of accounting courses numbered 800 or above and a total of 21 semester hours in courses numbered 800 or above*.

In general, we presume an undergraduate degree in business and an accounting major, equivalent to that offered at WSU. The following courses, or their graduate equivalents, must be included as part of the MPA program if not covered in the student’s bachelor’s degree:

Courses

<table>
<thead>
<tr>
<th>Accountancy</th>
<th>Hrs.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acct. 210, Financial Accounting</td>
<td>3</td>
<td>Financial Accounting</td>
</tr>
<tr>
<td>Acct. 220, Managerial Accounting</td>
<td>3</td>
<td>Managerial Accounting</td>
</tr>
<tr>
<td>Acct. 260, Introduction to Information Processing Systems</td>
<td>3</td>
<td>Introduction to Information Processing Systems</td>
</tr>
<tr>
<td>Acct. 310, Financial Accounting and Reporting</td>
<td>3</td>
<td>Financial Accounting and Reporting</td>
</tr>
<tr>
<td>Acct. 320, Accounting for Decision Making and Control</td>
<td>3</td>
<td>Accounting for Decision Making and Control</td>
</tr>
<tr>
<td>Acct. 410, Financial Accounting and Reporting</td>
<td>3</td>
<td>Financial Accounting and Reporting</td>
</tr>
<tr>
<td>Acct. 560, Accounting Information Systems</td>
<td>3</td>
<td>Accounting Information Systems</td>
</tr>
<tr>
<td>Acct. 610, Financial Accounting and Reporting</td>
<td>3</td>
<td>Financial Accounting and Reporting</td>
</tr>
<tr>
<td>Acct. 620, Accounting for Strategic Support and Performance Evaluation</td>
<td>3</td>
<td>Accounting for Strategic Support and Performance Evaluation</td>
</tr>
<tr>
<td>Acct. 630, Taxation of Business Entities</td>
<td>3</td>
<td>Taxation of Business Entities</td>
</tr>
<tr>
<td>Acct. 640, Principles of Auditing</td>
<td>4</td>
<td>Principles of Auditing</td>
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<tr>
<td>Acct. 810, Advanced Principles of Auditing</td>
<td>3</td>
<td>Advanced Principles of Auditing</td>
</tr>
<tr>
<td>Acct. 825, Management Control Systems</td>
<td>3</td>
<td>Management Control Systems</td>
</tr>
<tr>
<td>Acct. 835, Tax Research and Selected Topics</td>
<td>3</td>
<td>Tax Research and Selected Topics</td>
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<tr>
<td>Acct. 840, Advanced Principles of Auditing</td>
<td>3</td>
<td>Advanced Principles of Auditing</td>
</tr>
<tr>
<td>Acct. 860, Advanced Accounting Information Systems</td>
<td>3</td>
<td>Advanced Accounting Information Systems</td>
</tr>
<tr>
<td>Acct. 870, Advanced Accounting</td>
<td>3</td>
<td>Advanced Accounting</td>
</tr>
<tr>
<td>Acct. 890, Tax Research</td>
<td>3</td>
<td>Tax Research</td>
</tr>
<tr>
<td>Acct. 910, Advanced Auditing</td>
<td>3</td>
<td>Advanced Auditing</td>
</tr>
<tr>
<td>Acct. 920, Advanced Taxation of Business Entities</td>
<td>3</td>
<td>Advanced Taxation of Business Entities</td>
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<tr>
<td>Acct. 930, Advanced Accounting Information Systems</td>
<td>3</td>
<td>Advanced Accounting Information Systems</td>
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<tr>
<td>Acct. 940, Advanced Auditing</td>
<td>3</td>
<td>Advanced Auditing</td>
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<tr>
<td>Acct. 950, Advanced Taxation of Business Entities</td>
<td>3</td>
<td>Advanced Taxation of Business Entities</td>
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<tr>
<td>Acct. 960, Advanced Accounting Information Systems</td>
<td>3</td>
<td>Advanced Accounting Information Systems</td>
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<tr>
<td>Acct. 970, Advanced Auditing</td>
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<td>Advanced Auditing</td>
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<tr>
<td>Acct. 980, Advanced Taxation of Business Entities</td>
<td>3</td>
<td>Advanced Taxation of Business Entities</td>
</tr>
<tr>
<td>Acct. 990, Advanced Accounting Information Systems</td>
<td>3</td>
<td>Advanced Accounting Information Systems</td>
</tr>
</tbody>
</table>

Graduate electives outside accounting—9

Other graduate electives (accounting or nonaccounting)—6

The following graduate-level course work must be completed:

Courses

<table>
<thead>
<tr>
<th>Accountancy</th>
<th>Hrs.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acct. 800, Introduction to Financial Accounting</td>
<td>3</td>
<td>Introduction to Financial Accounting</td>
</tr>
<tr>
<td>Acct. 805, Financial Accounting</td>
<td>3</td>
<td>Financial Accounting</td>
</tr>
<tr>
<td>Acct. 825, Management Control Systems</td>
<td>3</td>
<td>Management Control Systems</td>
</tr>
<tr>
<td>Acct. 835, Tax Research and Selected Topics</td>
<td>3</td>
<td>Tax Research and Selected Topics</td>
</tr>
<tr>
<td>Acct. 840, Advanced Principles of Auditing</td>
<td>3</td>
<td>Advanced Principles of Auditing</td>
</tr>
<tr>
<td>Acct. 860, Advanced Accounting Information Systems</td>
<td>3</td>
<td>Advanced Accounting Information Systems</td>
</tr>
<tr>
<td>Acct. 870, Advanced Accounting</td>
<td>3</td>
<td>Advanced Accounting</td>
</tr>
<tr>
<td>Acct. 890, Tax Research</td>
<td>3</td>
<td>Tax Research</td>
</tr>
<tr>
<td>Acct. 910, Advanced Auditing</td>
<td>3</td>
<td>Advanced Auditing</td>
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<tr>
<td>Acct. 920, Advanced Taxation of Business Entities</td>
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<td>Advanced Taxation of Business Entities</td>
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<tr>
<td>Acct. 930, Advanced Accounting Information Systems</td>
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<td>Advanced Accounting Information Systems</td>
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<tr>
<td>Acct. 940, Advanced Auditing</td>
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<td>Advanced Auditing</td>
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<tr>
<td>Acct. 950, Advanced Taxation of Business Entities</td>
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<td>Advanced Taxation of Business Entities</td>
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<tr>
<td>Acct. 960, Advanced Accounting Information Systems</td>
<td>3</td>
<td>Advanced Accounting Information Systems</td>
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<tr>
<td>Acct. 970, Advanced Auditing</td>
<td>3</td>
<td>Advanced Auditing</td>
</tr>
<tr>
<td>Acct. 980, Advanced Taxation of Business Entities</td>
<td>3</td>
<td>Advanced Taxation of Business Entities</td>
</tr>
<tr>
<td>Acct. 990, Advanced Accounting Information Systems</td>
<td>3</td>
<td>Advanced Accounting Information Systems</td>
</tr>
</tbody>
</table>

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 entrepreneurship 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 partici-
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. 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 bachelor's degrees in nonbusiness fields usually will 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 following admission to the program.

### MBA Course Requirements

<table>
<thead>
<tr>
<th>Prerequisites</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math. 144, Business Calculus</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 231, Introductory Business Statistics</td>
<td>4</td>
</tr>
<tr>
<td><strong>Background Fundamental Courses</strong></td>
<td></td>
</tr>
<tr>
<td>Acct. 800, Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>DS 850, Production and Operations Management</td>
<td>3</td>
</tr>
<tr>
<td>DS 874, Management Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 800, Analysis of Economic Theory</td>
<td>3</td>
</tr>
<tr>
<td>Fin. 840, Financial Systems</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt. 860, Management of Organizations</td>
<td>3</td>
</tr>
<tr>
<td>Mkt. 800, Marketing Systems</td>
<td>3</td>
</tr>
<tr>
<td><strong>Required Courses</strong></td>
<td></td>
</tr>
<tr>
<td>Acct. 801, Managerial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 804, Managerial Economics</td>
<td>3</td>
</tr>
<tr>
<td>Fin. 850, Managerial Finance</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt. 803, Business Decision Making and Analysis or Mkt. 803, Marketing Analysis (taken within first two semesters of admission)</td>
<td>3</td>
</tr>
<tr>
<td>Mkt. 801, Marketing Management</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt. 862, Organizational Behavior</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt. 885, Advanced Strategic Management (taken during last semester)</td>
<td>3</td>
</tr>
</tbody>
</table>

**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 or graduate program. See Advanced Standing section above.
* **Two Independent Studies may also be taken as electives (3 credit hours each).**

## 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. 804, Fin. 850, Mgmt. 803 or Mkt. 803, Mgmt. 862, Mgmt. 885, Mkt. 801 and six hours of electives. The additional three hours of 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, entrepreneurship, finance, managerial economics, marketing, operations analysis and production management, organizational behavior, and human resource management.

## Executive Master of Business Administration

The Executive Master of Business Administration degree program is developed exclusively for high-potential professionals. The program focuses on the needs of professionals as well as the demands of the globally competitive business community. The EMBA program curriculum includes insights into human behavior, proven analytical tools, strategic operational and financial management, innovative marketing concepts, and the latest in competitive technology. The program is administered through Barton School of Business faculty in the accounting, economics, finance, real estate, and decision sciences; management; and marketing and entrepreneurship departments.

The EMBA program is completed in twenty-two months and requires completion of fourteen classes (36 credit hours). All classes meet on Saturdays.

## Admission Requirements

Admission to the EMBA is granted to students who hold mid- or upper-level professional positions in businesses and non-profit organizations. All students must hold a bachelor's degree from a regionally accredited institution. Previous academic training in business is not required for admission to the EMBA program.

Although various criteria are considered in granting admission, special attention is given to the applicant's work experience; potential for advancement in their organization; and score on the Graduate Management Admissions Test (GMAT). All applicants are required to submit application materials including letters of recommendation and personal essays, and are required to complete a personal interview with Barton School faculty and/or administrative staff.

### Master of Science in Business

The Master of Science in Business 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 advisors, to include specialization in one of five areas: finance, management, marketing, human resource management, or entrepreneurship. Two options are available under the MS program in business; 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 (GMAT) taken within the last six years. General minimum requirements for admission are:

1. A bachelor's degree from a regionally accredited university.

2. A total of 1,050 points based on the
Degree Requirements
Students admitted to the MS in Business 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.

Beyond the background fundamentals, the degree program includes 31 to 33 hours of work, including Thesis or Special Project hours. All course work taken for the degree must be approved by the student's advisor. (Courses identified as background fundamentals may not be included in the 31-33 hours required for the degree.)

Students obtaining the MS in business (under either option) are required to complete six hours of methods courses designed to enhance the student's capabilities for practical applications and research in the field of specialization. Methods courses would likely be drawn from such courses as research methods, statistical analysis, and experimental design.

Additional requirements under each option area are as follows:

Option A: Option A requires the completion of a minimum of 31 credit hours of work, including at least 21 hours in 800-level courses. In addition to the two 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 also must present an oral defense of their thesis conducted according to the requirements of Wichita State University's Graduate School.

Option B: Option B requires the completion of a minimum of 33 credit hours of work, including at least 24 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, three credit hours must 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 presents a curriculum leading to the Master of Arts (MA) degree. Courses of study concentrate on either economic analysis or business economics. Both seek to provide students with analytical skills useful in decision-making and a broader understanding of the overall economic environment. The economic analysis subspecialty is particularly suitable for students who wish to continue their studies in economics at the doctoral level. Business economics is geared to those who seek careers in the private or public sector, and desire to augment their analytic and quantitative skills. This track includes courses designed to analyze economic data, plus electives to provide exposure to graduate studies in other functional areas of business.

Options provide as much flexibility as is compatible with a student's background and career interests. The economic analysis track requires either a written comprehensive examination (33 hours), which allows students additional course work in a field of interest, or a thesis (30 hours). The business economics track is a 33-hour program that requires either a written comprehensive examination or a three-hour independent research project.

Admission Requirements
Admission to the MA program in economics requires an undergraduate degree from a regionally accredited university. Students without proper undergraduate economics background must make up the deficiency by taking undergraduate theory courses designated by the graduate coordinator before they are allowed to take graduate-level courses. Students lacking calculus must make up this deficiency 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. For admission to full standing, students must have a grade point average of at least 2.750 for the last 60 hours of their undergraduate work and for their economics courses.

Degree Requirements
The candidate's Plan of Study must be approved by the graduate coordinator or the chairperson of the department. All plans of study must include at least 18 hours of graduate-level courses in economics or courses approved by the graduate coordinator. Courses identified as background fundamentals of the MBA program and other courses designated by the economics department may not be included in the hours required for the degree.

Required courses include:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Econ. 731</td>
<td>Intermediate Business Statistics</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 801</td>
<td>Macroeconomic Analysis</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 802</td>
<td>Microeconomic Analysis</td>
<td>3</td>
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<tr>
<td>Thesis</td>
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This project must be approved by the MS committee and ordinarily is directed by a group of graduate faculty members.

Comprehensive Examination. If students elect to write a thesis, they must complete 30 semester hours including three thesis hours. They also must present and successfully defend their thesis before their thesis committee. Candidates are required to pass an oral examination based primarily on the defense of the thesis.

Business Economics
In addition to Econ. 731 and 801 listed above, the business economics subspecialty requires the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Econ. 802</td>
<td>Microeconomic Analysis</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 804</td>
<td>Managerial Economics</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 805</td>
<td>Analysis of Economic Conditions</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 831</td>
<td>Econometrics</td>
<td>3</td>
</tr>
</tbody>
</table>

Business economics courses in 800-level courses in at least two fields.

Independent Research. Students electing the independent research option are required to complete 30 graduate semester hours and three additional hours of independent research. Independent research is taken under the direction of a graduate faculty member of the economics department. The final product is a
written paper summarizing the research submitted to the department. The research paper must be read and approved by two faculty members in addition to the faculty advisor.

Comprehensive Examination. Students electing to take the comprehensive examination option are required both to complete 33 graduate semester hours and pass a written comprehensive examination.

Executive Master of Business Administration
Graduate Studies in Business

Courses for Graduate Students Only

800. Statistical Analysis and Quantitative Methods for Decision Making. (3) Introduces methods of statistical inference emphasizing applications to administrative and management decision problems. Includes classical estimation and hypothesis testing, regression, correlation, analyses of variance, and nonparametric methods. Prerequisite: admission to EMBA program.

802. Human Behavior and the Management of Organizations. (3) Examines leadership styles, power, authority, motivations, communications, and their impact on human behavior. Includes organizational learning, team building, participative management, transformational leadership, managing diversity, conflict management, network organizations, organizational change, and re-engineering. Prerequisite: admission to EMBA program.

803. Economic Analysis for Managers. (3) Focuses on the behavior of the firm's product and labor markets; the consequences of business, regulatory and tax policies, industry pricing, research and development strategies, transfer pricing, the effects of vertical and horizontal integration, and principal-agent problems. Prerequisite: admission to Executive MBA program.

804. Operations Management. (2) Focuses on the processes by which goods and services are supplied, produced, and distributed within organizations. Emphasizes systems for analyzing design and operational problems in the production/operations function. Prerequisite: admission to Executive MBA program.

805. Global Business and Competitiveness. (2) Focuses on applications of economic analysis to international business decision, international and macroeconomic components, understanding the implications of macro policies and developments for the firm's business environment, expansions into foreign markets, foreign investment and the relevance of global changes in technology and labor productivity, and foreign exchange, balance of payments, and trade policy issues. Prerequisite: admission to Executive MBA program.

806. Using Accounting Information to Understand Financial Performance. (2) Focuses on the nature and purpose of accounting, principal accounting instruments, and valuation problems. Prerequisite: admission to Executive MBA program.

807. Corporate Finance. (3) Focuses on the strategic decision that an organization makes leading to capital spending. Also includes the risk element in financial decision making and the financial instruments that have evolved to reallocate risk in the economy. Prerequisite: admission to Executive MBA program.

808. Using Accounting Information to Improve Strategic and Operational Performance. (3) Focuses on the use of financial information in management decision making. Includes internal reporting systems, cost management systems, planning and budgeting, performance measurement issues, and activity-based management. Prerequisite: admission to Executive MBA program.

809. Information Technology. (3) Focuses on information as a resource and the links between business strategy and information technology, the organizational implications of technology, and how to successfully incorporate information technology into organizations to support management decision making and control. Prerequisite: admission to Executive MBA program.

810. Managerial Investment Strategies. (2) Focuses on investment management, asset pricing models, factor models, performance assessment, option pricing, and other derivative securities. Prerequisite: admission to Executive MBA program.

811. Managerial Strategy. (3) Focuses on the other courses in the program by addressing the strategic management of an organization. Focuses on developing a strategic plan that maximizes shareholder value, generates commitment and effective action from others in the organization for implementing the plan, and developing a strategy consistent with the organization's resources while increasing shareholder value by satisfying customers better than competitors. Prerequisite: admission to Executive MBA program.

Accounting
School of Accountancy

Courses for Graduate/Undergraduate Credit

580. Accounting Information Systems. (3) A study of the content, design and controls of accounting systems, emphasizing the use of computers for processing financial data. Prerequisites: Acc 229 and 260; Math. 109 or 111; senior standing.

581. Financial Accounting and Reporting: Special Entities and Complex Issues. (3) Examines accounting concepts and techniques related to consolidated statements, governmental and not-for-profit entities, and partnerships. Includes accounting for foreign currency, hedges, financial instruments, and emerging issues in financial accounting and reporting. Prerequisites: Acc 410 or equivalent; Math. 109 or 111; senior standing.

620. Accounting for Strategic Support and Performance Evaluation. (3) The use of accounting information to assist management in developing and identifying superior strategies to produce and sustain comparative and/or competitive advantages. Focuses on goal-congruent strategies and incentives. Prerequisites: junior standing, Math. 109 or 111, Acc 252 and 350.

630. Taxation of Business Entities. (3) Studies the federal tax law as it applies to corporations, partnerships, S corporations, and tax-exempt entities. Examines the effect of taxation on business decisions. Prerequisite: Acc 350 or equivalent.

640. Principles of Auditing. (3) A study of the auditor's attest function, emphasizing auditing standards and procedures, independence, legal responsibilities, codes of ethical conduct and evaluation of accounting systems and internal control. Prerequisites: Acc 260, 410, 560; Math. 106 or 111; senior standing.

690. Seminar in Selected Topics. (1-3). Repeatable for credit with School of Accountancy consent.

777. Review for Professional Examinations. (1-8) Prepares students for professional certification examinations in accounting, including the CPA, CMA, and CIA examinations. Enrollment governs whether course is offered. Grade S/U and may be repeated for credit. Registration for up to 6 semester hours is permitted. Credit for this course does not count for degree credit in the School of Accountancy or the School of Business. Prerequisite: permission of the School of Accountancy.

Courses for Graduate Students Only

Where a course is indicated as a prerequisite to a second course, all prerequisites to the earlier course(s) also apply to the later course(s).

800. Financial Accounting. (3) A study of the basic structure of accounting: income determination, asset valuation, liability recognition, and accounting for ownership equity. Emphasizes the interpretation and analysis of financial statements. Prerequisite: no previous credit in accounting or permission of the School of Accountancy.

801. Managerial Accounting. (3) Examines the use of accounting information to assist management in planning, analyzing, and implementing business decisions and activities. Focuses on conceptual and operational performance analysis and evaluation. Prerequisite: Acc 800 or equivalent.

802. The Effect of Taxation on Management Decisions. (3) Introduces the basic tax concepts of income, deductions, and credits that will enable managers to (1) understand the tax consequences of their business decisions and...
(2) communicate effectively with tax professionals in structuring business transactions. Prerequisites: graduate standing and Acc. 800 or equivalent, or permission of the School of Accountancy.

835. Financial Accounting and Reporting-Contemporary Issues. (3). Uses the case method to examine and analyze the application of generally accepted accounting principles to problems of measurement, presentation, and disclosure in financial statements. Focuses on contemporary topics of interest in financial accounting and reporting. Prerequisites: graduate standing and Acct. 610 or equivalent, or permission of the School of Accountancy.

825: Management Control Systems. (3). Studies accounting in the context of management control systems. Focuses on how accounting interacts with management in achieving an organization's strategic and operational objectives. Emphasizes contemporary challenges in accounting, related to: i) broadening the types of information captured, measured, and reported. Prerequisites: graduate standing and Acc. 620 or 601 (or equivalent) or permission of the School of Accountancy.

831. Taxation of Estates and Trusts. (3). Studies the income taxation of trusts and estates, including the special cases of grantor and split-interest trusts. Examines the gift taxation of donors, the estate taxation of decedents, and the fundamentals of estate planning. Prerequisites: graduate standing and Acct. 430 or equivalent, or permission of the School of Accountancy.

840. Advanced Principles of Auditing. (3). An advanced study of auditing emphasizing EDP auditing, statistical sampling, and ethics. Prerequisites: graduate standing and Acct. 510 and 640 (or equivalent), or permission of the School of Accountancy.

860. Advanced Accounting Information Systems. (3). A study of the complex business information systems, their design and operation, and the relationship of these concepts to the economic information requirements, information flows, decision criteria, and control mechanisms in the business organization. Prerequisites: graduate standing and Acct. 560 (or equivalent) or permission of the School of Accountancy.

890. Seminar in Special Topics. (1-3). Repeatable with permission of the School of Accountancy.

891. Directed Study in Accounting. (1-3). Prerequisite: School of Accountancy consent.

899. Thesis Research. (1-3).

Business Law
Department of Finance, Real Estate, and Decision Sciences

Courses for Graduate/Undergraduate Credit

890. Seminar in Selected Topics. (1-5). Repeatable with departmental consent. Prerequisite: junior standing.

750. Workshop in Business Law. (1-4). Prerequisite: junior standing.

Courses for Graduate Students Only

834. Legal Environment of Business. (3). An introduction to the legal environment within which the business system operates. Examines the legal and ethical issues, and the consequences of specific decisions. Prerequisite: graduate standing and Acct. 430 or equivalent, or permission of the School of Accountancy.

880. Seminar in Special Topics. (1-3). Repeatable with departmental consent.

891. Directed Studies. (0-5). Prerequisite: departmental consent.

Decision Sciences
Department of Finance, Real Estate, and Decision Sciences

Courses for Graduate/Undergraduate Credit

575. Decision Making Techniques. (3). An introduction to the mathematical models commonly used for managerial decision making and their application to problems in such areas as production, distribution, and finance. Covers linear, integer, goal, and dynamic programming, transportation models, network models, queuing theory, and simulation. Prerequisite: DS 350.

651. Design of Operations Systems. (3). Studies the design and operation of production and service systems. Includes process analysis and design, production control, information systems, facilities planning, materials handling systems, job design, personnel planning and scheduling, and current issues. Prerequisite: DS 350.


890. Seminar in Special Topics. (1-3). Repeatable with departmental consent.

Courses for Graduate Students Only

850. Production and Operations Management. (3). Concepts for planning and controlling the production of goods or services. Topics include: linear programming, scheduling, quality control, inventory models, and waiting-line models. Not open to students with credit in DS 350. Prerequisite: calculus and statistics.

851. Intermediate Production Management. (3). Theories of production systems, decision making under uncertainty and advanced modeling techniques for production and inventory systems. Application of forecasting methods and inventory control models to real-world production systems. Prerequisite: DS 350 or 650.

871. Multivariate Statistical Methods. (3). A study of selected multivariate statistical methods used in support of modern decision making. Includes principal component analysis, discriminant analysis, and multivariate hypothesis testing. Prerequisite: DS 350 or 650.

872. Advanced Statistical Analysis. (3). Examines topics such as sample design, chi-square analysis and correlation, and regression analysis. Prerequisite: Econ. 870 or Econ. 231.

874. Management Information Systems. (3). A study of the structure and the strategic organizational role of computer-based information systems in business organizations. Covers transaction processing, management information systems, personal computer applications, and data communications. Includes information system design, project management, and database management. Prerequisite: DS 350 or 650.

875. Management Science. (3). Provides a foundation in quantitative methods, including operations research, management science, and decision analysis. Emphasis is on the use of mathematical models in decision-making. Prerequisite: DS 350 or 650.

884. Database Planning and Management. (3). Prepares students to deal with issues in planning and managing organization-wide integrated databases. Topics include: database design and relational database implementation, database management, and data management for computer integrated manufacturing. Prerequisite: DS 874 or instructor's consent.

891. Seminar in Special Topics. (1-3). Repeatable with departmental consent.
Economics
Department of Economics
Courses for Graduate/Undergraduate Credit

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. Prerequisites: Econ. 201Q, 202Q, or 800 and junior standing.

614. Industrial Organization. (3). A study of both competitive and non-competitive market structures, conduct, and performance, with special emphasis on related public policy, such as antitrust. Prerequisites: Econ. 202Q and junior standing.

615. Economics of Transportation. (3). A study of economic characteristics of transportation modes, problems, and policies. Prerequisites: Econ. 231Q, 232Q, or 800 and junior standing.

617. Economics of Regulation. (3). A study of the theory and practice of regulation. Includes both the traditional regulation of public utilities and communications and the newer forms of regulation, such as safety and environmental regulations. Prerequisites: Econ. 201Q, 202Q, or 800 and junior standing.


625. Economic History of Europe. (3). Cross-listed as Hist. 614. An analysis of the development of economic institutions; the rise of capitalism and its influence on overseas expansion, technology, precious metals, politics and war; changes in economic ideologies and cultural effects of economic change. Prerequisites: Econ. 201Q and junior standing.

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. Prerequisites: Econ. 201Q and junior standing.

660. Labor Economics. (3). An introduction to labor economics surveying both theoretical and empirical research in this field. Includes labor markets, wage determination, and human capital theory. Prerequisites: Econ. 201Q, 202Q, or 830 and junior standing.

661. Collective Bargaining and Wage Determination. (3). An examination of economic and legal aspects of collective bargaining, emphasizing the techniques and procedures used and the major issues and problems inherent in the bargaining process. Explores the manner in which wages are determined under various institutional relationships. Prerequisites: Econ. 201Q, 202Q, or 800 and junior standing.

662. Work and Pay. (3). Investigation of the economic aspects of work and the workplace. Deals with the demographics of 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 under capitalism. Prerequisites: Econ. 201Q, 202Q, or 800, and junior standing.

663. Economic Insecurity. (3). Cross-listed as Ger. 665. Perceived economic insecurity such as unemployment, old age, health care, disability, and erratic economic fluctuations. Includes costs and benefits of government action to ameliorate such insecurities. Prerequisites: Econ. 201Q, 202Q, or 800, or instructor's consent; junior standing.

667. International Trade and Payments. (3). An introduction to international trade and finance. Studies international trade theory and policy (the international economy), then explores the operations of the multinational firm within that environment. Prerequisites: Econ. 201Q, 202Q, or 800, and junior standing.

680. Economics of Energy and Natural Resources. (3). A study of the business and economic aspects of energy and natural resources problems. Includes energy demand and supply, the price of energy, energy industry characteristics and government regulations, conservation, environmental problems, and public policy. Uses statistical data extensively to evaluate the past and present energy and natural resources situations and the trends for the future. Employs simple economic concepts and theories to interpret the facts and to assess the impact of various public policies on the use of energy and natural resources. Prerequisites: Econ. 201Q, 202Q, or 800, and junior standing.

688. Urban Economics. (3). Cross-listed as P. Adm. 486. A survey of the economic structure and problems of urban areas on both the microeconomic and macroeconomic levels. Stresses the application of regional economic analysis in the study of urban areas as economic regions. Prerequisites: Econ. 201Q and 202Q, or Econ. 800, and junior standing.

692. Group Studies in Economics. (1-3). Repeatable for credit with departmental consent. Prerequisite: junior standing.

702. Mathematical Methods in Economics. (3). Introduces mathematical tools that are especially useful in economics, econometrics, and finance. Includes a review of differential and integral calculus, an introduction to matrix algebra, and various constrained optimization and economic modeling techniques. Emphasizes economic applications and modeling. Prerequisites: Econ. 201Q, 202Q, or 800, and Math. 144 or equivalent and junior standing.

731. Interrelated Business Statistics. (3). A study of the regression model with extensions, analysis of variance models, and other related statistical methods. Emphasizes application to business and economic data. Prerequisites: Econ. 231 and junior standing.

765. Public Sector Economics. (3). Cross-listed as P. Adm. 755. 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. Prerequisites: Econ. 201Q, 202Q, or 800, and junior standing, or instructor's consent.

Courses for Graduate Students Only

800. Analysis of Economic Theory. (3). An intensive analysis of micro- and macroeconomic principles. Not for graduate credit in the MA program in economics. Prerequisite: departmental consent.

801. Macroeconomic Analysis. (3). An intensive analysis of contemporary literature and problems in national income analysis. Prerequisite: Econ. 301. Prerequisite or corequisite: Econ. 702 or equivalent.

802. Microeconomic Analysis. (3). An intensive analysis of contemporary literature and problems in the areas of production, pricing, and distribution. Prerequisites: Econ. 302 or 804 or equivalent. Econ. 702.

803. Analysis of Business Conditions and Forecasting. (3). An intensive study of research methodologies and forecasting for real life business decision making. Covers formulation of research questions, specification of models, collection of time series and survey data, application of forecasting techniques, and interpretation and communication of the results. Prerequisites: Econ. 801 or equivalent and one semester of introductory statistics.

804. Managerial Economics. (3). A survey of theoretical and analytical tools of economics that are useful in decision making by man-
agencies. Prerequisites: Econ. 201Q, 202Q, or 800, and one course in calculus.

814. Seminar in Industrial Organization and Public Policy. (3). A study of business and economic organization and structure, market operation and performance, and public policy with special reference to the U.S. economy. Repeatable for credit with departmental consent. Prerequisite: Econ. 201Q or 800.

831. Introduction to Econometrics. (3). Analysis of time series, multiple regression, and partial correlation, analysis of variance, and introduction to econometric techniques. Prerequisites: Econ. 751 and 752 or equivalent.

840. Seminar in Monetary Theory. (3). An examination of neoclassical and contemporary monetary theories. Includes an analysis and evaluation of current monetary problems. Repeatable for credit with departmental consent. Prerequisite: Econ. 202Q and 341.

847. Speculative Markets. (3). Cross-listed as Fin. 822. Analysis of the markets for speculative securities such as futures, options, and commodities. Evaluation of underlying theories explaining speculative markets in which such securities are traded. Discussion of trading strategies such as hedging and arbitrage. Prerequisite: Econ. 840 or equivalent.

853. Seminar in Public Finance. (3). An analysis of theoretical and applied aspects of public finance in the American and foreign economies. Explores selected topics of current and permanent importance. Repeatable for credit with departmental consent. Prerequisite: Econ. 355Q, 202Q, or 800.

861. Seminar in Contemporary Labor Issues. (3). An intensive analysis of contemporary problems in the field of labor. The specific nature of the problems is determined by the interest of those enrolled in the course. Repeatable for credit with departmental consent. Prerequisite: Instructor's consent.

865. State and Local Government Finance. (3). Cross-listed as Pol. S. 865 and P. Adm. 865. An analysis of state and local government expenditure and revenue systems, with an introduction to state and local financial administration. Prerequisites: Econ. 759 or instructor's consent.

870. Seminar in International Trade. (3). Cross-listed as Fin. 820. A seminar in theoretical concepts and contemporary issues of international economics and finance, including foreign exchange markets, balance of payments, and the international monetary system. Prerequisites: Economics 201Q and 202Q.

885. Seminar in Environmental Quality Control. (3). Examination of actual problems, projects, and/or current approaches to environmental quality control. Takes a critical look at current happenings and trends. Prerequisite: instructor's consent.

891. Directed Study. (1–3). Individual study of various aspects and problems of economics. Repeatable for credit with departmental consent. Prerequisites: graduate standing and departmental consent.


896. Thesis. (1–2).

Entrepreneurship
Department of Marketing and Entrepreneurship

Courses for Graduate/Undergraduate Credit

856. New Product Marketing. (3). Cross-listed as Mkt. 812 and Mgmt. 861. Emphasizes the role of marketing in developing and commercializing new products within both smaller and larger firms. Covers: the role of the product manager, the development and management of new product processes, and the evaluation of marketing strategies within organizations. Prerequisites: Mkt. 300 and junior standing.

858. Selling and Sales Force Management. (3). Cross-listed as Mkt. 816. 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.


861. Growing and Managing in Entrepreneurial Firms. (3). Cross-listed as Fin. 812 and Mgmt. 861. Emphasizes the development of a comprehensive business plan which incorporates financial and marketing financing. Prerequisites: Mkt. 300 and Mgmt. 360.

863. Developing a Successful Business Plan. (3). Emphasizes the development of a comprehensive business plan which incorporates financial and marketing financing. Prerequisites: Mkt. 300 and Mgmt. 360.

864. Special Topics in Entrepreneurship. (3). An advanced course with in-depth discussion of emerging topics within the field of entrepreneurship. Topics: strategy, finance, marketing, technology, and innovation. Prerequisites: Entre. 668 and 420 and senior standing.

866. Workshop in Entrepreneurship. (1–4). Prerequisite: junior standing.

Courses for Graduate Students Only

862. Introduction to Total Quality Management. (3). Cross-listed as Mkt. 812 and Mgmt. 862. Emphasizes the role of marketing in developing and commercializing new products within both smaller and larger firms. Covers: the role of the product manager, the development and management of new product processes, and the evaluation of marketing strategies within organizations. Prerequisites: Mkt. 300 and junior standing.

885. New Venture Feasibility Seminar. (3). Cross-listed as Mkt. 812 and Mgmt. 885. 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.

886. Entrepreneurship and Innovation Within Organizations. (3). Cross-listed as Mkt. 812 and Mgmt. 886. 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.

887. Entrepreneurship and Innovation Within Organizations. (3). Cross-listed as Mkt. 812 and Mgmt. 887. 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.

888. Entrepreneurship and Innovation Within Organizations. (3). Cross-listed as Mkt. 812 and Mgmt. 888. 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.

889. Entrepreneurship and Innovation Within Organizations. (3). Cross-listed as Mkt. 812 and Mgmt. 889. 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.

890. Entrepreneurship and Innovation Within Organizations. (3). Cross-listed as Mkt. 812 and Mgmt. 890. 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.

891. Directed Studies. (1–5). Prerequisite: departmental consent.


Finance
Department of Finance, Real Estate, and Decision Sciences

Courses for Graduate/Undergraduate Credit


Explores the use of various decision rules for making accept/reject decisions on projects. Includes the study of project cash flows and analysis, mutually exclusive projects, and the choice of the discount rate. Prerequisite: Fin. 340 and junior standing.


621. Security Analysis and Portfolio Management. (3) Comprehensive study of analyzing major types of securities, including market behavior analysis. Explores the formulation of investment objectives, the design of portfolios for classes of institutional and individual investors and portfolio theory. Prerequisites: Fin. 340 and junior standing.

622. Futures and Options Markets. (3) Presents an overview of the futures and options market. Discusses basic theoretical concepts as well as the practical issues of hedging and speculating in these markets. Prerequisites: Fin. 340 and junior standing.

625. International Financial Management. (3) Cross-listed as Econ 674. The study of foreign exchange balances of payments, the international monetary system, and the world's money and capital markets and their relationships with the financial operations of multinational firms. Also explores relevant aspects of international financial management through a series of case studies. Prerequisites: Fin. 340, Econ. 202Q, and junior standing.

630. Financial Institutions. (3) A study of the management, structure, regulation, and operation of firms in the financial services industry and the markets in which they operate. Includes in-depth analysis of commercial banks, savings and loans, credit unions, mutual funds, insurance companies, investment companies, and other firms in this industry. Prerequisite: Fin. 340 and junior standing.

631. Money and Capital Markets. (3) A study of domestic and international financial markets, instruments, and institutions and the determinants of the general level and structure of interest rates and security prices. Also covers management of interest rates and portfolio risk using a variety of techniques. Prerequisites: Fin. 340 and junior standing.

632. Commercial Bank Management. (3) A study of bank asset and liability management. Also explores the internal organization of commercial banks, current problems and recent innovations in commercial banking. Prerequisites: Fin. 340 and junior standing.

650. Cases in Finance. (3) An exploration of the problems and operations for which the financial officer is responsible, emphasizing controversial aspects of financial analysis. This is the capstone course in the finance major and should be taken at the end of a finance program. Prerequisites: Fin. 340, 440, six hours of accounting, or departmental consent, and junior standing.

690. Seminar in Selected Topics. (0–6). Repeatable with departmental consent. Prerequisites: Fin. 340 and junior standing.


Courses for Graduate Students Only

810. Short-term Financial Management. (3) Provides state-of-the-art information in short-term financial management. Discusses how cash moves across international borders and within foreign countries and the influence of electronic communications on short-term financial management. Prerequisite: Fin. 840 or equivalent.

812. Capital Budgeting. (3) A study of the organization and operation of the capital budgeting system. Explores problems in partial decentralization and in comparability of estimates of funds flow. Includes contemporary methods of treating uncertainties and constraints and the application of programming techniques. Also explains the determination of approximate discount rates. Prerequisite: Fin. 840 or equivalent.

820. Seminar in International Trade and Finance. (3) Cross-listed as Econ 871. A seminar in theoretical concepts and contemporary selected issues of international economics and finance. Includes foreign exchange markets, the Eurodollar markets, Arab oil dollars in the international monetary system, transfer of inflation between countries, developments in the common markets. Prerequisite: Fin. 625 or Econ. 674 or instructor's consent.

821. 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. Prerequisites: Fin. 840 and Econ. 830.

822. Risk Management with Options and Futures. (3) Cross-listed as Econ. 847. Discusses the use of futures and options contracts in managing some of the risks associated with business and investment. Also discusses theoretical issues to provide a basis for understanding the practical uses of these securities. Prerequisite. Fin. 840 or equivalent.

830. Financial Institutions and Markets. (3) Analyzes the management and operations of firms in the financial services industry. Studies the competitive money and capital markets in which they operate. Emphasizes risk management in the financial institution using a variety of techniques. Prerequisite: Fin. 840 or equivalent.

840. Principles of Finance. (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. 830 or equivalent.

850. Managerial Finance. (3) Provides knowledge and tools to make informed investment and financing decisions. Includes capital markets, advanced capital budgeting, decision making under uncertainty, asset pricing models, contingent claims models, capital structure, dividend policy, mergers, restructuring, and corporate control, and exchange rate systems and international finance. Prerequisite: Fin. 840 or equivalent.

860. Cases in Financial Management and Investments. (3) An integrated treatment of basic business finance, financial management, financial statement analysis, and financial institutions. Prerequisite: Fin. 840 or equivalent.

890. Seminar in Special Topics. (1–3). Repeatable with departmental consent. Prerequisite: Fin. 840.

891. Directed Studies. (1–6). Prerequisite: Fin. 840 and departmental consent.

893. Special Project in Finance. (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 business degree candidates. Prerequisite Fin. 840.


Human Resource Management
Department of Management

Courses for Graduate/Undergraduate Credit

664. Labor Relations. (3) Presents the philosophy underlying labor legislation and the function of collective bargaining in labor-management relationships. Prerequisite: junior standing.

665. Human Resource Selection. (3) Analysis of all phases of the election process as implemented in a variety of organizations. Includes an analysis of the impact of federal and state anti-discrimination legislation on selection practices; as well as human resource planning; recruiting; job analysis; and selection techniques, including testing and interviewing. Also validation of selection techniques. Prerequisite: HRM 466 or instructor's consent.

668. Compensation. (3) Approaches to compensation processes in organizations. Discusses job evaluation techniques, wage level and wage structure determination, individual performance analysis, individual wage rate decisions, incentive plans, and benefits. Considers the legal constraints on compensation practices. Prerequisite: HRM 466 or instructor's consent.

669. Training and Development. (3) Analyzes the training and development function as applied in private and public sector organizations. Considers the role of training and development in today's business environment. Needs assessment, learning objectives, learning theory, instructional methods and techniques, and evaluation of training effectiveness. Prerequisite: HRM 466 or instructor's consent.
698 Seminar in Selected Topics. (1-5). Repeatable with departmental consent. Prerequisite: HRM 466 or instructor’s consent.

780. Workshop in Human Resources. (1-4). Prerequisite: junior standing.

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 human resources and a review of significant literature. The direction of the course could be determined by the interests of the class. Prerequisite: HRM 466.

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: HRM 466 or instructor’s consent.

890. Seminar in Special Topics. (1-5). Repeatable with departmental consent.

891. Directed Studies. (1-5). Prerequisite: departmental consent.


International Business

Department of Management

Courses for Graduate/Undergraduate Credit

600. International Management. (3). Studies management concepts and practices applicable to business operations in an international setting. Examines a wide range of problems associated with business operations across national boundaries. Discusses cultural differences, language barriers, nationalism, protectionism, technology transfer, and trade policies. Prerequisites: Mgmt. 360 or concurrent enrolment and junior standing.

601. International Marketing. (3). Cross-listed as Mkt. 601. Problems and procedures of marketing in foreign countries. Includes the effects of foreign cultures and marketing systems on the design of marketing programs. Prerequisites: Mkt. 380 and junior standing.

Management

Department of Management

Courses for Graduate/Undergraduate Credit

561. Introduction to International Economics and Business. (3). Cross-listed as Econ. 672. A survey of the economic foundations of international trade and investment. Studies international trade, theory, and policy (the international economy) then explores the operations of the multinational firm within that environment. Prerequisites: Econ. 202Q and junior standing.

600. Designing Effective Organizations. (3). Studies how work and workers can be structured to best accomplish the goals of an organization. Explores the interplay of design, technology, structure, and environment, and discusses frameworks that promote growth, market responsiveness, innovation, and global competitiveness. Emphasizes skills necessary for managing change for maximum effectiveness of individuals, work groups, and the organization as a whole. Prerequisites: Mgmt. 360 or concurrent enrolment and junior standing.

661. Coaching, Developing, and Mentoring. (3). Managers and leaders of all kinds are judged not on what they do but upon how well their subordinates perform. Course develops positive, supportive management skills for helping individuals and groups achieve their potential. Covers the importance of identifying and hiring superior performers, orienting them to the group, coaching and developing subordinates to their fullest, maintaining motivation at high levels, and merging individuals into a cohesive group. Prerequisites: Mgmt. 360 or concurrent enrolment and junior standing.

662. Managing Workplace Diversity. (3). Modern organizations face the challenge of managing employees with diverse backgrounds and talents to provide products and services to diverse customers. Course examines work force diversity from the perspective of maximizing its benefits to group and organizational effectiveness, including developing skills to facilitate the constructive resolution of conflict, encouraging cooperation and teamwork, and enhancing identification with the work unit. Prerequisites: Mgmt. 360 or concurrent enrolment and junior standing.

663. Building Effective Work Teams. (3). Significant changes in the business environment have motivated widespread support for the use of teams to accomplish work-related tasks. Course promotes an understanding of the organizational context of a team culture through an analysis of how teams form and group processes that enhance goal accomplishment. Emphasizes skills necessary to manage the organization’s culture, improve group performance, and increase collaboration among team members. Prerequisites: Mgmt. 360 or concurrent enrolment and junior standing.

664. Making Effective Decisions. (3). A study of the theories of decision making with attention to the factors of creativity, the quest for subjective certainty, rationality, cognitive inhibitors, problem identification, evaluation of alternatives, applications of qualitative methods to decision processes, and decision implementation. Prerequisites: Mgmt. 360 or concurrent enrolment and junior standing.

681. Strategic Management. (3). An analysis of business problems from a strategic management perspective. A capstone course which integrates the functional areas of business, including management, marketing, finance, accounting, and production. Discusses both domestic and international policy issues, large and small firms, and various sources of competitive advantage. Prerequisites: DS 350, Fin. 340, Mkt. 300, Mgmt. 360, and senior standing.

710. Seminar in Selected Topics. (1-5). Repeatable with departmental consent. Prerequisite: junior standing.

750. Workshop in Management. (1-4). Prerequisite: junior standing.

Courses for Graduate Students Only

803. Business Decision-Making and Analysis. (3). A study of business decision-making and problem-solving methodologies including problem definition, research design, data-gathering techniques, analytical techniques, reporting strategies, and communication issues. Prerequisite: Econ 231 or equivalent.

812. Introduction to Total Quality Management. (3). Cross-listed as Engr. 812 and Mkt. 812. Introduces the philosophy of quality improvement and compares/contrasts these views with traditional management thought. Also introduces the basic components of the quality improvement process. Includes application exercises in quality improvement techniques and experience with team concept. Prerequisite: instructor’s consent.

536. International Business Administration. (3). An introduction to international business administration with particular attention 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.

860. Management of Organizations. (3). An introduction to management and organizational behavior. Includes classical and contemporary management theory, human relations, group dynamics, motivation, communication, organizational structure and design, and behavioral control.

662. Organizational Behavior. (3). The study of individual and group behavior as it affects organizational functioning. Applies concepts such as motivation, personality, interpersonal relations, upward management, conflict management, and leadership to organizational settings, emphasizing analysis and action-planning. Prerequisite: Mgmt. 360 or departmental consent.

866. Communication. (3). Cross-listed as Comm. 865. An analysis of communication models emphasizing their applications to communication problems in organizations. Explores social-psychological processes underlying interpersonal relations and through the mass media. Critically analyzes communication systems and techniques within formal organizations. Prerequisite: Mgmt. 860 or departmental consent.

869. Research in Behavioral Science. (3). An analysis of some of the concepts and tools in behavioral science relevant to research in organizations. One or two areas such as motivation, cognitive processes, attitudes, and values, etc., may be analyzed in depth. Prerequisite: Mgmt. 862 or departmental consent.

888. Advanced Strategic Management. (3). An analysis of business problems from a strategic perspective. Builds on prior course work to focus on a firm’s ability to develop a sustainable competitive advantage. Firmly studied represent a broad range of manufacturing and service, global and domestic, entrepreneurial and mature issues. Prerequisite: to be taken during last semester of student’s program, or departmental consent.

888. Seminar in Research Methodology. (3). A study of concepts and procedures in the design and performance of research.
890. Seminar in Special Topics. (1-3). Repeatable with departmental consent.

891. Directed Studies. (1-5). Prerequisite: departmental consent.

893. Special Project in Management. (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 business degree candidates.


Management Information Systems
Department of Finance, Real Estate, and Decision Sciences

Courses for Graduate/Undergraduate Credit

601. Database Management Systems. (3). Introduces various methodologies for conceptual data modeling including Entity-Relationship Data Modeling and Object-Oriented Database Design. Covers relational database management systems, the SQL standard, and data administration issues. Students obtain hands-on development with SQL services in a client/server environment in a required database programming project. Covers electronic commerce transaction processing, data warehousing, data mining, and distributed database management. Prerequisite: MIS 350.

650. Problem Solving, Decision Support, and Expert Systems. (3). Introduces the design and implementation of decision support systems (DSS) Emphasizes problem solving and decision modeling techniques pertinent to representational problems in different business functional areas including accounting, finance, human resources, management, marketing, and production. Students utilize various end-user tools, including 4GLs, spreadsheets, statistical software, DSS generators, expert system shells, and EIS software to undertake several DSS implementation projects. Prerequisite: MIS 650.

686. Management of the IS function. (3). Addresses the issues of managing the information systems (IS) function. Includes the role of IS as a corporate entity, organizing the IS department, IS personnel management, IS project management, and the role of IS as a user-support entity. Prerequisite: MIS 650.

Marketing
Department of Marketing and Entrepreneurship

Courses for Graduate/Undergraduate Credit

601. International Marketing. (3). Cross-listed as IB 601. Problems and procedures of marketing in foreign countries. Includes the effects of foreign cultures and marketing systems on the design of marketing programs. Prerequisites: MKT. 300 and junior standing.

604. Distribution Management. (3). A study of all areas involved with the distribution of a firm's products or services. Focuses on such issues as the development of a firm's marketing channels and its relationships with wholesalers and retailers as well as the management of the firm's storage facilities, inventory control, procedures, and shipping facilties. Prerequisites: MKT. 300 and junior standing.

605. New Product Marketing. (3). Cross-listed as Ent. 605. Addresses identifying, evaluating, developing, and commercializing new products within both smaller and larger firms. Explores the role of the product/brand manager, a person who often acts as an internal entrepreneur. Prerequisite: MKT. 300.

607. Promotion Management. (3). An analysis of all issues involved with the promotion of an organization and its products or services. Deals 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.

608. Selling and Sales Force Management. (3). Cross-listed as Ent. 608. 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.

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 and six additional hours of marketing.

690. Seminar in Selected Topics. (1-5). Repeatable with departmental consent. Prerequisites: junior standing.

750. Workshop in Marketing. (1-4). Prerequisite: junior standing.

Courses for Graduate Students Only

800. Marketing Systems. (3). An intensive analytical introduction to the combination of sub-systems that comprise the overall marketing system. Also presents the marketing function as a major subsystem within the individual business firm.

801. Marketing Management (3). Develops an understanding of the difference between a sales/marketing department and a marketing orientation. Emphasizes the integral role of a marketing orientation throughout the modern organization. Prerequisite: MKT. 800 or equivalent.

803. Marketing Analysis. (3). The application of the scientific method to the solution of marketing problems. Prerequisite: MKT. 800 or equivalent.

805. Consumer Decision Processes. (3). An examination of different aspects of the behavior of consumers and of the factors that help explain their behavior. Includes an analysis of current consumer concepts and models. Prerequisite: MKT. 800 or departmental consent.

807. Services and Nonprofit Marketing. (3). Examines the characteristics of commercial and nonprofit services that pose unique marketing challenges for these types of organizations. Prerequisite: MKT. 800 or equivalent.

812. Introduction to Total Quality Management. (3). Cross-listed as Ent. 812 and Mgmt. 812. Introduces the philosophy of quality improvement and compares/contrasts these views with traditional management thought. Also introduces the basic components of the quality improvement process. Includes application exercises in quality improvement techniques and experience with team concept.

890. Seminar in Special Topics. (1-3). Repeatable with departmental consent.

891. Directed Studies. (1-5). Prerequisite: departmental consent.

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 business degree candidates.


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 analysis, mortgage financing and underwriting, primary and secondary mortgage markets. Prerequisite: Fin. 340. RE majors should have completed RE 330.


618. Real Estate Investment Analysis. (3). Equity investor decision criteria, institutional and ownership entity investment constraints, financial leverage opportunities, cash flow analysis, and creative income tax strategies. Prerequisite: Fin. 340. RE majors should have completed RE 310.

619. Urban Land Development. (3). A hands-on course to familiarize students with all aspects of land development, including supply and demand analysis, site selection, feasibility analysis, development financing, cash-flow budgeting, and marketing strategies. Prerequisite: RE 310 or 341 or 618.

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

750. Workshop in Real Estate. (1-4). Prerequisite: junior standing.
810. Real Estate Feasibility Analysis. (3). Theory and practice of analyzing the feasibility of both new construction and redevelopment of income-producing projects. Approaches detailed comprehensive case studies with contemporary analytical techniques. Prerequisites: RE 310, 614, and 618.

890. Seminar in Special Topics. (1-3). Repeatable with departmental consent.

891. Directed Studies. (1-5). Prerequisite: departmental consent.

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 business degree candidates.


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 Education

Offices: 104 Corbin Education Center
Jon M. Engelhardt, dean
Randolph A. Ellsworth, associate dean for administration and graduate program support
Marcus T. Ballenger, associate dean for student services and undergraduate program support

Departments
Administration, Counseling, Educational and School Psychology, (316) 978-3326--Orpha K. Duell, chairperson
Communicative Disorders and Sciences, (316) 978-3340--Linda Swink, chairperson
Curriculum and Instruction, (316) 978-3322--Dennis J. Keat, chairperson
Kinesiology and Sport Studies, (316) 978-3340--Lori Miller, chairperson

The College of Education offers programs leading to the Master of Arts (MA) in communicative disorders and sciences; the Master of Education (MEd) in counseling, curriculum and instruction, educational administration, educational psychology, physical education, sport administration, and special education; the Specialist in Education (EdS) in school psychology; the Doctor of Education (EdD) in educational administration; and the Doctor of Philosophy (PhD) in communicative disorders and sciences.

Graduate offerings include courses which help students meet requirements for state certification as principals, supervisory personnel, district school administrators, school counselors, early childhood teachers, English-as-a-Second-Language/bilingual education teachers, special education teachers, reading specialists, school psychologists, speech and language pathologists, audiologists and gifted teachers. Other programs are available to support the continued academic and professional development of teachers. Graduate offerings also are available to support careers in sport-related businesses and exercise-related programs at all levels.

Admission Requirements
Specific admission requirements for each degree specialization are described in each department's section of the Graduate Bulletin. Applicants for admission should review admission criteria well in advance of intended enrollment dates since some program admissions are determined by a faculty committee once each year or once each semester. Several programs require submission of scores from examinations (e.g., Graduate Record Examination), as well as transcripts and letters of reference.

Minimum admission requirements for full standing are a bachelor's degree from a regionally accredited institution and a grade point average of at least 3.50 based upon the last 60 credit hours of college work (including any post-baccalaureate graduate work). The student should have no more than nine hours of background deficiencies in the major field of graduate study desired. For most degree programs, admission requirements exceed these minimums.

Degree Requirements
Each advanced program of study specifies the number of semester hours of graduate course work required, elective courses, practica, comprehensive examinations, portfolio and/or thesis requirements. Specific degree requirements are listed on program sheets available from departmental offices. A thesis option in the MA or MEd programs may be elected. Appropriate topics range from basic to applied action research, and approaches vary from historical to descriptive to experimental, both qualitative and quantitative. The thesis program requires a minimum of 30 credit hours, approval of the thesis proposal by the student's graduate advisor 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 advisor.

Candidates for the non-thesis MA and MEd 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, an Application for Comprehensive Examination should be filed with the department office. Applications will not be accepted if submitted less than two weeks prior to the scheduled examination date. 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.

To remain in good standing in a graduate degree program requires a grade point average of at least 3.0 in all courses on the student's WSU Plan of Study and in all graduate work taken at WSU. Demonstrated suitability for professional practice, as determined by faculty, is also a consideration for remaining in good standing in graduate programs leading to advanced certificates or other endorsements indicating advanced professional practice or achievement.

Financial Assistance
Some financial assistance to support graduate study is available, including federal traineehips, assistantships, and Wichita State University fellowships. Full degree status is required to receive financial assistance.

Applications for graduate program admission must be submitted by departmental deadlines for eligibility for student loans and scholarships.

Administration, Counseling, Educational, and School Psychology

Graduate Faculty
Distinguished Professor: Melva Owens
Professors: Orpha K. Duell (chairperson), Randolph A. Ellsworth (associate dean), Willis J. Furtwengler, James J. Rhatigan (senior vice president)
Associate Professors: Linda Bakken, Carol B. Furtwengler, Jan Gibson, Joseph W. C. Mau, Nancy A. McKellar, Charles A. Romig, Marlene Schommer
Assistant Professors: Ruth A. Hitchcock, Randal Turk, Cary P. Wilson

Degrees and Areas of Specialization

The Department of Administration, Counseling, Educational, and School Psychology offers programs leading to the Master of Education (MEd) in educational administration for students pursuing certification endorsement at the building level, the MEd in counseling, the MEd in educational psychology, the Specialist in
Applications for admission will be

2. At least two Reference Report Forms from supervisors and/or professional peers of which at least one must be from a supervisor that attests to the applicant's potential as a building administrator.

3. Evidence of certification for a role in the public/private schools and at least one year of accredited experience.

4. A resume or curriculum vita of education and professional experience.

5. A brief statement of professional goals related to completion of the master's degree and/or certification as a public school administrator.

6. A letter signed by a building principal indicating he or she is willing to serve as the student's mentor and will allow the student to fulfill the practicum requirements of the program.

Specialist in Education Requirements

The Specialist in Education (EdS) in school psychology requires 39 credit hours of course work beyond the MEd. The degree is awarded upon completion of course work and practica. For full certification in school psychology, students must apply for a one year provisional certificate, register for a four credit hour post-specialist internship, and complete the full-time, one year internship in a public school.

Applications for admission will be reviewed twice a year, in the fall and spring. Deadlines for submitting applications to the Graduate School will be the first Monday in October for consideration for spring admission and the last Monday in March for consideration for summer and fall admission. All completed applications will be considered for admission within four weeks after the application deadline. In the event that all available openings are not filled from the pool of completed applications, candidates who apply will be considered in the order in which their applications are completed.

Admission Requirements—School Psychology

Students who have completed a master's degree in educational psychology, counseling, or a directly related area may apply for admission. Students must provide graduate degree transcripts; undergraduate grade point average for the last 60 credit hours; Graduate Record Examination scores (verbal and quantitative); names, addresses, and phone numbers of three people to provide letters of reference; and a statement of professional goals; (c) a resume; and (d) evidence of completion of nine credit hours of undergraduate psychology, plus six additional undergraduate hours in the behavioral sciences.

Admission to the MEd program in counseling does not require the teaching certificate; however, students whose career goals include Kansas school counseling certification must hold a Kansas teaching certificate and have two years of teaching experience prior to recommendation for school counselor certification. Only people who have been admitted to and have completed the MEd in counseling program at the 43 credit hour nonthesis level or at the 51 credit hour thesis level, hold a Kansas teaching certificate and have two years teaching experience may be recommended for certification as a school counselor.

Admission Requirements—Educational Psychology

To be considered for admission to the MEd in educational psychology, students must provide their grade point average for the most recent 60 credit hours of undergraduate course work; Graduate Record Examination scores (verbal and quantitative); names, addresses, and phone numbers of three people to provide letters of reference; and a statement of professional goals and research interests. The Graduate Record Examination (GRE) and grade point average (GPA) will be evaluated using the following index:

\[ \text{GPA} + \left( \frac{\text{GRE Verbal} + \text{GRE Quantitative}}{400} \right) \]

Ordinarily, applicant's scores on this index will equal or exceed 5.5. This index of 5.5 could be achieved by a student who attained a combined verbal and quantitative score on the GRE of 1,000 and a B average over the last 60 credit hours of undergraduate course work.

Admission Requirements—educational Administration and Supervision

Applicants must have a minimum 3.000 grade point average in their last two years (60 hours) of college course work from accredited institutions and a score of 480 or above on any two of the three General Tests of the GRE or a score of 42 or above on the Miller Analogies Test. In addition, applicants must have validated strengths on the multiple indicators listed below.

1. Official transcripts of all college-level work completed and indication of a degree conferred.

Education (EdS) in school psychology, post master's work for students pursuing certification endorsement as district level administrators or school counselors, and the Doctorate of Education (EdD) in educational administration.

Master of Education Requirements

The Master of Education (MEd) in counseling and in educational psychology may be earned under a thesis or nonthesis option. The nonthesis option in counseling requires 43 credit hours of course work and a written comprehensive examination. The thesis option in counseling requires 51 credit hours of course work plus an oral examination over the thesis. For state certification recommendation in elementary or secondary school counseling, 43 credit hours are required under the nonthesis plan and 51 credit hours are required under the thesis plan. The MEd in educational psychology may be earned under a thesis or nonthesis option. The nonthesis option requires 36 credit hours of course work and a written comprehensive examination. The thesis option requires 32 credit hours of course work plus an oral examination over the thesis.

The Master of Education (MEd) in educational administration and supervision is a 33 credit hour nonthesis program. Students pursuing certification endorsement as building administrators must complete this program in its entirety. A comprehensive written examination is required.

Applications for admission will be reviewed twice a year, in the fall and spring. Deadlines for submitting applications to the Graduate School will be the first Monday in October for consideration for spring admission and the last Monday in March for consideration for summer and fall admission. All completed applications will be considered for admission within four weeks after the application deadline. In the event that all available openings are not filled from the pool of completed applications, candidates who apply will be considered in the order in which their applications are completed.

Admission Requirements—Counseling

In addition to the general requirements, students seeking admission to the counseling program are required to have a 3,000 grade point average based upon the last 60 credit hours of course work (including any post-bachelor's graduate work). They must also submit: (a) names, addresses, and telephone numbers of three people to serve as references; (b) a statement of professional goals; (c) a resume; and (d) evidence of completion of nine credit hours of undergraduate psychology, plus six additional undergraduate hours in the behavioral sciences.

Admission to the MEd program in counseling does not require the teaching certificate; however, students whose career goals include Kansas school counseling certification must hold a Kansas teaching certificate and have two years of teaching experience prior to recommendation for school counselor certification. Only people who have been admitted to and have completed the MEd in counseling program at the 43 credit hour nonthesis level or at the 51 credit hour thesis level, hold a Kansas teaching certificate and have two years teaching experience may be recommended for certification as a school counselor.
goals and research interests. Undergraduate grade point average (GPA) and Graduate Record Examination (GRE) scores will be evaluated using the following index:

\[
\text{GPA} \times \left( \frac{\text{GRE Verbal} + \text{GRE Quantitative}}{200} \right)
\]

Ordinarily, applicant's scores on this index will equal or exceed 5.5 and master's degree grade point averages will equal or exceed 3.500. The GPA and GRE index of 5.5 could be achieved by a student who attained a combined verbal and quantitative score on the GRE of 1,000 and a B average over the last 60 credit hours of undergraduate course work.

Following admission to the EdS program, each student will meet with a faculty advisor to determine whether prerequisite requirements have been met or how remaining prerequisites can best be met. All students must complete the introductory professional issues course at WSC, and all students must either complete a thesis as part of their master's program or prepare a thesis equivalent as part of the EdS program. A thesis equivalent differs from a thesis only in procedures for enrollment and in form of recognition. Faculty will apply all thesis criteria for advisement, proposal review, human subjects review, and final oral examination.

**District Educational Administration Endorsement Requirements**

Applicants must have a minimum 3.250 grade point average for the last 30 hours of graduate course work leading to a building-level certification from an accredited institution and a score of 500 or above on any two of the three General Tests of the GRE or a score of 46 or above on the Miller Analogies Test. In addition, applicants must have validated strengths on the multiple indicators listed below.

1. Official transcripts of all college-level work completed and indication of a degree conferral.
2. At least three recommendations from supervisors and/or professional peers of which at least one must be from a supervisor that attests to the applicant's potential as an administrator.
3. Evidence of certification at the building level for a role in the public/private schools and at least three years of accredited experience.
4. A resume or curriculum vitae of educational and professional experience.
5. A brief statement of professional goals related to the completion of the specialist degree and/or certification as a public school administrator.

**School Counseling Endorsement Requirements**

The school counseling endorsement program requires 29 credit hours of course work. For state certification recommendations, students must have two years of teaching experience. Applicants must have a minimum 3.000 grade point average for the last 60 hours of course work (including post-baccalaureate graduate work). They must submit: (a) evidence of a current teaching certificate; (b) evidence of completion of a master's degree in a related field; (c) names, addresses, and telephone numbers of three people to serve as references; (d) a statement of professional goals; (e) a resume; and (f) evidence of completion of nine credit hours of undergraduate psychology plus six additional hours in the behavioral sciences.

**Doctor of Education**

The Department of Administration, Counseling, Educational, and School Psychology offers courses leading to the doctor's degree in educational administration (EdD).

**Admission Requirements**

Students applying for admission to the EdD program must have completed graduate work equivalent to the master's degree at an accredited institution.

Applicants must have a minimum grade point average of 3.500 on a 4.000 scale for all graduate-level hours (i.e., master's and/or specialist degrees) and a score of 500 or above on any two of the three General Tests of the GRE or a score of 46 or above on the Miller Analogies Test. In addition, applicants must have validated strengths on the multiple indicators listed below.

1. Official transcripts of all college-level work completed and indication of a degree conferral.
2. At least three letters of recommendation from supervisors and/or professional peers which attest to the applicant's potential for success as an administrator.
3. Evidence of building-level and district-level certification for a role as an administrator in the public/private schools and at least three years of accredited experience.
4. A resume or curriculum vitae of educational and professional experience.
5. A brief statement of professional goals related to the completion of the doctoral degree in educational administration and certification as a public school administrator.
6. A professional portfolio which includes samples of written or media products disseminated to constituent groups.

Completion of requirements includes core courses, a minimum of 15 dissertation hours, final examinations, and an approved dissertation.

**Certification Programs**

The Department of Administration, Counseling, Educational, and School Psychology provides degree programs and course work that lead to State of Kansas certification endorsement in the following areas:

- **91-1-33** Director of Special Education
- **91-1-127a** Supervisor
- **91-1-126b** Building Administrator
  - (requires completion of the MED program)
- **91-1-129a** District Administrator

**Counseling, Educational, and School Psychology**

**Courses for Graduate/Undergraduate Credit**

**681. Cooperative Education (1-8)** A work-related placement that integrates theory with a planned and supervised professional experience designed to complement and enhance the student's academic program. Prerequisites: graduate standing in the department and department chairperson approval. No more than 3 credit hours will be allowed in one Plan of Study. Repeatable for credit. Offered CR/NC.

**701. Introduction to Educational Research (3)** An introduction to research in education. Includes: (1) a survey of current educational research, (2) the nature of research methodology, (3) preparation of research reports, and (4) criticism of current research.

**704. Introduction to Educational Statistics (3)** An introduction to statistics, including measures of central tendency, measures of variability, correlation, chi square, median test, t-test, correlated t-test, and one- and two-way analysis of variance.

**728. Theories of Human Development (3)** Describes what developmental theories are, what they do, where they come from, how they work, and how they are used to explain human nature. Uses theoretical assumptions and related research to systematically evaluate developmental theories in terms of their scientific worthiness and their ability to address characteristics of human development. Focuses on those theories which helped shape the way we currently view human development as well as significant new perspectives which may shape the way we view it in the future. Prerequisites: CESP 334, Psy. 334 or equivalent, and CESP 701 or equivalent, or instructor's consent.
732. Behavior Management. (3). Presentation and utilization of psychological principles and techniques for dealing with developmental behavior and learning patterns. Emphasizes the preschool and elementary school child. Prerequisite: CESP 334 or equivalent or departmental consent.

750. Workshops. (0–4).

752. Special Studies in Education. (0–5). For students with personal and guidance interests. May be repeated for credit in different areas during a semester. Repeatable with advisor's consent. Prerequisite: instructor's consent.

Courses for Graduate Students Only

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. Helps the prospective counselor increase personal understanding of self as a variable in the counseling process. Prerequisite: counseling major or departmental consent. To be taken concurrently with CESP 804. May not be taken concurrently with CESP 825.

803. Counseling Theory. (3). A study of selected theories of counseling. Prerequisite: CESP 804 or concurrent enrollment or admission to school psychology program.

804. Principles and Philosophy of Counseling. (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. Prerequisite: admission to counseling program.

807. 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. Prerequisites: CESP 701, 704, 802, 803, 804.

808. School Psychology Professional Issues. (3). Examines roles and functions of school psychologists within the context of historical foundations of the profession. Uses lecture, discussions, observations in schools, and presentations by field-based school psychologists to acquaint students with the kinds of problems with which school psychologists typically work, the methods they employ to deal with problems, social systems in which these endeavors occur, and professional issues that shape and characterize the profession.

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. Prerequisites: CESP 701, 704, 802, 803, 804.


815. Career Development. (3). For master's level students interested in assisting students and adults in career development and related concerns. Covers (1) career development of individuals across lifespan, (2) sources and organization of information, (3) assessment designs and career intervention techniques, and (4) career decision-making strategies for career interventions. Prerequisites: CESP 701, 704, 802, 803, 804.

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

820. Learning Theory and Instruction. (3). Applications of some major learning theories and learning principles. Prerequisite: CESP 701 or departmental consent.

821. Multicultural Issues in Counseling. (2). Examines role and function of school psychologists within the context of historical foundations of the profession. Uses lecture, discussions, observations in schools, and presentations by field-based school psychologists to acquaint students with the kinds of problems with which school psychologists typically work, the methods they employ to deal with problems, social systems in which these endeavors occur, and professional issues that shape and characterize the profession. Prerequisites: CESP 701, 704, 802, 803, 804, or instructor's consent.

822. Psychometric Procedures in Counseling. (3). Surveys and studies of standardized tests and their application in counseling, emphasizing their use and interpretation. Studies the basic concepts pertaining to the interpretation of psychological tests and inventories, including basic measurement theory and the factors involved in the selection of tests. Prerequisites: CESP 701 and 704; counseling students must also have CESP 802, 803, 804.

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 differences between means, simple factorial designs, designs involving matched groups, designs involving repeated measures of the same group, and analysis of covariance. Prerequisite: CESP 704.

824. Techniques of Counseling. (3). Examines and practises techniques of counseling through simulated counseling situations and extensive examination of counseling case studies. Prerequisites: CESP 721, 722, Psy 340, and counseling major or departmental consent.

825. Group Counseling Techniques. (2). Examines different kinds of groups, group selection, communication patterns in groups, and issues to be addressed in group settings. Prerequisites: CESP 721, 722, and counseling major or departmental consent.

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: CESP 803 or departmental consent.

833. Secondary School Counseling. (3). Provides information and skills needed for counseling in secondary schools. Prerequisites: CESP 701, 704, 802, 803, 894.
866. Practicum in Guidance Services. (2-3) 
Supervised practice in administration, test interpretation, group counseling, and other activities of the department. Prerequisite: CESP 833 or 810 and instructor's consent.

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

875-876. Masters Thesis. (2-2). Prerequisite: CESP 860

881. Seminar in School Psychology. (1). Examines current trends and issues within the area of school psychology. Also considers alternative roles people may take on in the school psychologist from the standpoint of research and program development in related areas such as special education, general education, and professional psychology. Repeatable to a maximum of four hours. Prerequisite: CESP 864 or concurrent enrollment in instructor's consent.

892. Special Problems. (1-3). Directed reading and research under the supervision of a graduate instructor. Prerequisite: departmental consent.

903. Counseling Theory I. (3) In-depth critical review of research and applicability of important theories to the evaluation and design of interpersonal intervention strategies.

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

915. Intervention Design. (2). Gives the student further experience and skill in utilizing theories of interpersonal relations in creating macro- and micro-learning experiences designed for individuals or groups experiencing dysfunctional situations. Stresses individual and organizational effectiveness assessment skills.

922. 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 eight hours. Prerequisite: 15 hours of related graduate course work.

928. Seminar: Postsecondary Student Services. (2). Intensive study of issues, theories, approaches, and research in topics related to postsecondary student services. Repeatable for different topics for a maximum of eight hours.

930. Marriage and Family Counseling II. (3) An advanced course on marriage and family counseling, including therapy, techniques, and research in the field. Prerequisite: CESP 803, 830. 32 graduate hours or instructor consent.

934. Personality Assessment. (3). Focuses on theory and interpretation of instruments representing three major approaches to personality assessment: projective techniques, behavioral techniques, and personality inventories. Includes alternative personality assessment approaches and reviews of personality theory and psychopathology. Includes supervised experience. Prerequisite: CESP 822, 855, post-master's standing or last six hours of master's program, and instructor's consent.

948. Practicum in School Psychology. (3 or 6). Supervised practice in providing psychological services to children in school, clinical, or community agency settings. Requires at least 300 hours applied experience per three hours of credit. Repeatable for a maximum of six hours. Prerequisite: departmental consent.

947. Internship in Counseling: Internal or External. (2). The Internship is normally a full-time placement appropriate to career objectives in a position within an agency, institution, or school. The External Internship is normally a series of planned placement intervention experiences in a variety of settings designed to develop expertise in interpersonal consulting. Repeatable up to 6 hours of credit.

948. Practicum in Marriage and Family Counseling. (3). Prerequisite: CESP 930, graduate student status or departmental consent.

977. Internship in School Psychology. (2). Supervised experience as a school psychologist in a school or agency setting. Requires at least 460 hours of applied experience. Repeatable for a maximum of four hours. Prerequisites: CESP 846 and departmental consent.

990. Special Problems in Counseling and School Psychology. (1-3). Directed problems in research for full-time students under supervision of a graduate instructor. Prerequisites: CESP 761 and instructor's consent.

Educational Administration and Supervision

Courses for Graduate/Undergraduate Credit

681. Cooperative Education. (1-8). A workplace placement that integrates theory with a planned and supervised professional experience designed to complement and enhance the student's academic program. Prerequisite: 2.5 GPA. Repeatable for credit. Offered CR/NC.

750. Experienced Administrator's Workshop. (1-2). Offers a variety of administrative topics.

752. Special Studies in Educational Administration and Supervision. (1-3). Group study in a preselected specialized area of educational administration and supervision. Repeatable for credit with departmental consent. Prerequisite: departmental consent.

Courses for Graduate Students Only

803. Seminar: Professional Self-Assessment and Inquiry. (3). Participants engage in self-assessment and readiness for becoming a school administrator. Includes discussing and learning issues and techniques for measurement in the cognitive, affective, and psychomotor domains. Also reviews the basics of educational research, the nature of research methodologies, and methods for the preparation of research reports.

805. Practicum: School Opening I. (1). Participants engage in preparing to open their school for the fall semester with their principal and faculty. They participate in an inquiry project in their local school and read and critique current research literature and analyze how that research can assist in their school. Prerequisite: admission to the MEd in educational administration or instructor's consent.

813. Seminar: Introduction to Educational Leadership and School Finance. (3). Discusses educational philosophy, personal goal-setting, and educational administration models. Includes (a) an examination of educational foundations and the major theories of administration and application to specific problems, and (b) an overview of administration of the school district, especially problems involving the community and staff. Examines theoretical concepts related to financial planning and building resources. Review knowledge necessary to plan and organize work groups, projects, and the resources necessary to carry out day-to-day functional activities of school. Prerequisites: admission to the MEd in educational administration or instructor's consent.

815. Practicum: Introduction to Educational Leadership and School Finance. (3). Spend time in schools identifying how major theories of administration apply to specific problems in the school and how the school interacts with the district and the community. Apply financial-planning concepts to the school setting and manage the day-to-day financial and other resources allocation to schools. Prerequisite: admission to the MEd in educational administration or instructor's consent.

822. Seminar: Interpersonal Relations and Supervision. (3). Examine the theoretical concepts related to clinically oriented supervisory models and explicit teaching approaches. Study protective evaluation concepts focusing on performance issues related to actual teaching situations and the teacher's guided analysis of these issues. Review the responsibilities of the supervisor for planning and organizing staff development activities. Examine processes involved in the development of interpersonal skills. Engage in simulated exercises to acquire interpersonal skills desirable for group collaboration and communication. Prerequisite: admission to the MEd in educational administration or instructor's consent.

825. Practicum: Interpersonal Relations and Supervision. (3). Apply the concepts of clinical supervisory models and specific teaching approaches, emphasizing the culture of evaluation strategies which focus on performance issues generated from actual teaching situations and the teacher's guided analysis of these issues. Cover preparation of the supervisor's role in planning and organizing staff development activities. Apply concepts of formative evaluation and staff development using interpersonal and group process skills. Observe, analyze, and reflect upon supervisory techniques and interpersonal skills in the school setting. Prerequisite: admission to the MEd in educational administration or instructor's consent.
830. Practicum: School Closing. (1) Engage in closing the school year with a principal/mentor. Prerequisite: admission to the MEd in educational administration or instructor’s consent.

831. Seminar: Human Development and Managing the Learning Environment. (3) Examine developmentally appropriate practices in the classroom for student learning and behavior management. Includes discussion of developmental psychology sufficient to interpret human developmental patterns and their behavioral implications. Prerequisite: admission to the MEd in educational administration or instructor’s consent.

832. Practicum: School Opening 2. (1) For a second time, prepare to open a school for the fall semester with a principal/mentor, and participate in an inquiry project in the local school. Read and critique current research literature and analyze how that research can assist in the school. Prerequisite: admission to the MEd in educational administration or instructor’s consent.

833. Seminar: School Law and Personnel Management. (3) Examine concepts related to starting issues, including selection and recruitment, certification, orientation, staff development, evaluation, transfer and dismissal, and retirement. Cover general concepts of law, interpretations of statutes and court decisions affecting education, and the legal responsibilities of school personnel and professional negotiations. Prerequisite: admission to the MEd in educational administration or instructor’s consent.

834. School Law. (3) General concepts of law, interpretations of statutes and court decisions affecting education, and legal responsibilities of school personnel.

835. Practicum: School Law and Personnel Management. (3) Apply the concepts related to the selection, recruitment, certification, orientation, staff development, evaluation, transfer and dismissal, and retirement. Cover general concepts of law, interpretations of statutes and court decisions affecting education, and the legal responsibilities of school personnel and professional negotiations. Prerequisite: admission to the MEd in educational administration or instructor’s consent.

836. Seminar: Curriculum and Learning Theory (3). Examine theoretical concepts related to curriculum philosophies and developmental processes. Examine recent programs and proposals as well as curriculum development at the building and school system levels. Review techniques of curriculum evaluation and major learning theories and principles. Prerequisite: admission to the MEd in educational administration or instructor’s consent.

837. Practicum: Curriculum and Learning Theory (3). Apply the concepts of curriculum theories and development, emphasizing skills necessary to propose, implement, and evaluate various building programs. Address applications of prevailing major learning theories and principles as they relate to academic and behavioral aspects of the classroom. Prerequisite: admission to the MEd in educational administration or instructor’s consent.

838. Special Studies in Educational Administration and Supervision. (1-3) Group studies in new materials, new 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.

839. Finance and Facilities Management. (3) Designed for those preparing to become administrators at the school-building level. Focuses upon the knowledge and skills necessary to plan and organize work groups, projects, and the resources necessary to carry out day-to-day functional activities of schools.

840. Research Seminar in Educational Administration and Supervision. (3) Designed for students in advanced study. Emphasizes development of research proposals and studies. Prerequisite: completion of master’s degree or advisor’s consent.

841. Presentation of Research. (1-2) A project submitted in thesis manuscript form. Repeatable for a maximum of two hours of credit. Prerequisite: EAS 886.

842. Field Project in Administration and Supervision. (2-6) Field projects 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, a departmental concern, or a needed investigation or inquiry. Acceptable projects are developmental or must include an appropriate research design. A useful, well-documented report of the project is required, with the plan, format, and style approved by the student’s committee. Prerequisite: completion of master’s degree.

843. Politics and Power in Education. (3) An examination of the interaction of society and the school as it relates to administrative processes. Studies systems of control, social class, power structure, human relations, and group dynamics. Prerequisite: instructor’s consent.

844. Technologies for Academic Writing in Educational Administration. (3) Allows practicing administrators to gain knowledge of the doctoral program process through the use of various software packages used to collect and analyze data in Educational Administration and Supervision. Also introduces expectations for academic writing at the doctoral level. Students will work on a final project (possibly a Powerpoint) and be reasonably familiar with the Macintosh operating system. Microsoft Excel, EndNote Plus, and Microsoft Word. Prerequisite: admission to the EdD program in EAS.

845. Advanced Administrative Theory Seminar. (5) Examines the relationship between theory and practice in educational administration. Participants consider various theoretical frameworks for empirical studies, program designs, and organizational implementation efforts, and take initial steps toward an integration of those frameworks. Class activities require the application of the constructs and propositions considered to an on-going analysis of school-related problems and the conceptualization of action programs for addressing such problems. Prerequisite: admission to EdD program in EAS.

846. Decision-Making and Problem-Solving Seminar. (5) Focuses on approaches to identifying, clarifying, and solving various problems in elementary and secondary education. Decision making and problem solving models are reviewed, critiqued, and applied. Prerequisites: admission to EdD program: EAS 970 and 981, concurrent enrollment in EAS 982.

847. Administrative Leadership Seminar. (5) Designed to facilitate in-depth investigations of research relevant to leadership theory and practice. Activities include clarifying and developing personal leadership skills; identifying, fostering, and supporting the leadership skills of others; and conducting observations of leaders in action. Prerequisites: admission to EdD program: EAS 970 and 981, concurrent enrollment in EAS 982.

848. Applied Inquiry Seminar I. (3) Provides doctoral students with an introduction to field-based inquiry/problem solving strategies; begins the development of field-based problem-solving strategies; and provides practice in field research design, implementation, and reporting. Prerequisite: admission to EdD program in EAS.

849. Applied Inquiry Seminar II. (3) Continues EAS 981 and provides opportunities for more sophisticated and complex field-based studies. Prerequisite: admission to EdD program in EAS.

850. Applied Inquiry Seminar III. (3) Continues EAS 981 and EAS 982. Focuses on the development of individualized research plans leading to small group or individual field-based experiences in the second year of doctoral study. Prerequisite: admission to EdD program in EAS.

851. Field-Based Research I. (3) This is the first in a sequence (Fall, Spring, Summer) that provides practical experience leading to EdD dissertation proposal. Prerequisites: admission to EdD program: EAS 981, 982, 983, and concurrent enrollment in EAS 972.
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 education are provided for students who wish to become professionally qualified to work with 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 pathologist or audiologist in the public schools and for work in hospital clinics, rehabilitation centers, or private practice. With an undergraduate preprofessional major, students normally can complete the master's program in two years and be eligible for certification by the Kansas State Department of Education and the American Speech-Language-Hearing Association, and be eligible for Kansas licensure.

Admission Requirements
Admission to the master's degree program is considered for students who have completed an undergraduate major of at least 30 credit hours in the area of speech-language, and hearing disorders or closely allied courses. Admission also requires an overall grade point average of 2.750 and 3.000 or above for the last 60 credit hours of the undergraduate degree program and in the undergraduate major field. Scores for the general aptitude section of the Graduate Record Examination must be submitted. The Graduate Record Examination must be taken within the last five years and the sum of the verbal and quantitative portions of the exam should equal 900 or better. Three letters of recommendation and a personal essay are required. Consideration for admission to the doctoral degree program requires a master's degree and completion of at least one year of that graduate work with a grade point average of 3.500 or better. Scores for the general aptitude section of the Graduate Record Examination must be submitted. The Graduate Record Examination must be taken within the last five years and the sum of the verbal and quantitative portions of the exam should equal 1,000 or better. Three letters of recommendation are required.

Master of Arts Requirements
The Master of Arts (MA) in communicative disorders and sciences may be earned with an emphasis in audiology (42 hour program) or in speech-language pathology (40 hour program), and with either a thesis option or a nonthesis option. The option requires the presentation and oral defense of an acceptable thesis and the successful completion of the minimum credit hours required for that emphasis. Enrollment in CDS 859 or 899 is required for each semester in which the student is working with a faculty member on thesis research. The nonthesis option also requires the successful completion of the minimum credit hours required for that emphasis. Written comprehensive examinations also must be taken, and are normally taken during the last semester in the program. Students may not take these examinations during any semester in which they are on academic probation.

All degree program students must complete two to three subjects, each for 3 credit hours and with a minimum C letter grade. Students will be allowed to test out of these courses. One course is in statistics, and the second is a research methods. All students must enroll in a clinical practicum course each semester of enrollment. No more than four credit hours in clinical practice may count toward the minimum credit hours requirements for the MA. Clinical competence also must be demonstrated before the completion of the graduate program by meeting the ASHA dock hour practicum requirement for certification in the area of emphasis.

Participation in 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 $1,000,000-$3,000,000. This must be done on a yearly basis, when appropriate. Procedures for insurance purchase may be obtained from the departmental office.

Doctor of Philosophy Requirements
Doctoral students, in conjunction with their advisory committee, develop a Plan of Study which normally consists of at least 95 credit hours, 65 of which must be taken at Wichita State University. Students normally take the qualifying exami-
nation in the semester in which they complete the Plan of Study requirements, exclusive of dissertation hours. A minimum of nine hours of Advanced Practicum will be included in the Plan of Study. Enrollment in CDS 999 is required for each semester in which the student is working on dissertation research, including the semester of graduation. The final requirements in the PhD program are the completion of original research and an oral defense thereof.

General

Courses for Graduate/Undergraduate Credit


581. Cooperative Education (1-6). A work-related placement that integrates theory with a planned and supervised professional experience designed to complement and enhance the student's academic program. Prerequisites: 2.5 GPA. Repeatable for credit. Offered CP/NC.

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

750. Workshop in Communicative Disorders and Sciences. (1-4). Offered periodically on selected aspects of speech and hearing habilitation.

Courses for Graduate Students Only

800. Research Methods. (3). A survey of the different research methods utilized in the fields of communication sciences and communication pathology. Students acquire the fundamental motivation, knowledge, and skills for conducting clinical and basic science research and for reading and critically evaluating the clinical research literature. Prerequisites: graduate student status.

890. Independent Study in Speech and Language Pathology or Audiology. (1-3). Arranged individual, directed study in specialized content areas in speech and language pathology or audiology. Repeatable. Prerequisites: instructor's consent prior to enrollment.

892. Presentation of Research. (1-3). A directed research project culminating in a manuscript appropriate for publication. Repeatable, but total credit hours may not exceed three. Prerequisites: CDS 800 and instructor's consent prior to enrollment.

895. Thesis Research. (1-3). Repeatable, but total credit hours counted toward degree requirements must not exceed two. Prerequisite: instructor's consent.

899. Thesis. (1-2). Repeatable, but total credit hours counted toward degree requirements shall not exceed two. Prerequisite: instructor's consent.

935. Advanced Practicum in Communicative Disorders and Sciences. (1-4). Supervised internship in one or more of the following sections: Advanced Practicum in Client Management, Advanced Practicum in Clinical Supervision, Advanced Practicum in Academic Instruction, Advanced Practicum in Research, and Advanced Practicum in Clinical and Program Administration. Intended for doctoral students or advanced master's-level students. Repeatable; more than one section may be taken concurrently.

940. Advanced Research in Communicative Disorders and Sciences. (1-4). Directed individual or group study in specialized areas of communicative sciences and disorders. Intended for doctoral students or advanced master's-level students. Repeatable.

949. Seminar in Clinical Research. (3). Presentation of advanced models in clinical research design applicable to the investigation of communicative disorders in a clinical setting. Prerequisites: CDS 800 or equivalent and competency in statistics.

994. Research Seminar. (1). A weekly seminar of informal discussion and formal presentation of ongoing or planned research by the CDS faculty and doctoral graduate students. Goal is to provide CDS doctoral students with new and valuable knowledge and insights regarding how real world research is performed. Prerequisite: doctoral student standing.


Communication Sciences

Courses for Graduate/Undergraduate Credit

501. Speech and Hearing Science. (3). Examination of the facts in the chain of events that lead to human communication. Studies speech production and perception at physiological and acoustic levels, emphasizing acoustics. Prerequisite: CDS 111Q.

605. Neurology of Speech and Language I: Basic Processes. (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.

Courses for Graduate Students Only

801. Advanced Speech and Audiology Science. (3). Advanced study of speech and hearing processes, primarily in their normal aspects. Attention to current understanding of speech generation, the speech signal, and the normal function of hearing. Attention also to techniques of investigation of these processes. Prerequisite: CDS 801 or equivalent or departmental consent.

804. Speech Physiology. (3). A critical review of theories and empirical research addressing the perception of speech, species-specific communication, and speech recognition systems through artificial intelligence. Discusses both unimodal and bimodal models of perception. Prerequisite: CDS 801.

Speech-Language Pathology

Courses for Graduate/Undergraduate Credit

510. Language and Communication Science. (3). A detailed analysis of the perception of speech. Studies the various theories and empirical research concerning the physiological bases of speech. Emphasizes understanding the instrumental techniques utilized in such studies. Prerequisite: CDS 801.
for therapy, writing behavioral objectives and progress reports, and conducting parent conferences. Prerequisites: junior or senior standing, 3.500 GPA, 20 clock hours of observation, CDS 414 and 416, prior or concurrent enrollment in CDS 510.

6341L. Beginning Practicum in Speech and Language (1). Supervised practice of clinical assignments in the University Speech-Language-Hearing Clinic. Prerequisites: prior or concurrent enrollment in CDS 635, instructor’s consent one semester prior to enrollment. 3.500 GPA, and medical clearance.

676. Teaching English as a Second Language (Methods). (3). Discusses current methods of teaching English to nonnative speakers. Students learn to analyze interlanguage patterns and to design appropriate teaching units for class and language laboratory use.


712. Fluency Disorders. (3). A review of current theories on the etiology and development of the disorder. Considers behaviorally based diagnostic procedures for children and adults, as well as methods for clinical intervention, including procedures for parent interviewing and counseling, and multicultural concerns. Provides opportunities for observation, one focus being demonstration of intervention methods. Prerequisites: senior standing and CDS 310, 510.


716. Language Disabilities in Children and Adolescents. (3). Examination of various approaches to working with children and adolescents with language abilities. Practical application of language assessment procedures, individualized planning, and language intervention strategies. Language in the classroom for school-age children and adolescents and collaborative strategies. Multicultural literacy and the multidimensional nature of language in the classroom. Prerequisite: CDS 416 and 516 or departmental consent.

778. Communication Development and Disorders. (3). Identifies communication deviations, differentiating disorders from development and/or cultural/linguistic differences. Evaluates potential impact of various communication disorders on academic performance of individuals. Considers strategies for facilitating development of children’s communication skills in educational settings.

780. Communication Disorders in Educational Settings. (3). Organization, administration, and professional relationships in public school speech and language management programs on the elementary and secondary school levels. Emphasizes procedures and materials for surveys, scheduling, writing IEP’s, therapeutic management, record keeping, and utilization of various instructional media. Should be taken prior to student teaching. CDS 781 and 782. Prerequisite: prior or concurrent enrollment in CDS 510.

781. Speech and Language Practicum in the Public Schools (6). Half-time participation in a public school speech and language management program under the guidance of a certified clinician and a University supervisor. Prerequisites: graduate standing, CDS 716 and 782, departmental consent one semester prior to enrollment, and medical clearance.

782. Speech and Language Practicum Seminar for Public Schools. (3). Discussion and evaluation of student teaching experiences in public schools. Demonstrations of applied clinical skills, counseling on the elementary and secondary school levels. Prerequisite: to be taken concurrently with CDS 781.

783. Courses for Graduate Students Only

810. Neurology of Speech and Language II: Motor Speech Disorders. (3). Studies speech disorders resulting from upper and lower motor neuron lesions in the central nervous system and emphasizes evaluation and treatment strategies for intervention. Prerequisite: CDS 605.

812. Neurology of Speech and Language III: Aphasia and Head Trauma. (3). Language assessment and treatment strategies in adult aphasia, closed head injury, and right hemispheric communication impairment. Includes medical aspects of stroke rehabilitation, interdisciplinary intervention, and contemporary and future professional issues in clinical aphasiology. Prerequisite: CDS 605.

815. Interviewing and Parent Counseling. (3). Provides information on the structure and conduct of different types of interviews, and considers the help of the role, as practiced by professionals who work with exceptional children or adults. Focuses on information supportive of developing effectiveness in these roles. Considers multicultural concerns.

818. Communication Disorders in Medical Settings. (3). Provides the principles underlying a interdisciplinary teaming approach, emphasizing differential diagnosis and treatment of complex disorders found in medical settings. Discusses the fundamentals of private practice and legal issues in the practice of speech-language pathology. Prerequisites: CDS 810 and 812.

830. Advanced Methods in Speech and Language Evaluation. (1). Clinical methods for evaluation and diagnosis of children and adults presenting with speech and language disorders. Prerequisites: CDS 510 or equivalent, concurrent enrollment in CDS 813, and instructor’s consent.

831. Evaluation Processes. (1). Provides the student with information regarding speech and language evaluation processes and procedures. Prerequisites: CDS 510, concurrent enrollment in CDS 830, and instructor’s consent.

832. Beginning Graduate Methods. (1). Lecture and class discussions covering various types of communication disorders and management techniques/methods. Relates theory and methods to student’s clinic and practicum assignments. Designed for students with 20 or more practicum clock hours. Prerequisites: CDS 635, 636, or equivalent, instructor’s consent, concurrent enrollment in C836.

833. Advanced Methods in Hospital/Adult Care. (1). Class discussions cover various topics pertinent to hospital and adult care practicum experiences. Relates theory and methods to student’s practicum assignments. Prerequisites: prior enrollment in CDS 818, concurrent enrollment in CDS 836, instructor’s consent.

834. Advanced Methods for Phonological Disorders. (1). Procedures for evaluation and remediation of children’s highly unintelligible utterances. Discussion of client’s individual needs. Prerequisites: prior or concurrent registration in CDS 714, concurrent enrollment in CDS 836, instructor’s consent.

835. Professional Issues in CDS. (1). Discussions overview ethical, legal, procedural, and policy issues related to practice of CDS. Case studies address ethical and legal issues pertinent to the practice of speech-language pathology and audiology in the educational, medical, and private practice arena. Prerequisite: admission to Graduate School or instructor’s consent.

836. Graduate Practicum in Communicative Disorders (1-6). Repeatable. Supervised application of diagnostic and/or clinical management techniques with individuals presenting communicative disorders. Prerequisites: CDS 636 or equivalent, instructor’s consent, medical clearance, concurrent enrollment in a practicum methods course.

837. Advanced Methods in Language. (1). Lecture and class discussions cover various types of language disorders. Relates theories and methods to students’ clinic and practicum assignments. Prerequisites: CDS 633 or 832 or equivalent, CDS 516, concurrent enrollment in CDS 836, instructor’s consent.


839. Advanced Methods in Accent Modification. (1). Lecture and discussion of techniques for foreign accent and dialect modification. Relates techniques to students’ practicum experience in CDS 570, Attendance in CDS 570 required. Prerequisites: CDS 535 or 832 or equivalent, concurrent enrollment in CDS 836.
Audiology

Courses for Graduate/Undergraduate Credit

550. Senior Seminar in Audiology. (2). An exploration of theories, principles, practices, and pitfalls of audiology emphasizing creating dynamic models for research interpretation, clinical interaction, and professional management. Examines the current educational, professional, and ethical issues in clinical audiology and hearing science. Prerequisite: CDS 450 or senior standing.

685. Methods in Auditory Assessment-SLP. (1). Methods in audiologic evaluation for speech and language pathology students. Discusses procedures for diagnostic evaluation of a broad range of auditory disorders in infants, children, and adults in weekly class meetings, along with procedures for hearing screening, hearing aid maintenance and appropriate referral, counseling, and others as appropriate. Prerequisites: CDS 250 and 350 or equivalents.

751. Clinical Audiology I. (3). Techniques and procedures for administering the basic auditory test battery and the interpretation of audiometric results. Prerequisite: graduate student status.

752. Clinical Audiology II. (3). Techniques and procedures for the administration and interpretation of special auditory tests including tests for psychophysical testing, predictive acoustic reflexes, and tests for central auditory pathology. Prerequisite: CDS 751.


785. Methods in Aural Rehabilitation. (1). Discusses topics pertaining to the provision of aural rehabilitation services for children and adults. Includes current practices in aural rehabilitation for children, adults, and the elderly; procedures and materials for those services; and current therapy by student clinicians enrolled in practicum. Repeatable. Prerequisite: CDS 751 or equivalent.

827. Introduction to Psychoacoustics. (2). 1D. Basic principles underlying the perceptual hearing process, emphasizing the interdependence between sound stimuli and subjective auditory experience as related to communication behavior. Prerequisite: CDS 826.

851. Medical Audiology. (2). Many hearing disorders require evaluation/treatment by both the audiology and medical professions. Reviews the audiological and physiological aspects of the more common of these conditions found in children and adults. Prerequisites: CDS 250, 826, or instructor's consent.

854. Community and Industrial Audiology. (2). Reviews recent developments and research with attention to industrial audiology, federal and state regulations, and environmental noise problems. Prerequisite: CDS 751.


858. Auditory Evoked Potentials. (3). Techniques and procedures for administration and interpretation of physiologic tests of the auditory system, including electroencephalography, ENG, auditory brainstem response (ABR), and the later occurring cortical evoked potentials (MLF, LAEP, and P300). Prerequisites: CDS 605, 826, 851.

859. Electrocochleography. (2). Techniques and procedures for clinical evaluation of the functional status of the peripheral (inner ear) and central nervous system portions of the vestibular or balance system. Prerequisite: CDS 588.

860. Amplification I. (3). 2L. The history and function of hearing aids, accessories, and assistive listening devices. The measurement and significance of the electroacoustic characteristics. The principles and procedures for the selection and recommendation of specific amplification systems for individual hearing losses. Prerequisite: CDS 751.


885. Advanced Methods in Auditory Assessment-Aud. (1). Methods in audiology evaluation for audiology students. Discusses procedures for diagnostic evaluation of a broad range of auditory disorders in infants, children, and adults in weekly class meetings, along with procedures for hearing aid evaluation and the selection and fitting, counseling, and others as appropriate. Prerequisite: audiology faculty's consent.

886. Advanced Practicum in Auditory Assessment-Aud. (1). Practicum experiences encompassing diagnostic evaluations covering a full range of auditory disorders and types of evaluations in infants, children, and adults, including standard audiologic batteries, masking, site-of-lesion testing, electrophysiologic measurements, hearing aid fitting and dispensing, patient follow-up, and counseling. Prerequisite: audiology faculty's consent.

Curriculum and Instruction

Graduate Faculty

Professors: Robert D. Alley, Marcus T. Ballenger (associate dean), Jon C. Carroll, Jon M. Engelhardt (dean), Bryant P. Filion, Michael A. James, Dennis J. Kear (chairperson)

Associate Professors: Francis L. Clark, Gary J. Coleman, Tonya Huber


Degrees and Areas of Specialization

The Department of Curriculum and Instruction offers courses of study leading to the Master of Education (MEd) in curriculum and instruction and the MEd in special education (mildly handicapped and early childhood). The department also provides course work leading to endorsement in early childhood education, early childhood handicapped, gifted education, middle level education, teaching English to speakers of other languages (TESOL), and reading.

Admission Requirements

In addition to the Graduate School admission requirements, students seeking the MEd in curriculum and instruction must meet both of the following criteria:

1. Potential to do graduate work, by meeting one or more of the following:
   a. graduate from the WSU teacher education program with a minimum GPA of 2.750 in the last 60 credit hours;
   b. graduate from an NCATE accredited program with a 3.000 or better GPA in the last 60 credit hours;
   c. take the Graduate Record Exam and score a minimum of 917 on any two of the subtests, or take the Miller Analogies Test and score a minimum of 40; or

   826. Advanced Practicum in Auditory Assessment-Aud. (1). Practicum experiences encompassing diagnostic evaluations covering a full range of auditory disorders and types of evaluations in infants, children, and adults, including standard audiologic batteries, masking, site-of-lesion testing, electrophysiologic measurements, hearing aid fitting and dispensing, patient follow-up, and counseling. Prerequisite: audiology faculty's consent.
(d) provide alternative evidence that documents academic aptitude.
(2) Provide evidence of involvement in curriculum development or teaching.

The special education degree with an emphasis in mildly handicapped conditions is available for people certified at the elementary and/or secondary teaching level with successful teaching experience in a regular classroom setting. The special education degree with an emphasis in early childhood is also available for people entering with a bachelor's degree from a related program (e.g., CDS, PT, OT, social work, and nursing). Admission requirements include:

1. GPA of 3.00 or higher in the last 60 hours; or GPA of 2.750-2.999 and GRE score of 917 or better (on any two of the subtests) or Miller Analogies Test score of 40 or better.
2. Current Kansas teaching certification.

Note: Students with a BA from a related area must also have minimum scores on the Pre-Professional Skills Test (PST) of 172 in writing, 173 in reading, and 174 in math. The computerized version of this test is acceptable for entering the MEd in special education/early childhood.

Applications are evaluated periodically.

Master of Education Requirements

The Master of Education (MEd) in curriculum and instruction is a 36-credit hour program. Students must complete either a thesis option or a portfolio option. Students complete 17 credit hours of required courses in curriculum and instruction, research and research problems. They also complete 12 hours in a self-selected area of specialization, 3 hours in a course related to their particular thesis or portfolio project and 4 hours in thesis or portfolio work.

The MEd in special education may be earned under a thesis option or a nonthesis option. The nonthesis option requires 40 credit hours of course work and a written comprehensive examination. The thesis option requires 37 credit hours of course work, 8 hours of thesis work and an oral examination on the thesis.

Courses for Graduate/Undergraduate Credit

541. Desktop Publishing I. (3). Desktop publishers control the entire publishing process, from creation and typesetting to printing and distribution, with equipment from the desktop. Word processing on the personal computer and laser printing are the two technological achievements that make possible a desktop publishing revolution. Stresses type design, harmony, legibility, copy fitting, and layout fundamentals.

542. Desktop Publishing II. (3). An intermediate-level course which enhances, enriches, and develops further skills and techniques used in desktop publishing. Students select software packages in which they need additional depth toward master-level. Prerequisite: C614.

515. Learning and Reading Strategies. (3). Students are provided with the understanding of the development of learning and reading strategies and explore instructional approaches for guiding secondary students in those strategies and their use in content areas.

516. Literature for Adolescents. (3). Students participate in extensive reading of literature in all genres consistent with studies of adolescents; reading interests, abilities, and responses to literature. Prerequisite: acceptance into teacher education. Currently and previously certified teachers meet prerequisites.

521. Instructional Strategies: Middle Level Education. (3). Students examine the middle grades school as an organization that takes its design specifically from the analysis of 10-14 year olds, their characteristics, and their needs. Students examine many curricular and instructional alternatives for middle grades education and learn to manage changes.

501. Foundations of Education. (3). Students survey the various foundations areas, including philosophical, historical, social, and comparative. This course is prerequisite to subsequent foundations courses. Prerequisite: graduate standing.

702. Introduction to Exceptional Children. (3). A survey of the characteristics of exceptional learners, including the handicapped and the gifted. Presents service delivery models and current practices. Fulfills certification requirements for teachers and serves as an introductory course in exceptionalism for special education majors, administrators, and school psychologists. Prerequisite: bachelor's degree or departmental consent.

705. Introduction to the Reading and Writing Process. (3). Examine all aspects of current theories and pertinent research on reading and writing. Stresses applying this information to the actual teaching of children.

706. Reflective Inquiry Into Learning, Teaching, and Schools. (3). Fosters the reflective thinking ability of teachers about the relationships among learning, teaching, and schools. Explores various frameworks of growth and development, learning theory, social and multicultural education, and philosophical foundations. Students are engaged in initial reading and investigation into individualized research topics. Prerequisites: admission to graduate school, CESP 701.

707. Introduction to Mildly Handicapped. (3). Examine the roles and responsibilities of special educators and become acquainted with issues and challenges confronting special educators. Also examine alternative approaches to the delivery of special education services and with the social systems within which special education services are provided. Prerequisite: acceptance into the MEd, special education for mildly handicapped program.

708. Current Topics in Curriculum. (1-3). Addresses a broad range of topical issues in curriculum development and implementation. A current issue will be covered under this course number, an umbrella number for a variety of topics/innovations in curriculum. Repeatable.

709. Current Topics in Instruction. (1-3). Addresses a broad range of topical issues in current practices for effective instruction. A current issue will be covered under this course number, an umbrella number for a variety of topics/innovations in instructional practices. Repeatable.

710. Current Topics in Classroom Management. (1-3). Addresses a broad range of topical issues in current classroom management practices. A current issue will be covered under this course number, an umbrella number for a variety of topics/innovations in classroom management. Repeatable.

711. Multicultural Education. (3). Emphasizes students understanding multiple perspectives in a global society and developing multiple modality, culturally aware curriculum experiences. Provides disciplined inquiry and critical experience “to become more responsive to the human condition, cultural integrity and cultural pluralism in society” (NCATE, 1992, p. 14). Emphasizes diversity issues in education and the development of a knowledge base to support culturally responsible pedagogy. Prerequisite: graduate standing or departmental consent.

712. Environmental Education. (3). Provides basic information on environmental issues which can be addressed in the classroom. Become familiar with a wide range of resources for both teachers and their students. Stresses applying environmental issues to everyday teaching.

713. Agriculture in the Classroom. (2). K-12 teachers learn about agriculture and develop ways to integrate that information into their everyday teaching. Includes presentations, field trips, and projects showing how the food chain industry touches every person's life. Teachers learn to integrate agricultural information into existing teaching basic subjects like math, language arts, social studies, science, art.

717. The Ethnography of Schooling. (3). Through readings, guided experiences in research and field work, graduate students become familiar with qualitative research approaches in education, emphasizing case study methodology and expertise in non-participant and participant observation, constant comparative analysis, and reporting research. Prerequisite: admission to Graduate School.

723. Analysis and Management of Behavior. (3). Covers behavior management strategies specifically needed by classroom teachers and your academic and social outcomes. Addresses theoretical, technical, and practical aspects of applied behavior analysis. Prerequisites: CI 320 or 702 and CI 430 or 711 or equivalent.
724. Methods I: Academic and Cognitive Skills, Mild Exceptionalities. (3). Introduces students to specific techniques for improving the cognitive skills and academic performance of students with mild exceptionalities (learning disabilities, attentional disturbances, behavioral disorders, or mental retardation). Includes competencies for (a) teaching readiness, cognitive, and academic skills as well as consent to students with exceptional learning needs; (b) basing instructional decisions on data; (c) determining where to begin instruction for students with special needs; (d) instructional management and monitoring strategies; and (e) strategies for working with students with exceptional learning needs in general and special education settings. Prerequisites: CI 320 or 702, CI 439 or 711, admission to the Teacher Education Program or to the graduate program in special education as a non-degree seeking student, or instructor’s consent.

725. Improvement of Instruction in Science. (3). Students identify and explore the principles of science that teachers should recognize, understand, and consider from K-9. Prerequisite: CI 402.

731. The Reflective and Inquiring Educator. (6). This integrated course builds a foundation for reflective thinking about educational issues and learning research principles that can be used to collect and analyze the success or failure of potential solutions. Prerequisite: admission to ME4 in Curriculum and Instruction.

734. Literature-Based Reading Programs. (3). Students examine specific methods for developing a literature program with children (preschool-elementary years) emphasizing the extension of literature and media through the reading environment, language arts, the arts, and creative expression. Prerequisites: CI 705 and graduate standing.

735. Introduction to the Gifted. (3). Students are introduced to the historical and socio-educational perspectives germane to gifted education, issues related to the field of gifted education, such as theories of intelligence, identification, delivery modes, characteristics and learning needs, special populations, curriculum development, and pre-service experiences. Prerequisite: graduate standing.

740. Introduction to Early Childhood Special Education. (3). Students are provided a basic introduction to the emerging field of early intervention for children with disabilities and their families. Prerequisites: CESP 725 and CI 761.

741. Early Childhood Special Education Methods: Preschool. (3). Provides specific techniques needed to teach children with exceptionalities in preschool settings. Includes components of the early childhood special education for (a) legal foundations (IDEA, Part B), (b) characteristics of learners, (c) assessment, diagnosis, and evaluation, (d) report and Individualized Education Plan (IEP) development, (e) instructional content and management strategies, (f) instructional context and development, (g) planning and managing the teaching and learning environment, (h) managing student behavior and social interaction skills, (i) collaborating and forming partnerships with family members and other professionals, (j) professional and ethical practices, and (k) strategies for working with students with exceptional learning needs in general special education preschool settings. Prerequisites: CI 320 or 702, CI 740, admission to the Teacher Education Program or to the Special Education program as a non-degree student, or instructor’s consent.

747L Practicum: ESL/Bilingual Education (K-12 or adult). (3). Provides full-time participation in an ESL class supervised by a master teacher and a University professor. Focuses on the application of strategies in the methods of teaching ESL/bilingual learners, the appropriate use of formal and informal assessment procedures, the development of cross-cultural teaching strategies, and the integration of language with content area instruction. Prerequisites: CI 430 or 711, CI 755U, CDS 676.

750. Workshops in Education. (1-4).

751. 752, 753, or 754. Special Studies in Education. (1-3). For elementary and secondary school teachers. Repeatable with advisor’s consent. Prerequisite: teacher certification or departmental consent.

760. Parent Education. (3). An introduction to ways of working with parents of preschool and elementary children and an analysis of formal and informal approaches emphasizing the teacher’s role in developing these procedures.

761. Early Childhood Education. (3). Students examine programs, problems, and philosophy of educating children in the preschool years.

762. Instructional Strategies: Preschool Education. (3). Students examine the content and methods of instruction in preschools and observe/teach in a variety of settings. Students study teaching methods for preschool children and prepare materials to enhance the learning experiences of these children. Prerequisite CI 761.

770M. Introduction to Macintosh Computing. (2). Provides basic Macintosh skills appropriate for classroom use. Covers mouse skills, desktop menu management, document and folder organization, and file folder organization and file manager features. Prerequisite: experience using a Macintosh computer.

770P. Introduction to PC Computing. (2). Provides basic PC computing skills appropriate for classroom use. Covers mouse skills, desktop menu management, document and folder organization, and file folder organization and file manager features. Students learn to use the computer in a variety of tasks.

772M. Macintosh in the Classroom. (3). A comprehensive introduction to a wide range of instructional applications of the Macintosh computer and related technology. Covers teacher management tools such as gradebooks, database management, and test construction software; development of instructional materials in print, on screen, and with hypermedia; appropriate application of CD-ROM and laserdisc technology; and types and evaluation of educational software. Prerequisite: CI 770M or department consent.

772P. PCs in the Classroom. (3). A comprehensive introduction to a wide range of instructional applications of the PC computer and related technology. Covers teacher management tools such as gradebooks, database management, and test construction software; development of instructional materials in print, on screen, and with hypermedia; appropriate application of CD-ROM and laserdisc technology; and types and evaluation of educational software. Prerequisite: CI 770M or department consent.

780C. Computers and the Young Child. (1). Learn to use the computer with children in preschool through second grade. Appropriate software is evaluated and used in planning for instruction. Prerequisite: CI 770 or instructor’s consent.

786L. Computers in Language Arts. (2). Enables classroom teachers to utilize computers and related technology in the language arts curriculum. Appropriate software is evaluated and used in planning for instruction. Prerequisite: CI 770 or instructor’s consent.

786M. Computers in the Math Classroom. (1). Focuses on the integration of software programs designed for middle and high school mathematics classrooms. Explore software and instructional activities which support math at the middle and high school levels using Apple IIe and Macintosh systems. Prerequisite: CI 770 or instructor’s consent.

786S. Computers in Science. (2). Introduces classroom teachers to application of computer technology, CD-ROM, and laserdisc technology in the science curriculum. Appropriate software is evaluated and used in planning for instruction. Prerequisite: CI 770 or instructor’s consent.

787. Internet for Educators. (2). Learn how to access and use Internet as an instructional tool. Includes e-mail, World Wide Web, file transfer protocol, newsgroups, and listservs. Covers software and commercial software for both PC and Mac platforms. Emphasizes the instructional impact of the resources and potential applications in the classroom. Prerequisite: CI 770M or 770P.
583. Special Projects in Internet. (1). Explore and expand your knowledge of Internet. Complete a special project designed to utilize knowledge and experiences developed in CI 782. Students and instructor establish goals and activities appropriate for graduate-level study and applicable in an educational setting. Prerequisites: CI 770M or 770P and CI 782 or instructor's consent.

786. Structured BASIC. (2). Designed to prepare middle school and high school teachers to teach beginning programming courses. Techniques include top-down programming, modularization, subroutines, debugging, documentation, and different data types including string, integers, real numbers, and file manipulations. Prerequisite: CI 770M or 770P.

790. Special Problems in Education. (1-4). Directed reading, activity, or research under supervision of a graduate instructor. Prerequisite: departmental consent.

791. Practicum: Methods of Computer-Related Instruction (2). Investigate teaching and learning strategies related to the use of computers in the classroom. Includes the design and management of instructional activities related to software integration, programming, and the development and assessment of computer-related student competencies. Students will be supervised in the field while they apply methods and principles of computer-related instruction. Prerequisite: CI 770M or 770P or department consent.

792. Multimedia in the Classroom. (2). Prepares educators to plan and create multimedia presentations. Includes digitizing audio and video, storyboards, scripting, appropriate hardware, and authoring software.

Courses for Graduate Students Only

802. Seminar on Current Issues in Special Education. (3). Analyze and critique research, integrate understandings, evaluate current issues in light of historical roots, and draw conclusions relating theory to practice. Students make oral and written presentations. Prerequisite: within 6 hours of graduation, CESP 701.

804. Classroom Research in Curriculum and Instruction. (6). This integrated class guides students in using classroom research principles to collect, analyze, interpret, and report data to develop solutions for curriculum, instruction, and student issues. Prerequisite: successful completion of CI 731.

807. Philosophy, History, and Psychology of Secondary and Elementary Education. (3). Students survey concepts of mind, learning, experience, and knowledge, and philosophical, historical, and psychological systems and theories as they relate to current educational problems and practices. Prerequisite: CI 781.

809. Foundations and Characteristics of Mild Exceptionalities. (3). Introduces students to the principles, concepts, and historical foundations underlying the provision of services for students with mild exceptionalities. Explains characteristics of students identified as having behavior disorders, learning disabilities, or mental retardation. Discusses legal and ethical principles related to various delivery approaches, and examines roles of the student, parents, and educators as well as related services and community personnel. Discusses current developments in the field of special education. Prerequisites: CI 320 or 702, CI 430 or 711, CI 723 and 724, and full admission to the MEd program in special education; or instructor's consent.

810. Methods II: Social Skills for Mild Exceptionalities. (3). Provides knowledge and skills necessary to teach social skills and affective education to children and youth with exceptionality. Prerequisites: full admission to the graduate program, CI 723, 724, 809, and 887. Permission from the instructor for majors in other master's degree programs.

811. Family and Professional Collaboration (3). Assists the special educator in developing the skills to collaborate and consult with parents, siblings, regular educators, support personnel, and community agencies to facilitate the needs of children with exceptionality. Prerequisites: full admission to the graduate program, CI 723, 724, 809, and 887. Permission from the instructor for majors in other master's degree programs.

812. Transition Across the Life Span. (3). Examines aspects of transition planning for individuals with exceptionalities across their life span. Addresses transitions from early childhood special education settings to the school environment, elementary to middle school, middle school to high school, special education setting to another (e.g., self-contained classroom to resource room or general education classroom), and high school to post-secondary settings and independent functioning. Discusses roles of individuals with exceptionalities, parents, educators, and community personnel. Prerequisites: CI 809, full admission to the MEd program in special education, or instructor's consent.

821. Classroom Reading Practicum. (3). Students participate in a practicum experience delivering developmental and corrective reading instruction in a classroom setting. Prerequisite: CI 706.

835. Instructional Models and Practices. (3). For teachers (1) to explore the theories behind the development of, and the syntax for viable instructional practices; (2) to apply instructional models in the analysis and evaluation of various learning environments; and (3) to develop a commitment as a reflective practitioner to more effective instruction through an expanded and integrated repertoire of teaching strategies. Prerequisites: admission to MEd in Curriculum and Instruction program, CESP 701.

837. Collaborating and Refining Problem-Solving Skills. (6). This integrated class guides students in implementing school and classroom improvement practices that have documented success. Emphasizes collaboration skills in the identification, selection, and development of approved school and professional development projects.

842. Early Childhood Special Education Methods: Infants/Toddlers and Families. (3). Provides specific techniques needed to provide services, supports, and accommodations for infants/toddlers and their families who face challenges of developmental disabilities. Includes competencies within early childhood special education (a) legal foundations (IDEA Part C, b) collaborative and forming partnerships with family members and other professionals, (c) typical and atypical developmental patterns, (d) child assessment, diagnosis, and evaluation, (e) family assessment and evaluation, (f) family service coordination, (g) development of Individualized Family Service Plans (IFSP), and (h) family-centered interventions. Emphasizes collaborative techniques, strategies, and instructional content and practice, (i) planning intervention strategies in natural environments, (j) recommendations for transitioning from early intervention to school, (k) role of the special educator in the education of infants/toddlers and parents, and (l) professional and ethical practices. Prerequisites: CI 702, CI 740, full admission to the MEd in special education program, or instructor's consent.

845. Curriculum Models and Practices. (3). Examines theories, development processes, evaluation procedures, and current practices in curriculum. Emphasizes multiple conceptual frameworks for thinking about curriculum and reflective inquiry into the implications of those frameworks in today's classrooms and schools. Prerequisites: admission to MEd in Curriculum and Instruction program, CESP 701.

847A. Practicum/Internship in Early Childhood Special Education. (1-10). Provides students with opportunities for supervised experiences in working with children with mild to moderate disabilities in infant/toddler and preschool programs. Prerequisites: admission to MEd in special education, CI 723, 724, 809, and 887.

847E. Practicum/Internship in Learning Disabilities. (1-10). See CI 847A, including prerequisites and departmental consent.

847H. Practicum in Center-Based/Home-Based Early Childhood Handicapped (ECHH). (3). Provides opportunities for the student to develop clinical competencies with handicapped young children and their parents under the supervision of trained professionals in the field and while working in the center and the home of the client child. Prerequisites: CI 740, 847E, 891, CDS 915 or CI 760, and departmental consent.
Kinesiology and Sport Studies

Graduate Faculty
Professor: Lori K. Miller (chairperson), Susan K. Kovar
Assistant Professors: Richard E. Laptad, Michael Rogers, Clay Stoldt, Frank Wyatt

Degrees and Areas of Specialization
The Department of Kinesiology and Sport Studies offers courses of study leading to the Master of Education (MEd) in sport administration or in physical education. Academic training is provided for students who wish to prepare for careers in physical education programs in public schools and universities, for careers in exercise science, wellness, and for careers in sport administration.

Admission Requirements
Admission to the master's degree program requires students to have completed an undergraduate degree from a regionally accredited institution and have a grade point average of at least 2.750 (4.000 system) in the last 60 credit hours of undergraduate course work including any post-bachelor's graduate work. In addition to the above requirements, students selecting the sport administration major must submit a letter of application and three letters of recommendation. Students selecting the physical education major may be required to take prerequisites prior to full standing admission.

Master of Education Requirements
The Master of Education (MEd) in physical education may be earned under a 33 credit hour thesis option or a 36 credit hour nonthesis option. The exercise science/wellness program offers a 34 hour thesis option and a 36 hour nonthesis option. The thesis option requires an oral examination on the research; the nonthesis option requires a written comprehensive examination.

The MEd program in sport administration requires 30 hours of course work (thesis or nonthesis), a 6 hour internship and a final oral examination.

Courses for Graduate/Undergraduate Credit

506. Health Education K-12. (3). Provides practical applications of theoretical models of change for the health field. Discusses health problems, strategies for affecting change, and outcome assessment. Develops selected instructional materials. Two field trips to pres-
502. Applied Health I. (2). Introduction to public health problems and practices. Field experiences are arranged. Prerequisite: departmental consent.

504. Applied Health II. (2). Intensive study of selected health problems with regard to ecology, prevention, and the present state of world health. Prerequisite: KSS 502 or departmental consent.

515. Rhythmic Activities. (3). Teaches methodology and curricular content of rhythmic activities appropriate for elementary and middle school children. Prerequisites: Block 1 of teacher education program.

526. Sport Tournament and Event Management. (3). A detailed account of the structural design, mathematical calculations, scheduling principles, procedures, and thought processes involved in the organizing and conducting of sport tournaments and events.

528. Sport Finance. (3). Introduces the sport administration student to financial statements, financial planning, and related issues within sport organizations.

529. Physiology of Exercise. (3). Analyses the physical processes utilized in each of the major categories of exercise, and emphasizes the role of the nervous system in controlling these processes.

530. Measurement and Evaluation in Physical Education. (3). A study of the methods utilized in the evaluation of physical education programs including (1) basic statistical procedures, (2) educational testing, (3) evaluation of teaching, and (4) a survey of measurement tools. Prerequisites: KSS 229 or equivalent.

532. Seminar in Sport Business. (3). Integrates the knowledge base of sport and business as they apply in the practical setting. Prerequisites: 2.5 GPA, admission to College of Education, KSS 460, and senior standing.

540. Organization and Administration of Physical Education Programs. (3). The organizational and administrative problems of physical education programs and the management of the physical plant.

547A. Internship in Sport Administration. (8). Culminating activity for students in sport administration. Students spend the equivalent of full-time employment in the appropriate agency for a total of at least 520 hours. Prerequisites: KSS 460 (when applicable), 2.500 GPA overall and in major, senior standing in College of Education, advisor’s approval.

547B. Internship in Sport Administration. (8). Second internship experience for students in sport administration; takes place in a different setting than KSS 547A. Students spend the equivalent of full-time employment in the appropriate agency for a total of at least 520 hours. Prerequisites: KSS 547A, 2.500 GPA overall and in major, senior standing in College of Education, advisor’s approval.

557. Internship in Fitness/Wellness (8). Culminating activity for students in the fitness field option specialization. Students spend the equivalent of full-time employment in the appropriate agency for one full semester. Prerequisites: senior standing, departmental consent, KSS 470, 2.500 minimum GPA overall and major admission to College of Education.

562. Sport Facility Management. (3). Assessment of various aspects of facility management, such as mission development, funding and budget, site selection, planning and design, floor surfaces, risk management, equipment purchase and maintenance, and personnel management.

565. Marketing Sport and Physical Activity Programs. (3). Introduces concepts and tools used to market sport and physical activity. Emphasizes marketing strategies that are applicable to the sport administrator, teacher/coach and exercise professional. Prerequisite: MKD 300.

590. Independent Study. (1-3). Prerequisite: departmental consent.

705. Wellness in the Fitness Setting. (3). Introduces concepts and tools used to implement wellness programs; focuses on issues addressing the management of a health/wellness program. Prerequisites: senior standing, full standing in the Graduate School, or instructor’s consent.

720. Teaching Strategies. (3). Non-traditional and innovative techniques and strategies for increasing student participation and motivation in the physical education lesson. Prerequisites: senior standing, graduate standing, or instructor’s consent.

732. Introduction to ECG’s. (3). Develops a foundation in electrocardiography. Includes normal and abnormal ECG leads, rate and rhythm, ECG complexes and intervals, conduction disturbances, arrhythmias, ECG identification of myocardial infarction, and drug effects on the ECG. Prerequisites: KSS 530 and senior standing, full standing in the Graduate School, or instructor’s consent.

750. Workshop in Education. (1-4).

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.

760. Sport in Society. (3). Impact of sports on American culture, including economics, mythology, education, religion, ethics, professional sports, and minorities.


780. Cooperative Education Field Study. (1-8). Provides the graduate student with a field placement which integrates theory and practice as it relates to sport administration; takes place in a different setting than KSS 547A. Students spend the equivalent of full-time employment in the appropriate agency for one full semester. Prerequisites: senior standing, departmental consent, KSS 470, 2.500 minimum GPA overall and major admission to College of Education. May be repeatable for credit with a limit of eight hours toward the graduate degree. Offered Cr/NC only.

790. Applied Exercise Physiology. (3). Focuses on the applied aspect of exercise physiology. Includes the areas of environmental influences on performance, optimizing performance through training nutrition, and ergogenic aids, and training and performance of the athlete. Focuses on the various components of sport administration by reading the various related materials and entering into dialogue with practicing administrators.

Courses for Graduate Students Only

800. Recent Literature in the Profession. (3). Survey of current research in physical education. Includes a comprehensive interpretation of the literature and research in the field.

801. Leadership and Management in Sport. (3). Initial introduction into the administration of sports in public schools, institutions of higher education, and commercial and professional sports organizations. Learn about the various components of sport administration and the differences in performance and training between genders. Prerequisite: KSS 530 or 531.

812. Advanced Techniques in Physical Education. (3). Comprehensive coverage of selected techniques emphasizing class procedures. Includes laboratory experiences.

814. Analysis of Teaching. (3). An in-depth examination of teacher effectiveness. Includes analysis of research in physical education identifying significant teacher and student behaviors involved in effective teaching, examining evaluation models designed for analyzing and measuring teaching effectiveness, and developing intervention programs.

815. Fitness Assessment/Exercise Recommendations. (3). Introduces techniques appropriate for assessing physical activity, health appraisal, and fitness assessment as required for prescribing exercise programs for individuals without disease or with controlled disease. Requires out of class laboratory experiences. Prerequisites: KSS 530 or equivalent and graduate standing.
816. Physical Education in Secondary Schools. (3). For the physical education specialist. New concepts and recent trends in methodology, programming, and supervision at the secondary level.

825. Physical Education in Elementary Schools. (3). New concepts, recent trends, methodology, programming, and supervision. For the elementary teacher and physical education specialist.

830. Advanced Physiology of Exercise. (3). In-depth study into the physiological basis of exercise. Includes energy metabolism, respiratory dynamics, cardiovascular function, and regulation during rest, steady state and exhaustive physical activity. Emphasizes immediate and long-term adaptation to exercise and training. Prerequisite: KSS 530.

835. Legal Issues in the Profession. (3). Acquaints the graduate student with legal research and the role that law plays in governing the sport and fitness industries. Actively research various theories of law and how they affect the nature of sport, fitness activity, the participants, and consumers. Investigates the basic concept of negligence utilizing illustrative cases from sports, physical education, and fitness activities. Also focuses on specific situations regarding injury and subsequent lawsuits.

847. Internship. (6). Internship in selected areas of specialization in exercise science or sports administration. Prerequisite: departmental consent.

857. Internship in Exercise Science/Wellness. (6). Internship in selected areas of specialization within the exercise science/wellness program. Students spend the equivalent of full-time employment in the appropriate agency for one full semester. Prerequisite: departmental consent.

860. Research Methods in the Profession. (3). Examination of research methodology as related to topics in health, PE, recreation, sports studies, and exercise science/wellness. Includes review and critical evaluation of the literature, research design and statistical processes, methodology, data collection techniques, computer-based analysis of data and thesis/report writing. Students design and complete a mini-research project.

875. Thesis Research. (1-2). Development of a research problem and proposal with the direction of a graduate faculty member. Repeatable but total credit hours counted toward degree requirements must not exceed two. Prerequisites: admission to graduate school in good standing, KSS 860, and departmental consent.

876. Thesis. (1-2). Repeatable but total credit hours counted toward degree requirements must not exceed two. Students must be enrolled in this course during the semester in which all requirements for the thesis are met. Prerequisites: KSS 875 and consent of the student's committee chair.

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

Music Education
See School of Music section, College of Fine Arts.

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
Mark M. Jong, associate dean

Departments
Aerospace, (316) 978-3410—Walter J. Horn, chairperson; Kamran Rokhsaz, master’s graduate coordinator; Klaus Hoffmann, doctoral graduate coordinator
Electrical and Computer, (316) 978-3415—Everett L. Johnson, chairperson; M. Ed Swain, graduate coordinator
Industrial and Manufacturing, (316) 978-3425—Abu Masiel, chairperson and doctoral graduate coordinator; Mark J. Kaiser, master’s graduate coordinator
Mechanical, (316) 978-3402—Richard T. Johnson, chairperson; Mahesh S. Greywall, graduate coordinator

The College of Engineering offers graduate programs leading to a Master of Science (MS) and a Doctor of Philosophy (PhD) in aerospace engineering, electrical engineering, industrial engineering, and mechanical engineering. Areas of specialization can be found in the individual departmental sections. A Master of Engineering Management (MEM) is also offered; details can be found in the Industrial and Manufacturing Engineering Department section. The graduate programs are enhanced by the presence of the industrial complex in Wichita and of the National Institute for Aviation Research on the Wichita State campus.

Master of Science
Admission Requirements
To be admitted to the MS program, students must have completed the equivalent of an undergraduate degree in an engineering or related field. Students with deficiency in certain areas may be required to take additional courses. For admission with full standing, a minimum grade point average (GPA) of 3.000 on a 4.000 scale is required for the last two years of undergraduate work. Students with a GPA less than 3.000 may be considered for probationary admission. Scores for the General Test of the Graduate Record Examination (GRE) are recommended for all students applying from non-U.S. institutions. The GRE scores will help in the admission decisions for those students with marginal grades.

Degree Requirements
The MS degree requires the completion of a Plan of Study approved by the student’s advisor and the department graduate coordinator, which must be filed within the first 12 credit hours of graduate course work. Three options are available:

1. The thesis option requires a minimum of 24 hours of course work plus a minimum of 6 hours of thesis.
2. The directed project option requires a minimum of 30 hours of course work plus a minimum of 3 hours of directed project, and
3. The course work option requires a minimum of 36 hours of course work.

At least 60 percent of the hours in the Plan of Study must be 700-level or above. Additional details of the MS degree may be obtained from the department graduate coordinator.

Examination
Before the MS degree is granted, candidates in the thesis option must pass an oral examination over the thesis. Candidates in the directed project option must give an oral presentation and submit a written report on their directed project. Candidates in the course work option must pass a written exit exam. Details of the exit exam can be obtained from the department graduate coordinator.

Doctor of Philosophy
PhD programs are offered by the four departments of engineering at WSU. Typical fields of specialization can be found in the individual departmental sections. These fields will be used in determining testing areas for the comprehensive examination in the major and minor fields.

Admission Requirements
Admission to any PhD program in engineering requires that the student has completed (or nearly completed) a master’s degree in engineering or physical science. Scores for the General Test of the Graduate Record Examination (GRE) must be submitted. Some students may find it necessary to take prerequisite courses to be able to meet the course breadth requirements. The student is recommen
d 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.

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. The committee will be composed of a minimum of five graduate faculty, with at least four having full membership including the chairperson who also must have authorization to chair doctoral committees. A majority of the advisory committee members must be from the major department and at least one member must be outside the student’s major department. The chairperson of the advisory committee should be the student’s dissertation advisor. 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 ensure proper breadth of course work, the Plan of Study must include at least 15 hours in the student’s major field and 18 hours outside the major area. The 18 hours must include a minimum of six hours in a minor area (defined by the advisory committee) and a minimum of six hours of mathematics/statistics. A Plan of Study normally contains about 60 hours of course work, including courses from the master’s degree, and should have a minimum of 60 percent of the hours (24 dissertation hours included) beyond the master’s work at the 800-900 level or equivalent.

Comprehensive Examination
After the PhD Plan of Study has been approved, and after sufficient course work has been completed, the student must take the comprehensive examina-
tion given by the advisory committee. The comprehensive examination will cover the major and minor fields and any course that the advisory committee deems necessary. The student's advisory committee is responsible for ensuring that the student takes the comprehensive examination at the appropriate time. No part of the comprehensive examination may be attempted more than twice. Upon passing the comprehensive examination, a student is known as an Aspirant for the PhD.

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 advisor 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, the advisory committee can petition for permission to administer the DAE. The aspirant will submit a written dissertation proposal to the advisory committee. After reading the proposal and receiving permission of the graduate dean, the advisory committee will conduct an oral examination to determine the aspirant'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.

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.

Aerospace Engineering
Graduate Faculty
Distinguished Professor: Ramesh Agarwal
Professors: Walter J. Horn (chairperson), Bert L. Smith
Associate Professors: Klaus A. Hoffmann (doctoral graduate coordinator), Steven J. Hooper, L. Scott Miller, Roy Y. Myose, M. Gawad Nagati, Michael Papadakis, Kamran Rokhsaz (master's graduate coordinator)
Assistant Professors: Thomas E. Lacy, John S. Tomblin

The Department of Aerospace Engineering offers programs leading to Master of Science (MS) and Doctor of Philosophy (PhD) degrees. Faculty research provides valuable educational opportunities for graduate students. Current research topics include theoretical and experimental aerodynamics, computational fluid dynamics, composite materials, structures, damage mechanics, failure mechanics, impact dynamics and flight dynamics and control.

The department's research and instructional facilities are among the finest in the nation. They include six wind tunnels, a water tunnel, and a structural testing laboratory. Graduate students have opportunities to use the equipment in all laboratories for their research projects. Students may also use the research facilities in the University's National Institute for Aviation Research, including a composites lab and a crash dynamics lab. Computer facilities for students include mainframe terminals, high performance workstations, and various personal computers.

The department's programs are enhanced by Wichita's aviation heritage and the presence of major aerospace companies in the city, including Boeing, Cessna, Learjet, and Raytheon.

Graduate course work is scheduled so that engineers employed in the local industry may pursue graduate degrees.

Master of Science
Courses of study leading to the MS degree are available with specialization in any of the following four fields: (1) aerospace dynamics and fluid mechanics; (2) structures and solid mechanics; (3) flight dynamics and control; and (4) multidisciplinary analysis and design. Details of the MS program requirements can be found under the College of Engineering heading.

Doctor of Philosophy
Courses of study leading to the Doctor of Philosophy (PhD) degree are available with specializations in the same fields as listed above for the MS degree. Details of the PhD program requirements can be found under the College of Engineering heading.

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

Courses for Graduate/Undergraduate Credit


508. Systems Dynamics. (3). Lumped parameter modeling; classical, numerical, transform and state model methods of solution, introduction to systems with feedback; analogies of various physical systems. Prerequisites: AE 373 and Math 355.

512. Experimental Methods in Aerodynamics. (2). Lab and computer applications of the wind tunnel. Students may pursue separate research projects. Prerequisite: AE 424.


528. Aerospace Design I. (4) R; 2L. Methodology of vehicle design, mission objectives, regulations and standards, use of hand and computer methods for configuration development and component sizing, ethics and liability in design. Prerequisite: AE 514.


625. Flight Structures II. (3) Strength 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.

628. Aerospace Design II. (4) R; 2L. Preliminary design of flight vehicles; design iteration, sensitivity studies, optimization, economic considerations, and introduction to project management. Prerequisite: AE 528.

653. Basic Composite Materials. (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 514.

654. Manufacturing Composite Structures. (1-2) Manufacturing methods and tooling for fiber-reinforced polymer structures and structural components. Prerequisites: ME 250 and AE 659 both recommended.

660. Selected Topics. (1-3) Prerequisite: instructor's consent.

690. Independent Study. (1-3) Arranged individually under the supervision of a faculty member. Repeatable for credit. Prerequisite: consent of supervising faculty member.


703. Rotor Aerodynamics. (3) Aerodynamics of rotors, including propellers, wind turbines and helicopters, momentum, blade element and potential flow analysis methods; helicopter dynamics, control and performance. Prerequisite: AE 424.


711. Intermediate Aerodynamics. (3) A study of potential flow equations of motion, singularities, boundary layer, fluid mechanics, Navier-Stokes equations, linear stability analysis, boundary layers, scalar representation of the Navier-Stokes equations, and ship hydrodynamics. Prerequisite: AE 424 or ME 531.

712. Advanced Aerodynamics Laboratory. (3) Includes potential flow solution techniques, flow visualization, wind tunnel tests, and an introduction to aeroelasticity. Prerequisites: AE 424 or ME 521.

713. Introduction to Aeroelasticity (3) Overview of phenomena and interactions among aeroelastic, inertial and elastic forces. Introduction to aerospace structures. Includes such specific cases as divergence, control effectiveness, control reversal, flutter, buffet, dynamic response to rapidly applied periodic forces. Prerequisites: AE 333, ME 424 or equivalent.


715. Intermediate Space Dynamics. (3) Advanced topics in orbital mechanics—vector mechanics perspective of the two-body problem, interplanetary missions including gravity assist maneuvers, rocket performance, orbital dynamics, general relativistic effects on orbit determination and relative and dynamic stability. Prerequisites: AE 333, ME 324 or equivalent.

716. Compressible Fluid Flow. (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 equation, method of characteristics, conical shocks and subsonic similarity laws. Prerequisites: AE 420, AE 424, or ME 521 or equivalent.

719. Introduction to Computational Fluid Dynamics. (3) Classification of parabolic differential equations, parabolic equations, numerical solution of parabolic elliptic, and hyperbolic differential equations, stability analysis, boundary conditions, scalar representation of the Navier-Stokes equations, and incompressible Navier-Stokes equations. Prerequisite: AE 424 or ME 531.


731. Theory of Elasticity. (3) Develops the equations of the theory of elasticity and uses them to determine stress and displacement fields in linear elastic isotropic bodies. Use Airy stress functions to obtain solutions. Introduces energy principles and variational methods. Prerequisite: instructor’s consent.


737. Mechanics of Damage Tolerance. (3) An introduction to the mechanics of damage tolerance with emphasis on stress analysis oriented fracture mechanics. Topics include stress intensity, fracture toughness, residual strength, fatigue crack growth rate, fatigue crack propagation, and damage tolerance concepts. Prerequisites: AE 523 or instructor’s consent.

750. Aerospace Engineering Workshop. (1-4) Various topics in aerospace engineering. Prerequisites: instructor’s consent.

760. Selected Topics. (1-3) Prerequisite: instructor’s consent.


777. 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 of multidegree freedom systems. Introduces continuous systems. Prerequisites: Math. 355, AE 373 and 375.

Courses for Graduate Students Only

801. Structural Dynamics. (3) A study of the dynamic response of multiple degrees of freedom systems and continuous systems subject to external dynamic forcing functions. Classical, numerical and energy solutions. Prerequisite: AE 777.


812. Aerodynamics of Viscous Fluids. (3). Viscous fluid flow theory and boundary layers. Prerequisite: AE 424 or ME 521.

814. Advanced Flight Dynamics II. (3). Sensitivity analyses of flight parameters, control surface sizing; handling qualities; pilot-in-the-loop analyses; trajectory optimization. Prerequisite: AE 714.

815. Spacecraft Attitude Dynamics. (3). An in-depth study of advanced six degrees-of-freedom kinematics, spinning motion, effects of gravitational forces, simple spacecraft dynamics, and flexible spacecraft. Prerequisite: AE 714 or 773 or equivalent.

817. Transonic Aerodynamics. (3). 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; nozzle throat design; detached shock wave computations; computational methods. Prerequisites: AE 424 or equivalent, and AE 711 or 716.


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 222 and 731.

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.


860. Selected Topics. (1-3). Prerequisite: instructor's consent.

876. MS Thesis. (1-6). Graded S/U only.

878. MS Directed Project. (1-3). A project conducted under the supervision of an academic advisor for the directed project option. Requires a written report and oral presentation on the project. Graded S/U only. Prerequisite: consent of academic advisor.

890. Independent Study. (1-3). Arranged independent study in specialized areas of aerospace engineering under the supervision of a faculty member. Repeatable for credit. Prerequisite: consent of supervising faculty member.

911. Airfoil Design. (3). 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 lift and control devices. Prerequisites: AE 711, Math. 757.

913. Aerodynamics of Aerelasticity. (3). A study of thin airfoils and finite wings in steady flow and thin airfoils oscillating in incompressible flow. Includes extension to compressible and three-dimensional airfoils and modern methods for low aspect ratio lifting surfaces. Prerequisites: AE 711 and 777 or instructor's consent.

919. Advanced Computational Fluid Dynamics. (3). A study of structured grid generation schemes, transformation of the governing equations of fluid motion, numerical algorithms for the solution of Euler equations, parabolized Navier-Stokes equations, and Navier-Stokes equations. Explore the fundamentals of unstructured grids and finite volume schemes. Prerequisite: AE 719 or ME 858.

936. Theory of Plasticity. (3). Includes criteria of yielding, 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. Includes two dimensions and axially symmetric problems of finite deformation and variational and extremum principles. Prerequisite: AE 731.

960. Advanced Selected Topics. (1-3). Prerequisite: instructor's consent.


990. Advanced Independent Studies. (1-3). Prerequisite: instructor's consent.

Electrical and Computer Engineering

Graduate Faculty


Associate Professors: Raj S. Katti, Huyuck M. Kwon, John S. O'Loughlin, Larry D. Paarmann, Steven R. Skinner, Asrat Teshome

Assistant Professor: Ravindra Pendse

The Department of Electrical and Computer Engineering offers courses of study leading to the Master of Science (MS) and Doctor of Philosophy (PhD) degrees.

Master of Science

Courses of study leading to the MS degree are available with specializations in any of the following five fields: (1) control systems, (2) communications, (3) signal processing, (4) computers and digital systems, and (5) energy and power systems. Details of the MS program can be found under the College of Engineering heading.

Doctor of Philosophy

Courses of study leading to the Doctor of Philosophy (PhD) degree are available with specializations in control theory, communications/signal processing, digital systems, and energy and power systems. Details of the PhD program can be found under the College of Engineering heading.

Facilities

Modern electrical engineering laboratories contain facilities for experimental work in areas of instrumentation, control systems, computers and digital systems, electronics, circuits, energy conversion, power electronics, and power quality.

Courses for Graduate/Undergraduate Credit

582. Distributed Parameter Circuits. (3). 2R; 3L. A study of the theory and applications of distributed-parameter circuits with emphasis on transmission lines. Treats telegrapher's equations, transient signals on lossless lines, steady state signals on lossless lines, effects of lumped impedances, and Smith Chart techniques. Prerequisite: ECE 383.

585. Electrical Design Project I. (2-3). 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.


588. Advanced Electric Motors. (3). Advanced electric motor applications and theory. Includes single-phase motors, adjustable speed ac drive applications, and stepper motors. Prerequisites: ECE 488 and 492.

594. Microprocessor Based System Design. (3). Development of microprocessor based systems presented. Interfacing the address bus, data bus, and control bus to the processor chip studied. Memory systems and I/O devices interfaced to the appropriate busses. Vendor-supplied, special purpose chips, such as interrupt controllers, programmable I/O devices, and DMA controllers, integrated into systems designed in class. Prerequisites: ECE 238 and 294, or 394.
649. Principles of Power Distribution. (3). The distribution system is a vital component of the overall power system, providing quality electrical service. Provides an overview of the engineering fundamentals of distribution systems. Discusses distribution system planning and automation, primacy and secondary distribution networks. Presents various protection, coordination, and reliability. Prerequisite: ECE 586 or departmental consent.

726. Digital Communication Systems I. (3). Presents the theoretical and practical aspects of digital and data communication systems. Topics include the design and analysis of digital communication systems, digital signal processing, and digital communication systems in space. Prerequisite: ECE 636 or departmental consent.


790. Independent Study in Electrical Engineering. (1-3). Arranged individually, independent study in specialized content areas in electrical engineering under the supervision of a faculty member. Repealable for credit. Prerequisite: departmental consent.

791. State Variables. (3). Review of mathematical concepts and techniques for modeling dynamic systems. Includes the study of state models and their stability, analysis, and design. Prerequisite: ECE 636 or departmental consent.

817. Selected Topics in Electrical Engineering. (1-4). New or special courses presented on sufficient demand. Repeatable for credit. Prerequisite: departmental consent.

826. Digital Communication Systems II. (3). Presents in-depth theoretical and practical digital communication systems and channels. Includes the modeling and analysis of all digital communications receivers with intermediate
frequency (IF) sampling and A/D converter; synchronization techniques; trellis-coded modulation (TCM); Multiple Access: fading multipath channel; radio frequency interference (RFI) channel; and jamming channel. Applies to digital satellite communications systems and digital cellular code division multiple access (CDMA) systems. Prerequisite: ECE 726.

842. Modern Filters. (3). Concerned with estimating a signal of interest or the state of a system in the presence of additive noise, making use of the statistical characteristics of both the signal and the noise. Course includes Wiener filters, Kalman filters, linear prediction, and algorithms for linear prediction parameter estimation. Prerequisite: ECE 754.


845. Adaptive Filters. (3). Concerned with estimating a signal of interest or the state of a system in the presence of additive noise, but without making use of prior statistical characteristics of the signal or the noise. Concerned with the design, analysis, and application of recursive filtering algorithms that operate in an environment of unknown statistics. Content includes least mean square (LMS) filters, recursive least-square (RLS) filters, and recursive least-squares lattice (RLS) filters. All are adaptive and self-designing. Includes concepts of convergence, tracking ability, and robustness. Prerequisite: ECE 754.

846. Spectrum Estimation. (3). Concerned with estimating the frequency spectrum, primarily power but also energy, of a signal of interest. Reviews historical methods, but concentrate on modern methods that are model based, achieve high resolution even for short data lengths. Content includes maximum entropy, maximum likelihood, autoregressive, moving average, and autoregressive moving average spectrum estimation methods. Applications also included. Prerequisite: ECE 754.

854. Stochastic Control Systems. (3). Reviews the pertinent aspects of deterministic system models; stochastic processes and linear dynamic system models emphasizing linear systems driven by white Gaussian noises; linear estimation and optimal filtering; design and performance analysis of Kalman filters. Prerequisites: ECE 684 and 754.

876. MS Thesis. (1-6). Graded S/U only. Repeatable for credit toward the MS thesis option up to six hours. Prerequisite: prior consent of MS thesis advisor.

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.

878. MS Directed Project. (1-3). A project conducted under the supervision of an academic advisor for the directed project option. Requires a written report and an oral presentation on the project. Graded S/U only. Prerequisite: consent of academic advisor.

882. Speech Digital Signal Processing. (3). An introductory study in speech signal generation and digital speech signal processing. Includes speech generation and perception, acoustic phonetic models, and speech analysis methods of speech signal production, analysis methods of digital speech signals, digital representations of speech signals, short-time Fourier transforms and the application to spectrograms, pitch and formant estimation, parametric and nonparametric methods of signal representation, linear prediction methods, speech data compression, and some methods of speech synthesis and recognition, and speech signals in the presence of noise. Prerequisites: ECE 754.

883. Digital Filters. (3). A study of digital filter design methods. Includes both IIR and FIR filters. Discusses software and hardware implementations; introduces two-dimensional digital filters. Prerequisite: ECE 782 or departmental consent.

884. Discrete-Time Control Systems. (3). Fundamentals of input-output and state-space analysis; difference equations and state space presentations; pole placement and observer design; dynamic programming and discrete minimum principle; linear state regulator design; equality-constrained control problems. Prerequisites: ECE 684 and 782.

886. Error Control Coding. (3). Presents fundamental topics from information theory which underlie source and error control coding. Reviews topics from finite field theory and vector spaces essential for the study of coding. Presents the concepts of code space, sphere packing and perfect codes. Considers linear (n, k) block codes in some detail including 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. Presents convolutional codes and topics such as the Viterbi algorithm for decoding. Prerequisites: ECE 586 and 754.

893. Optimal Control. (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: ECE 792.


895. Nonlinear Control Theory. (3). An introduction to the analysis and design of nonlinear control systems emphasizing stability. Includes stability definitions, phase-plane methods, linearization, time and frequency domain stability criteria, limit-cycle criteria and exact methods for relay control systems. Prerequisites: ECE 684 and 792.

897. Operation and Control of Power Systems. (3). Acquires electric power engineering students with power generation systems, their operation in economic mode and their control. Introduces mathematical optimization methods and applies them to practical operating problems; introduces methods used in modern control systems for power generation systems. Prerequisite: ECE 598.

960. Advanced Selected Topics in Electrical Engineering. (1-3). Presents new or specialized advanced topics in engineering. Repeatable for credit. Prerequisite: instructor's consent.


993. Large Scale Control Systems. (3). Reviews methods of signal representation, linear prediction methods, and applications to practical operating problems. Introduces methods used in modern control systems for power generation systems. Prerequisite: ECE 598.

Industrial and Manufacturing Engineering

Graduate Faculty

Professors: Jeffrey Fernandez, Don Malzahn, Abu Masud (chairperson and graduate coordinator)

Associate Professor: S. Hossein Cheraghi
The Industrial and Manufacturing Engineering (IMfgE) Department is committed to instruction and research in design, analysis, and operation of manufacturing and other integrated systems of people, material, equipment, and capital. The graduate programs are directed toward both full-time and part-time students with a special emphasis on providing training and experience in performing independent research on topics with theoretical as well as applied interest. Students are encouraged to conduct research or take courses on topics that overlap several disciplines.

The IMfgE Department offers the Master of Engineering Management (MEM) degree and Master of Science and Doctor of Philosophy programs in industrial engineering (MSIE and PhDIE, respectively). Fields of specialization for the MSIE and PhDIE programs include engineering systems, ergonomics/human factors, and manufacturing systems engineering.

Facilities

The following facilities used in teaching and research are available for graduate students:

1. The Graphics Lab has 25 NT stations with ProEngineer, AutoCAD, ARENA, and NeuralWare software.
2. The Metrology Lab has a Mitutoyo CMM machine and a host of metrology tools.
3. The CIM Lab has a CNC machine center, a CNC lathe, several table-top CNC lathes/drill machines, robotic arms, and MasterCAM software.
4. The Manufacturing Processes Lab has several engine lathes, drill presses, and facilities for arc/gas welding, casting, and thermo-forming.
5. The Non-Traditional Machining Lab currently has an EDM machine.
6. The Automation and Controls Lab has four workstations (with PLC, I/O devices and appropriate software) and data collection and control devices.
7. The Ergonomics/Human Factors Lab has a 3-D motion analysis system, EKG system, treadmill, bicycle ergometer, metabolic cart, load cells, audiometric chamber, and other measurement devices.
8. The Graduate Computing Lab, available only to IE/MME students, has a SUN workstation and several PCs, all on engineering LAN.
9. The Open Computing Lab has 43 PCs, several laser printers, and a wide-ploter, all on engineering LAN.
10. There are several SUN and SG1 workstations for use in research.

Curriculum and Research Areas

The industrial and manufacturing engineering teaching and research emphases are clustered around the following three areas.

Engineering Systems. Emphases include optimization; multi-criteria decision making; modeling and analysis of manufacturing/service systems; management of engineering enterprises; decision analysis; total quality management; application of intelligent systems and simulation in manufacturing; and activity-based costing.

Ergonomics/Human Factors. Emphases include industrial ergonomics; human-machine systems; occupational safety and other industrial hygiene issues; and, ergonomics and human factors issues in aviation, space systems. Another area of continued research involvement is rehabilitation engineering, especially dealing with persons with severe physiological disabilities.

Manufacturing Systems Engineering. Emphases include planning, design, and control of manufacturing systems; CAD/CAM/CIM systems; measurement inspection; GD&T; manufacturing processes, forming; tool/jigs design; assembly; and, free-form surfaces manufacturing.

Master of Science in Industrial Engineering

The Master of Science in Industrial Engineering (MSIE) program offers specialization in all the three areas described above. Students can complete the degree requirements through any of the following options: Thesis, Directed Project, or All Course.

Admission Requirements. In order to be admitted in the MSIE program, applicants must:

1. possess an undergraduate degree in engineering, science, business, or other related discipline;
2. have satisfactorily completed (with B or better) Math 344 Calculus III; IEN 254 Engineering Probability and Statistics I; IEN 255 Engineering Economy; IEN 524 Engineering Probability and Statistics II; and, IEN 549 Industrial Ergonomics or IEN 550 Operations Research or IEN 553 Production Systems (depending on the chosen major area);
3. have programming competence in C, Visual Basic, or FORTRAN;
4. have a minimum GPA of 3.0, on a 4.0 scale, in the last 60 hours of undergraduate courses and in all graduate courses (students with a lower GPA may be considered only for probationary or non-degree admission);
5. indicate one of the following as a major area: engineering systems, ergonomics/human factors, or manufacturing systems engineering.

In addition,

6. Students with English as a second language must have a minimum TOEFL score of 550. Students requesting financial assistance are encouraged to submit a TSE score (minimum acceptable score is 50).
7. Students with an undergraduate degree from a program not accredited by ABET are encouraged to submit GRE scores.

Degree Requirements

1. Core courses (two of the following three, depending on chosen major area): IEN 549 Industrial Ergonomics, IEN 550 Operations Research, and IEN 553 Production Systems;
2. Major area courses: at least 9 hours from a selected list of area courses;
3. Technical electives: from an approved list of courses (no more than 6 hours from another department);
4. An approved plan of study;
5. Completion of the minimum required graduate credit hours with at least 3.0 GPA:
   a. Thesis Option - a minimum of 24 hours of course work plus 6 hours of thesis,
   b. Directed Project Option - a minimum of 30 hours of course work plus 3 hours of directed project.

All Course Option - a minimum of 33 hours of course work plus a written core competency exam; and
6. Up to 12 hours may be transferred from another accredited Graduate School.

Master of Engineering Management

The Master of Engineering Management (MEM) degree program is geared toward helping engineers, technologists, develop planning, decision making, and management skills while receiving advanced technical knowledge. Students should consid-
6. Up to 12 hours may be transferred from another accredited Graduate School.

**Doctor of Philosophy**

Courses of study leading to the Doctor of Philosophy (PhD) degree are available with specialization in any of the three areas discussed earlier. Details of the PhD program can be found under the College of Engineering heading.

**Industrial Engineering**

Courses for Graduate/Undergraduate Credit


553. Production and Inventory Control. (3). Quantitative techniques used in the analysis and control of production systems. Includes forecasting, inventory models, operation planning and scheduling. Prerequisite: IEN 550.

554. Statistical Quality Control. (3). A study of the measurement and control of product quality using statistical methods. Includes acceptance sampling, statistical process control and total quality management. Prerequisite: IEN 524.

556. Information Systems. (3). A study of the implementation and computer analysis of information management systems. Prerequisites: IEN 255 and ECE 239 or AE 227.


563. Facilities Planning and Design. (3). Quantitative and qualitative approaches to problems in facilities planning and design, emphasizing activity relationships, space requirements, materials handling and storage, plant layout and facilities location. Prerequisites: IEN 350 and MgrE 258. Corequisite: IEN 452.

565. Systems Simulation. (3). The design of simulation models and techniques for use in designing and evaluating discrete systems, including manufacturing systems too complex to be solved analytically. Emphasizes general purpose computer simulation languages. Prerequisites: IEN 550 or equivalent and ECE 239 or AE 227. Corequisite: IEN 524.

590. Industrial Engineering Design I. (3). A design project utilizing industrial engineering principles, performed under faculty supervision, for solving practical problems. May not be counted toward a graduate Industrial Engineering major. May not get credit in both IEN 390 and Mgr E 390. Prerequisites: must be within one year of graduation and departmental consent.

564. Engineering Management. (3). An introduction to the design and control of technologically based projects. Considers both the theoretical and practical aspects of systems models, organizational development, project planning, and control, resource allocation, team development and personal skill assessment. Prerequisite: IEN 254 or Stat. 471.

570. Industrial Robotics. (3). A study of principles and applications of industrial robots in manufacturing systems. Includes robot classifications, actuators, sensors, control systems and robot programming. Prerequisite: ECE 239 or AE 227.

590. Industrial Engineering Design II. (3). Continuation of the design project initiated in IEN 590 or the performance of a second industrial engineering design project. May not be counted toward a graduate industrial engineering major. May not get credit in both IEN 590 and Mgr E 590. Prerequisites: IEN 590 and departmental consent.


740. Analysis of Decision Processes. (3). Decision analysis as it applies to capital equipment selection and replacement, project design and policy development. Explores consideration of risk, uncertainty and multiple attributes is developed and applied using modern computer-aided analysis techniques. Prerequisites: IEN 254 and 255.

749. Advanced Ergonomics. (3). A continuation of IEN 549. Includes principles and application of human factors to the design of the workplace, displays, control systems, hand tools and video display terminals. Prerequisite: IEN 549.

750. Industrial Engineering Workshops. (1-4). Various topics in industrial engineering. Prerequisite: departmental consent.

754. Reliability and Maintainability Engineering. (3). Studies problems of quantifying, assessing and verifying reliability. Presents various factors that determine the capabilities of components emphasizing practical applications. Examples and problems cover a broad range of engineering fields. Prerequisite: IEN 524.

755. Design of Experiments. (3). Application of analysis of variance and experimental design for engineering studies. Includes gener-
Courses for Graduate Students Only

835. Applied Forecasting Methods. (3). A study of the forecasting methods, including smoothing techniques, time series analysis and Box-Jenkins models. Prerequisite: IEN 524.

842. Advanced Simulation. (3). A study of advanced techniques and methods for statistically selecting input distributions for and analyzing output from simulation models. Also studies variance reduction and model validation techniques. Prerequisites: IEN 565 and 524.

854. Quality Engineering. (3). A broad view of quality tools and their integration into a comprehensive quality management and improvement system. Covers the theory and approaches of the major quality leaders such as Deming, Juran, and Crosby. Explores offline and online quality engineering techniques, including cost of quality: the seven "olds" and seven "news". Quality Function Deployment, and statistical process control methods. Explores design of engineering experiments, including Taguchi's methods. Prerequisite: IEN 524.

875. Computer Integrated Manufacturing. (3). A study of the concepts, components and technologies of CIM systems, enterprise modeling for CIM, local area networks, CAD/CAM interfaces, information flow for CIM, shop floor control and justification of CIM systems. Prerequisite: IEN 259 or knowledge of a programming language.

876. Topics in Industrial Engineering. (3). New or special courses are presented under this listing. Repeatable for credit when subject matter warrants.

878. Cooperative Education. (1-8). A work-related placement with a supervised professional experience to complement and enhance the student's academic program. Intended for master's level and doctoral students in IE. Repeatable for credit. May not be used to satisfy degree requirements. Prerequisite: departmental consent and graduate GPA of 3.0 or above. CR/NC only.

879. Assembly Design and Planning. (3). Studies various topics related to design, planning, and fabrication of mechanical assemblies. Includes joint processes, design for assembly (DFA) principles, assembly design, product modeling, product data management, assembly sequencing, and assembly tool design. Prerequisite: Mfg. E. 258 and ECE 239 or knowledge of a programming language.

885. Tolerancing in Design and Manufacturing. (3). Provides a basic understanding of the theory and application of tolerancing in design, manufacturing, and inspection. Reviews current literature in the area of tolerancing and inspection. Includes detailed discussion of the ASME standards on geometric dimensioning and tolerancing (GD&T). GD&T verification procedures, tolerance analysis and allocation, statistical tolerancing, and Taguchi's approach to tolerancing.

890. Multiple Criteria Decision Making. (3). An extensive treatment of techniques for decision making where the multiple criteria nature of the problem must be recognized explicitly. Prerequisite: IEN 550.

949. 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: IEN 549.

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: IEN 549 and AE 223.

956. Knowledge-Based Systems. (3). Introduction to the concepts and techniques in knowledge-based systems or expert systems. Includes design and development of knowledge-based systems using microcomputer-based software. Prerequisite: ECE 239 or AE 257 or departmental consent.

960. Advanced Selected Topics. (1-3). New or special courses on advanced topics presented under this listing, on sufficient demand. Prerequisite: instructor's consent.

970. Machine Vision Applications. (3). A study of machine vision techniques, such as thresholding, edge detection, boundary following, object identification and measurements using machine vision. Emphasizes the application of machine vision techniques in automated inspection and object recognition. Prerequisites: ECE 239 or knowledge of a programming language, IEN 567, or instructor's consent.


990. Advanced Independent Study. (1-3). Arranged individual; independent study in specialized content areas. Repeatable toward the PhD degree. Prerequisites: advanced standing and departmental consent.

Manufacturing Engineering

Courses for Graduate/Undergraduate Credit

502. Metrology. (3). Covers new methods of manufacturing metrology and digital measurement techniques. Introduces devices such as CMM, Coordinate Measuring Machines and non-contact optical measurement devices. Includes a laboratory to familiarize the students with these devices. Prerequisites: IEN 254 and Mfg. E. 258.

551. Manufacturing Tools and Processes. (3). Introduces the concepts of concurrent engineering, tool design, fixture design, jig design, presswork design, machine tools and mold design. Also includes the fundamental soft gauge design and measuring fabrication processes, assembly tooling and processes. Prerequisite: Mfg. E. 258.

575. Computer Aided Manufacturing. (3). An introductory course in Computer Aided Manufacturing. Examines the basic principles of CAM, such as computer-aided design, NC programming, CAD/CAM integration, and principles of group technology and part family recognition. Prerequisites: Mgf. E 258 and ECE 239 or equivalent.

590. Manufacturing Engineering Design I. (3). First of two capstone design project courses utilizing manufacturing engineering principles. Performed under faculty supervision for solving practical problems. May not be counted toward a graduate engineering major. May not get credit in both IEN 590 and Mgf. E 598. Prerequisites: must be within one year of graduation and departmental consent.

622. Computer Aided Design. (3). Intended as an introduction to 3-D computer graphics. Discuss concepts of CAD/CAM/CIM, design theory and animation, knowledge-based CAD systems and the use of AI tools in CAD. Describes the design interchange standards and the interface between CAD/CAM. Prerequisites: IEN 272, ECE 239 or equivalent.

683. Applications of Finite Element Analysis in Mechanical Engineering Systems. (3). Introduces the finite element method as a powerful and general computer tool for solving problems related to mechanical engineering systems. Applies finite element techniques to one and two-dimensional mechanical engineering problems in fluid mechanics, heat transfer, solid mechanics, and mechanical systems design. Introduces commercial finite element computer tools such as ALGOR and ANSYS. Prerequisite: ME 459, ME 522 or equivalent.

645. Manufacturing Systems Engineering. (3). A study of the design, planning, implementation, and control of manufacturing systems. Discusses types of manufacturing systems, material requirement planning, capacity planning, facilities planning, scheduling, and an introduction to computer-aided process planning. Prerequisite: Mgf. E 358.

654. Non-traditional Machining Processes. (3). A study of the role and economics of non-traditional processes; use of laser and electron beams in inspection and measurement; heat treatment: material removal; mechanical properties; and coating. Also covers the fundamentals of electro-discharge machining, electro-chemical machining, chemical milling, and water-jet machining. Prerequisite: Mgf. E 358.

658. Forming Processes. (3). Introduces the fundamentals of deformation and the physical and mathematical modeling of forging, rolling, extrusion, drawing, swaging, coining, sheet-metal working; spinning. Also covers the fundamentals of tool and die design. Prerequisite: AE 333.

590. Manufacturing Engineering Design II. (3). Continuation of the project initiated in Mgf. E 590 or a second industry-based design project. May not be counted toward a graduate industrial engineering major. May not get credit in both IEN 690 and Mgf. E 690. Prerequisites: Mgf. E 590 and departmental consent.

Mechanical Engineering

Graduate Faculty

Professors: Jharna Chaudhuri, A. Richard Graham, Mahesh S. Greywall (graduate coordinator), Richard T. Johnson (chairperson)

Associate Professors: Behnam Bahr, Hanid M. Lankarani, Julie A. Mathis, T.S. Ravigururan, James E. Steck, George E. Talis

Assistant Professors: David N. Koert, C. Charles Yang

The Department of Mechanical Engineering offers courses of study leading to the Master of Science (MS) and Doctor of Philosophy (PhD) degrees. Departmental faculty have developed research activities in several areas of specialization, including engineering materials properties and failure modes; intelligent controls, robotics, and automation; multidisciplinary impact dynamics; mechanical engineering design and manufacturing; thermodynamics and transport processes; combustion; and heating, ventilating, and air-conditioning (HVAC) and energy conservation.

Many departmental faculty members are associated with Wichita State's National Institute for Aviation Research (NIAR). This association makes facilities of the NIAR available for research activities of these faculty and their graduate students. NIAR and Departmental faculty include a scanning electron microscope (SEM) located in the materials laboratory, the crash dynamics laboratory, the shock and vibration laboratory, the propulsion laboratory, the computer-integrated manufacturing laboratory, and the mechatronics laboratory.

The department's programs and efforts are influenced by the concentration of technology-oriented industries in the Wichita area. Particular attention is given to scheduling course work so that engineers employed by local industry may pursue a graduate degree in mechanical engineering.

Master of Science

Courses of study leading to the MS degree are available with specialization in any of the departmental faculty research areas described earlier. Details of the MS program can be found under the College of Engineering heading.

Doctor of Philosophy

Areas of research specialization for the Doctor of Philosophy (PhD) program are within those stated previously for the MS degree. Exact specialties will depend upon the student's dissertation advisor and graduate committee. Other details of the Doctor of Philosophy (PhD) program can be found under the College of Engineering heading.

Courses for Graduate/Undergraduate Credit

The courses numbered 502 through 760 are not automatically applicable toward an advanced degree in engineering. They must be approved by the student's advisor, 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 Thermodynamics I emphasizing cycle analysis, thermodynamic property relationships and psychrometrics, with an introduction to combustion processes and chemical thermodynamics. Prerequisites: ME 398 with grade of C or better.

503. Mechanical Engineering Systems Laboratory. (3). Selected experiments illustrate the methodology of experimentation as applied to mechanical and thermal systems. Experiments include the measurement of performance of typical systems and evaluation of physical properties and parameters of systems. Group design and construction of an experiment is an important part of the course. Team and individual efforts are stressed as are written and oral presentation skills. Prerequisites: ME 402, Eng. 102. Corequisite: ME 522.


522. Heat Transfer. (3). Temperature fields and heat transfer by conduction, convection and radiation. Study of steady and transient multidimensional conduction, free and forced convection and combined heat transfer. Discusses various analytical methods, analogies, numerical methods and approximate solutions. Prerequisite: ME 321.

523. Fluid and Heat Flow Laboratory. (1). (3L). Laboratory course designed to illustrate and reinforce the concepts in ME 521 and ME 522. Prerequisite: ME 521; corequisite: ME 522.

541. Mechanical Engineering Design II. (3). Applications of 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. Prerequisite: ME 439.

544. Design of HVAC Systems. (3). Analysis and design of heating, ventilating and air conditioning systems based on psychrometrics, thermodynamics and heat transfer fundamentals. Focuses on design procedures for space air-conditioning and heating and cooling loads in buildings. Prerequisites: ME 521 and 522 or equivalent.

550. Selected Topics in Mechanical Engineering. (1-3). New or special topics are presented on sufficient demand. Repeatable for credit when subject material warrants. Prerequisite: departmental consent.

602. Engineering for the Environment. (3). Engineering for the environment, air, water, and noise pollution and handling of hazardous wastes. Covers briefly the major pollutants, their major sources, their effects, and their attainment levels set by the U.S. Environmental Protection Agency. Emphasizes engineering systems for pollution control. Prerequisites: ME 398, AE 223, IEN 250, ECE 282, or departmental consent.

631. Heat Exchanger Design. (3). Covers analytical models for forced convection through tubes and over surfaces, experimental correlations for the Nusselt number and pressure drop; design of single and multiple pass shell and tube heat exchangers; compact baffled, direct contact, plate, and fluidized bed heat exchangers; radiators, recuperators, and regenerators. Prerequisites: ME 521 and 522 or equivalent.

637. Computer-Aided Engineering. (3). R, 3L. Integrates computer-aided design, finite element analysis, kinematics analysis, heat transfer analysis, and other considerations for design of mechanical components and systems. Provides a blend of theory and practice. Prerequisite: ME 439. Corequisite: ME 522 or equivalent.

639. Applications of Finite Element Methods in Mechanical Engineering. (3). Introduces the finite element method (FEM) as a powerful and general tool for solving differential equations, arising from modeling practical engineering problems. Finite element solutions to one and two dimensional mechanical engineering problems in fluid mechanics, heat transfer, solid mechanics, and vibrations. Includes Galerkin’s and variational finite element models. Introduces commercial finite element computer tools such as AILGOR and ANSYS. Prerequisites ME 429, 522 or equivalent.

641. Thermal Systems Design. (3). Modeling, simulation, and optimization used as tools in the design of thermal systems. Engineering design principles, characteristics of thermal equipment, and economic considerations. Studies open-ended problems, including work on design projects in small groups. Prerequisites: ME 502 and 521.

650. Selected Topics in Mechanical Engineering. (1-3). New or special topics are presented on sufficient demand. Repeatable for credit when subject material warrants. Prerequisite: departmental consent.

655. Internal Combustion Engines (3). A broad coverage of the basics of internal combustion engines with emphasis on spark ignition and diesel engines. Introduces engine types and configurations and important variables used to evaluate performance and efficiency. Fundamentals learned in thermodynamics, chemistry, and mechanical design are used to understand engine design, performance, and control. Applications discussed are focused primarily on automotive use and involve power output, fuel consumption, and exhaust emissions. Prerequisite: ME 398.


662. Mechanical Engineering Practice. (3). R, 1R, 6L. An exercise in the practice of mechanical engineering, students engage in a comprehensive design project requiring the integration of knowledge gained in prerequisite engineering science and design courses. Team effort and both oral and written presentations are a part of the experience. Open only to mechanical engineering students in their last semester of study. Prerequisite: last semester of study.

664. Introduction to Fatigue and Fracture. (3). Deals with the primary analytical methods used to quantify fatigue damage. These are the stress life approach, strain life approach and the fracture mechanics approach. Prerequisites: ME 250 and AE 333.

665. Selection of Materials for Design and Manufacturing. (3). Focuses on the selection of engineering materials to meet product and manufacturing requirements. Solution to various product and manufacturing problems by appropriate selection of materials is illustrated through the use of numerous examples and case studies. Prerequisites: ME 280, AE 333.

666. Materials in Manufacturing Processes. (3). Deals with fundamental principles of materials and their applications to manufacturing processes. Prerequisites: ME 290.

667. Mechanical Properties of Materials I. (3). Major focus on deformation mechanisms and on crystal defects that significantly affect mechanical properties. Also covers plasticity theory, yield criteria for multi-axial states of stress, fracture mechanics, and fracture toughness. Includes some review of basic mechanics of materials and elasticity as needed. Prerequisite: ME 250 or departmental consent.


678. Studies in Mechanical Engineering. (1-3).* Arranged individually, independent study in specialized content areas in mechanical engineering under the supervision of a faculty member. Requires written report or other suitable documentation of work for departmental records. Three (3) hours maximum technical elective credit. Not for graduate credit. Prerequisite: departmental consent.

719. Basic Combustion Theory. (3). Introduction to the fundamental principles of combustion processes. Focuses on the chemistry and physics of combustion phenomena, i.e., detonation and flames, explosion and ignition processes. Prerequisites: Chem. 111Q and ME 502.

729. Computer-Aided Analysis of Mechanical Systems. (3). Modeling and analysis of mechanical systems including automatic generation of governing equations for kinematic and dynamic analysis, as well as computational methods and numerical solutions of governing equations. Open only to students on projects on engineering applications such as vehicle ride simulation, fluidics, and robotics. Prerequisites: ME 339, AE 373 and Math 555.

757. Robotics and Control. (3). A systems engineering approach to robotic science and technology. Fundamentals of manipulators, sensors, actuators, end-effectors and product design for automation. Includes kinematics, trajectory planning control, programming of manipulators and simulation, along with introduction to artificial intelligence and computer vision. Prerequisite: ME 659 or equivalent.

759. Advanced Machine Design. (3). A broad coverage of principles of mechanical analysis and design of machine elements. Emphasizes advanced system modelling, prediction of natural frequencies and forced resonance, effect of support flexibility, failure theories used in design, and fatigue life prediction. Typical mechanical systems studied are gears, shafts, rotating machinery, and many types of spring-mass systems. Uses fundamentals learned in mechanics, strength of materials, and thermal sciences to understand mechanical system modelling, analysis, and design. Prerequisite: ME 541 or instructor’s consent.

747. Microcomputer-Based Mechanical Systems. (3). 2R, 3L. Microcomputer-based real-time control of mechanical systems. Familiarizes students with design and methodology of software for real-time control. Includes introduction to the C programming language which is most relevant to interfacing and implementation of control theory in computer-based systems. Laboratory sessions involve interfacing microcomputers to mechanical systems and software development for control methods such as PID. Prerequisite: ME 402 or departmental consent.

750. Special Topics in Mechanical Engineering. (1-3). New or special topics are presented on sufficient demand. Repeatable for credit when subject material warrants. Prerequisite: departmental consent.

755. Intermediate Thermodynamics. (3). Laws of thermodynamics, introduction to statistical concepts of thermodynamics, thermodynamic properties, chemical thermodynamics,
Maxwell's relations. Prerequisite: ME 502 or departmental consent.

759. Neural Networks for Control. (3). Introduces specific neural network architectures used for dynamic system modeling and intelligent control. Includes theory of feed-forward, recurrent and Hopfield networks; applications in robotics, aircraft and vehicle guidance, chemical processes, and optimal control. Prerequisite: ME 659 or departmental consent.

760. Fatigue and Fracture. (3). Covers fracture mechanics in metals, ceramics, polymers and composites. Suitable for graduate and undergraduate study in metallurgy and materials, mechanical engineering, civil engineering and aerospace engineering where a combined materials-fracture mechanics approach is stressed. Prerequisite: ME 280 or departmental consent.

762. Polymeric Composite Materials. (3). A basic understanding and knowledge about the structure and mechanical properties of polymeric composite materials in detail. Discusses both short fiber and continuous fiber composites. Emphasizes special design considerations for composite materials including fracture mechanics and performance of composites under adverse conditions (fatigue and impact). Prerequisite: ME 250 or equivalent or departmental consent.

764. Thermodynamics of Solids. (3). Presents basic thermodynamic concepts which will form the working tools throughout the course. Emphasizes the interpretation of certain types of phase diagrams—not upon the use of thermodynamics to assist phase diagram construction but upon the use of phase diagrams to obtain thermodynamic quantities. Also, the thermodynamics of defects and defect interactions in metals, ceramics, polymers, elemental semiconductors, and compounds. Prerequisites: ME 250 and 399 or departmental consent.

766. SEM and EDAX. (3). Gives students knowledge of Scanning Electron Microscopy (SEM), a powerful tool in materials science and engineering which can be used to analyze structural defects in materials. Discusses both the theory and experimental methods, as well as the application of these methods. Prerequisite: ME 250 or departmental consent.

801. Boundary Layer Theory. (3). Development of the Navier-Stokes equations, laminar boundary layers, transition to turbulence, turbulent boundary layers and an introduction to homogeneous turbulence. Prerequisite: ME 521 or departmental consent.

802. Turbulence. (3). An overview of the theory, practical significance and computation of turbulent fluid flow. Prerequisites: ME 521 and 801.

829. Advanced Computer-Aided Analysis of Mechanical Systems. (3). Computational methods in modeling and analysis of spatial multibody mechanical systems. Includes Euler parameters, automatic generation of governing equations of kinematics and dynamics; numerical techniques and computational methods; computer-oriented projects on ground vehicles with suspension and steering mechanisms, crashworthiness and biodynamics. Prerequisite: ME 729 or instructor's consent.

832. Failure Analysis Applications in Mechanical Design. (3). Application of engineering fundamental to the study of mechanical failure analysis brought about by the stresses, strains and energy transfers in machine elements that result from the forces, deflections and energy inputs applied. Emphasizes recognition, identification, prediction and prevention of failure modes that are prevalent in machine-element design. Prerequisite: ME 439 or departmental consent.

847. Applied Automation and Control Systems. (3). 2R; 3L. Control theory condensed to engineering practice with the analysis, design and construction of operating control systems. Experiments with pneumatic, hydraulic and electro-mechanical servo-systems. Implementation of feedback and feedforward control schemes for various industrial systems and machine tools. The experiments are oriented and intended to be representative of the current state-of-the-art in classical and modern control practice. Prerequisite: ME 659 or equivalent.

850. Special Topics in Mechanical Engineering. (3). New or special topics are presented on sufficient demand. Repeatable for credit when subject material warrants. Prerequisite: departmental consent.

851. Principles and Applications of Conduction Heat Transfer. (3). Theory and measurement, Fourier's equation, steady and unsteady state with and without heat sources and sinks and numerical methods. Prerequisites: ME 522, Math. 757 or departmental consent.

852. Principles and Applications of Convective Heat Transfer. (3). Free and forced convection in laminar and turbulent flow. Includes analysis and synthesis of heat transfer equipment. Prerequisite: ME 522 or departmental consent.


854. Two-Phase Flow Heat Transfer. (3). Thermodynamic and mechanical aspects of interfacial phenomena, boiling and condensation mechanisms and applications of boundary value problems, system of flow convective boiling and condensation. Prerequisites: ME 522, Math. 555 or departmental consent.


860. Introduction to Ceramics. (3). Introduces the fundamental principles of ceramic science and engineering with application on ceramics processes and fabrications. Presents the concepts and properties utilizing the crystal structure background. Discusses nonequilibrium aspect of phase relation in ceramics systems and their influence on processing parameters. Covers the microstructure formation, liquid-solid, and solid-state reaction with some detail in combination with heat treatment. Students are expected to have backgrounds in chemistry, physics, math, thermodynamics, mechanics of solids, and introduction to materials in undergraduate engineering courses.

864. Physical Metallurgy. (3). Covers a range of basic concepts in the physical metallurgy essential for further studies in materials engineering. Topics include structure and diffraction, dislocations, defects and thermal processes, solid solution and hardening, diffusion, and phase diagrams and transformations. Prerequisites: ME 250 and 399, AE 333 or departmental consent.

866. Advanced Fracture Mechanics. (3). Covers the fracture mechanics of elastic brittle, ductile, time dependent and heterogeneous materials. Suitable for graduate study only in metallurgy and materials, mechanical engineering and aerospace engineering where a combined materials-fracture mechanics approach is stressed. Prerequisites: ME 520, AE 333 or departmental consent.

867. Mechanical Properties of Materials II. (3). After a brief review of pertinent concepts of the macro-mechanical behavior of deformable bodies, course focuses on determination mechanisms and on crystal defects that significantly affect mechanical properties and strengthening mechanisms. This includes point, line and planar crystal defects and location dynamics, various hardening and strengthening mechanisms. Conclusives with discussion of physical properties and testing methods to measure these properties. Prerequisite: ME 667 or departmental consent.

876. Thesis. (1-4). Graded S/U only. Repeatable for credit toward the MS thesis option up to six hours. Prerequisite: consent of MS thesis advisor.
878. MS Directed Project. (1-3). A project conducted under the supervision of an academic advisor for the directed project option. Requires a written report and an oral presentation on the project. Graded S/U only. Prerequisite: consent of academic advisor.

890. Independent Study in Mechanical Engineering. (1-3). Arranged individual, independent study in specialized content areas. Prerequisite: instructor's consent.

901. Advanced X-Ray Diffraction Theory. (3). First part concentrates on the fundamental X-ray diffraction theories including dynamical theory of X-ray and anomalous absorption. The general theory is then applied to various atomic structures. Ideal crystals, imperfect crystals and amorphous bodies. Prerequisites: ME 767, Math. 757.

958. 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 various flow equations, boundary layer type equations, "parabolized" Navier-Stokes equations and the Navier-Stokes equations. Prerequisite: ME 858 or equivalent.

960. Advanced Selected Topics. (1-3). New or specialized advanced topics in mechanical engineering. Prerequisite: instructor's consent.

962. Advanced Ceramics. (3). Covers concepts in ceramics science and engineering essential to understanding and using advanced ceramic materials such as high temperature matalcereamics. Expands coverage of fundamental concepts and physical properties presented in ME.


990. Advanced Independent Study. (1-16). Arranged individual, independent study in specialized content areas. Repeatable toward the PhD degree. Prerequisites: advanced standing and instructor's consent.

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

School of Art and Design, (316) 978-3551—Donald R. Byrum, chairperson

Art Education, (316) 978-3555—Mary Sue Foster, program director
Art History, (316) 978-3555—Frederick Herrniss, program director
Graphic Design, (316) 978-3555—Jim Hellman, program director
Studio Art, (316) 978-3555—Jill Eggars, program director

School of Music, (316) 978-3500—J. William Thomson, chairperson

Music Education Studies, (316) 978-3103—Larry Blocher, director
Musicology-Composition Studies, (316) 978-3532—Dean Roush, director
Keyboard Studies, (316) 978-3103—Paul E. Reed, director
Strings/Orchestra Studies, (316) 978-3103—Jackie Dilson, director
Voice/Choral Studies, (316) 978-3103—Donny Cram, director
Winds/Percussion/Band Studies, (316) 978-3103—Victor A. Markovich, director

School of Performing Arts, (316) 978-3368—Leroy Clark, chairperson

Dance, (316) 978-3645—C. Nicholas Johnson, director
Theatre, (316) 978-3368—Leroy Clark, director

Fine Arts
Although there is no graduate degree in general fine arts, the following course is available for graduate credit.

Course for Graduate/Undergraduate Credit
590. Special Topics in the Fine Arts. (1-4). For group instruction. May be repeated for credit. Involves interdisciplinary upper division / graduate level topics with the fine arts (music, art, dance, and theatre). Prerequisite: senior undergraduate or graduate standing or instructor's consent.

School of Art and Design
Donald R. Byrum, Chair

The School of Art and Design offers programs leading to both the Master of Arts and Master of Fine Arts degrees. Students seeking the Master of Arts degree take a major in art education. Students seeking the Master of Fine Arts degree select a major in ceramics, painting, printmaking, or sculpture. The specific requirements for each major are described under the appropriate program listing, below.

Art Education
Graduate Faculty
Associate Professor: Mary Sue Foster

Master of Arts in Art Education
The Master of Arts (MA) degree 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 bachelor's degree program in art education and meet requirements for Kansas state certification in this field. Also required are a 2.750 overall grade point average and a minimum of 12 hours in art history. 15 hours in one studio area, and nine hours in art education. Degree applicants are expected to schedule an interview with the director of art education prior to the first semester of enrollment. During the interview applicants are required to present for evaluation the following: (1) a professional resume reflecting training and accomplishments; (2) a brief statement outlining professional goals; (3) written examples of professional and academic work; and (4) six examples of their art work (either portfolio or slide form) with an accompanying list identifying name, title, size, and media. Up to half of the portfolio may be work produced by students of the applicant. Make up of undergraduate course deficiencies may be required before applicant is admitted to the MA program in full standing. All correspondence should be addressed to the graduate coordinator of art and design.

Degree Requirements
Two plans may be followed in meeting the requirements for the MA in art education.

Plan A. The minimum requirements through Plan A are summarized below. Of the 30 hours required, 18 must be in courses numbered 700 or above.

| Art education courses, including research problems and thesis | 18 |
| Bachelor's major art areas and related fields | 12 |
| Total | 30 |

*May include courses in studio arts and art history.

Plan B. The minimum requirements through Plan B are summarized below. Of the 33 hours required, 20 must be in courses numbered 700 or above.

| Art education courses, including research problems and terminal project | 18 |
| Bachelor's major art areas and related fields | 15 |
| Total | 33 |

All candidates must pass a written comprehensive examination before enrolling in thesis or terminal project. This examination is scheduled the first Saturday in November, the second Saturday in April, and the first or second Saturday in July.

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 regionally accredited graduate school with the approval of the major advisor 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 approved by the major department and the dean of the Graduate School.

Transfer of credit and extension credit will be accepted. Six hours of graduate-level courses taken as nondegree student will be accepted if approved by the graduate coordinator, provided that...
all six hours are taken in the same department. Courses taken in more than one department before acceptance into the art education master's program may not apply toward the degree.

Courses for Graduate/Undergraduate Credit

510Q. Stimulating Creative Behavior. (3). Includes 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. Emphasizes methods to elicit creative behavior. Repeatable once for credit.

514Q. Aesthetic Inquiry. (3). Focuses on contemporary trends in aesthetics relative to the visual arts. Students write critical observations and interpretations in response to art work. Prerequisite: upper-division art major.

515. Developing Visual Materials for Art Education. (3). A production laboratory that emphasizes the integration and selection of appropriate visual media for art instruction. Prerequisite: Art E. 311.

550. Art Workshop. (1-3). Repeatable for credit. Area covered is determined at the time the course is offered.

702. Metal Processes for Jewelry Construction. (3). Emphasizes fabrication techniques, design analysis and function of jewelry designed and produced by students and acknowledged craftsmen. Repeatable once for credit. Prerequisite: Art E. 212, 302 or instructor's consent.

710. Creative Behavior and Visual Thinking. (3). Identification and application of theories for creative and critical thinking. Emphasizes strategies for problem solving and visual thinking and procedures to implement those strategies. Student identifies an area for individual investigation. Repeatable once for credit.

711. Seminar in Art Education: Topic to be Announced. (1-3). Supervised study and research of contemporary issues in art education. Repeatable for credit with advisor's consent.

712. Development of Art Understanding in the Educational Program. (3). Includes readings, observation and evaluative techniques in the development of concepts and materials for art understanding. Repeatable once for credit. Prerequisite: instructor's consent.

713. Fiber and Fabric Processes. (2-3). Fiber processes using traditional and experimental techniques in woven forms and other structural techniques using natural and man-made fibers. Repeatable once for credit. Prerequisite: instructor's consent.

714. Aesthetics for the Classroom. (3). Focuses on applying the issues and theories of aesthetics to the K-12 classroom. Students participate in discussions and demonstrations of these theories through critical and reflective writing as well as curricular planning. Students consider aesthetic development and construct lessons to integrate strategies involving aesthetic concepts into their teaching.

715. Research Problems in Art Education. (3). Orientation to 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.

719. Electronic Imaging. (1-3). Emphasizes Macintosh and other computer processes and their application to art and art education. Students generate computer images using digitizing, scanning, and animation with a variety of software and hardware. Makes application of this new technology to problems of design, art history, and art criticism. Develops curriculum materials for art instruction employing computer graphic instruction. The graduate student prepares a research paper on a selected topic related to computer graphics and art learning.

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 a child responding to environmental stimuli.

750. Art Workshop. (1-3). Repeatable for credit. Area to be covered is determined at the time the course is offered.

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 course work. Repeatable for credit. Prerequisite: instructor's consent.

816-817. Thesis—Art Education. (1-3; 1-3).

818-819. Terminal Project—Art Education. (1-3; 1-3).

Art History

Graduate Faculty

Associate Professors: Frederick Hemans, Patrick Smith

Assistant Professors: Lisa Rosenthal

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.

521Q. Italian Renaissance. (3). General education further studies course. Painting, sculpture, and architecture in Italy from the 13th to the 16th centuries. Prerequisite: Art H. 122G or instructor's consent.

522. Southern Baroque. (3). General education further studies course. Painting, sculpture and architecture in Italy and Spain from 1650 to 1750. Prerequisite: Art H. 122G or instructor's consent.

523. 18th and 19th Century European Art. (3). General education further studies course. A history of European art from Watteau through post-Impressionism.


526. Art Since 1945. (3). General education further studies course. 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.

528. Museum Techniques I. (3). Primarily for the graduate student interested in museum work. Includes specialized research related to administrative responsibilities of a museum: collection exhibition, recording, preservation and financial activities.

529. Modern Architecture. (3). An overall view of the development of modern architecture from its inception in the early 20th century until today. Stresses theoretical connections between architecture and the arts of painting and sculpture as they developed in the United States and Europe.

530. The Art of Classical Greece. (3). General education further studies course. A study of painting, sculpture and architecture of Greece during the 5th and 4th centuries B.C.

531. The Art of Hellenistic Greece. (3). General education further studies course. A study of the painting, sculpture and architecture of Greece during the Hellenistic period, 6th to 1st centuries B.C.

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.

533. Seminar: Topics in Modern Art. (1-3). Selected readings and problems in art of the modern era. Course content varies but individual areas are not repeatable for credit.

534. History of Photography. (3). History of photography stressing techniques, media, processes, interrelations with other visual arts, style questions, genres, and criticism.

535. Northern Renaissance. (3). General education further studies course. Painting and printmaking in France, Germany, and the Netherlands in the 14th through 16th centuries. Explores northern European pictorial traditions and considers their relationship to
If MFA degree students

In order to define a preliminary examination, Required Prerequisite.

Plan Graduate Review. Transferr Credit.

Translation of original studio work, accompanying the MFA terminal project report, which is a documentation of the candidate's studio work (slides, video, photographs, CD), a written statement, and a resume.

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 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 accepted for transfer will be at the discretion of the departmental advisor and graduate coordinator. A maximum of 24 semester hours from prior graduate study may be considered for transfer to the MFA program. Final determination of transfer will be made after the student has successfully completed 12 semester hours at WSU and the first graduate review. A maximum of 12 semester hours can be applied to a major field of study. If a transfer of credit is accepted, it may reduce course requirements but not entrance requirements. A ruling on 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 graduate 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 Students Only

800. Seminar in Art Topics. (3). Explores areas of common interest in the arts. Supervised study, research and discussion. Repeatable for credit.

Ceramics

Courses for Graduate/Undergraduate Credit

574. Advanced Study of Ceramic Glazes. (3). The study of glaze formulation and the color and crystalline effects of oxides on base glazes. Requires notebook, advanced formulation records and laboratory work. Prerequisite: Art S. 375.

575. Study of Ceramic Materials II. (3). Lab fee. Lectures and research concerning physical and chemical characteristics of pottery materials. Requires reading assignments concerning physical and chemical characteristics of pottery materials. Prerequisites: Art S. 275 and 370.

577. Study of Ceramic Glazes II. (3). Lab fee. The study of glaze formulation and the color and crystalline effects on oxides bases glazes. Requires notebook, formulation records and laboratory work. Prerequisite: Art S. 375.

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 instructor's consent. Statement of intent must be submitted for faculty approval before registration. Prerequisite: departmental consent.

Courses for Graduate Students Only

874. Special Problems in Ceramics. (1-5). Research in advanced problems in ceramics. Repeatable for credit.

875. Advanced Research of Ceramic Materials. (3). Lectures and advanced research concerning clays, glazes and refractory materials. Reading assignments concerning physical and chemical characteristics of pottery materials. Requires notebook and outside lab work.

876. Advanced Study of Ceramic Glazes. (3). The study of glaze formulation and the color and crystalline effects of oxides on base glazes. Requires notebook, advanced formulation records and laboratory work. Prerequisite: Art S. 375.

878-879. Terminal Project—Ceramics. (1-5; 1-5).

Drawing

Courses for Graduate/Undergraduate Credit

545. Advanced Drawing Studio. (1-3). Drawing with a variety of media. Uses graphic problems relative to individual technical and aesthetic development. Critiques are given. Repeatable for credit. Prerequisites: Art S. 340 and 345.

549. Independent Study in Drawing. (1-3). A professional emphasis on technical or aesthetic research in the area of drawing. Available only for the advanced drawing student with instructor's consent. Statement of intent must be submitted for faculty approval before registration. Prerequisites: Art S. 340, 345 and instructor's consent.

Courses for Graduate Students Only

840. Special Problems in Life Drawing. (1-3). Drawing from life. Requires sketchbooks and/or portfolio. Repeatable for credit.

845. Special Problems in Drawing. (1-3). Advanced drawing in various media emphasizing independent work and the development of personal expression. Repeatable for credit.

Painting

Courses for Graduate/Undergraduate Credit

551. Advanced Watercolor Studio. (3). For the professionally oriented student. Emphasizes independent study. Repeatable for credit. Prerequisites: four semesters of Art S. 351 and interview with instructor.

552. Advanced Decorative and Ornamental Painting and Design. (3). Projects in decorative and ornamental painting and design developed and completed by the student with faculty supervision. Preparation for more independent work. A plan of study defining projects must be submitted and approved by the instructor. Prerequisite: Art S. 352 or instructor's consent.

553. Independent Study in Painting. (1-3). A professional emphasis on technical or aesthetic research in the painting area. Available only for the advanced painting student with instructor's consent. Statement of intent must be submitted for faculty approval before registration. Prerequisite: departmental consent.

554. Advanced Painting Studio. (1-3). For the professionally oriented student. Emphasizes independent study. Repeatable for credit. Prerequisites: four semesters of Art S. 354 and interview with instructor.

559. Terminal Project: Decorative and Ornamental Painting and Design. (3). Supervised independent study. A plan of study for a project in decorative and ornamental art must be submitted for faculty approval prior to registration. Repeatable for credit. Prerequisite: Art S. 552.

Courses for Graduate Students Only

850. Special Problems in Painting. (1-5). Professional and experimental painting emphasizing 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.

858-859. Terminal Project—Painting. (1-5; 1-5).

Printmaking

Courses for Graduate/Undergraduate Credit

560. Advanced Printmaking Studio—Intaglio. (1-3). Intaglio, collagraph and mixed techniques. For students interested in professional printmaking, course offers specialization in color printing or black and white. Repeatable for credit. Prerequisites: Art S. 266, 352 and 364.

561. Advanced Printmaking Studio—Lithography. (1-3). Lithography, black and white or color. For students interested in professional printmaking, course offers specialization in color printing. Repeatable for credit. Prerequisite: Art S. 364.

565. Independent Study in Printmaking. (1-3). A professional emphasis on technical and aesthetic research in the printmaking area. Only for the advanced printmaking student with instructor's consent. Statement of intent must be submitted for faculty approval before registration. Prerequisite: departmental consent.

Courses for Graduate Students Only

860. Special Problems in Printmaking—Intaglio. (1-5). Advanced printmaking or an individual basis. Gives encouragement to investigation, combined with a craftsman-like approach. Techniques include all intaglio, relief and combined methods, black and white and color. Repeatable for credit.

862 & 869. Special Problems in Printmaking—Lithography. (1-5; 1-5). Advanced printmaking on an individual basis. Gives encouragement to investigation, combined with a craftsman-like approach. Includes lithography and allied techniques, black and white and color. Repeatable for credit.

868-869. Terminal Project—Printmaking. (1-5; 1-5).
Sculpture

Courses for Graduate/Undergraduate Credit

580. Advanced Sculpture Studio. (1-3). Sculpture in any medium, emphasizing individual development and creativity. Repeatable for credit. Prerequisite: Art S. 380.

585. Independent Study in Sculpture. (1-3). A professional emphasis on technical or aesthetic research in the sculpture area. Available only for the advanced sculpture student with instructor's consent. Statement of intent must be submitted for faculty approval before registration. Prerequisite departmental consent.

Courses for Graduate Students Only

880. Special Problems in Sculpture. (1-5). Advanced sculpture emphasizing experimentation and high quality work on an individual basis. Stresses special projects in casting architectural sculpture, mixed media or new materials and techniques. Repeatable for credit.

888-590. Terminal Project—Sculpture. 0-5: 1-5.

School of Music

J. William Thomson, Chairperson
Tom Fowler, Coordinator, Graduate Studies

Graduate degree programs in the 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, conducting, 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 degree (MM) allows for concentration in history-literature, piano pedagogy, theory-composition, conducting, and performance. The general requirements for the degree are outlined below, while the specific course requirements for each concentration are given in the program sections (music education, musicology—composition, music performance) in which the concentrations are housed.

Admission Requirements

Admission to the MM program requires the completion of an accredited music bachelor's degree that includes a minimum of 60 semester hours in music, with at least 24 hours in basic music studies (history and theory) and 15 hours in a major specialty. Approval of the MM concentration must be acquired during the first semester of enrollment.

Degree Requirements

The MM degree requires completion of a minimum of 32 graduate semester hours, including a thesis or recital as indicated for the respective concentration. Of these hours, 60 percent must be in courses numbered 700 or above. Each Plan of Study must include 852, Introduction to Bibliography and Research; 830, Seminar in Music Theory, and six hours elected from graduate courses in music history and literature (791-792, Seminar in Music History, or elections from the graduate period courses: 893, Music of Antiquity-Renaissance, through 897, Music of the 20th Century). Advisor's approval must be obtained for all courses included in the degree Plan of Study.

Master of Music Education

The School of Music offers the Master of Music Education degree (MME). Areas of concentration and associated requirements are listed under Music Education, below.

Examinations

All degree candidates in the School of Music must pass an oral comprehensive examination. The oral comprehensive examination for thesis candidates includes a defense of the thesis.

Music Education

Graduate Faculty
Professor: Harold A. Popp
Associate Professors: Elaine Bernstorf, Larry Blocher (director, music education)
Assistant Professors: Thomas Fowler, Thomas Wine

Master of Music Education

The Master of Music Education (MME) program allows for concentration in elementary music, instrumental music (with recital option), music in special education, and voice. Conducting options may be elected (with approval) in the choral and instrumental programs.

Admission Requirements

Admission to the degree program in music education requires the completion of a Bachelor of Music Education (BME) degree, or the equivalent of a BME, from an accredited institution. Students holding bachelor's degrees in music other than the Bachelor of Music Education must satisfy public school certification requirements to qualify for full admission. Applicants without such certification are admitted on a conditional basis pending their attainment of public school teaching credentials. Approval of the MME specialization must be acquired.

Degree Requirements

MME programs range from 32 to 36 hours. The required core is 13 hours; 10 field specialty hours must be decided in consultation with an advisor and the director of music education; five five-credit options are available; recital, conducting, project, thesis, research seminar, and an extra hours option. Of these hours, 12 must be in courses numbered 700 or above. Each Plan of Study must include 852, Introduction to Bibliography and Research; 851, Music of Philosophy, 871, History and Philosophy, and 830, Seminar in Music Theory. Three hours also are required in graduate music history.

Qualified students requesting permission to present a formal graduate recital should obtain approval from the appropriate performance area before completing 12 hours of graduate enrollment. A recital is not a terminal requirement for the MME in special education.

Courses for Graduate/Undergraduate Credit

511. Jazz Pedagogy. (2). For both music education and music performance majors interested in teaching improvisation, jazz history and theory, and small and large jazz ensembles. Includes a review of current jazz methods and materials, rehearsal techniques for jazz ensembles, how to listen to jazz, lectures by visiting jazz performers and effective jazz programming. Prerequisite: completion of MUS C 226 or instructor's consent.

606. Music Methods for Early Childhood Education. (2-3). Methods and materials for teaching music in the preschool and kindergarten classroom. Includes the development of the child's musical growth through singing, listening, rhythmic and creative activities; a survey of available materials, and development of playing, singing, and conducting skills.

611. Music for Special Education. (3). Open to upper-division or graduate students and intended for the potential practicing music teacher, classroom teacher or special education teacher, includes identification of dysfunctioning children and their problems and current theory and practices in special music education. Satisfies the requirement, effective September 1, 1981, that applicants for initial certification or renewal of secondary and/or elementary certification shall present a survey course, or equivalent content from other courses, in the subject area of exceptional children. This provision applies to initial certification
and recertification of music teachers only, grades K-12.

686. Marching Band Techniques. (2). A systematic approach to the marching band with regard to organization, show development, instrumental instruction, music adaptation, drill construction and script development. Teaches both traditional drill and corps style marching utilizing manual methods and computer generated graphics. Field observations, films, photographs and live performances by marching bands complement the class syllabus. Required for all instrumental majors.

732. Music in the Junior High School. (3). Includes administrative structures, the curriculum, adolescent development, teaching as behavior and competencies needed for successful teaching of general and choral music in grades 6-9.

737A. Advanced Woodwind Techniques. (2). Special problems and techniques in the teaching of woodwind instruments. Surveys current materials. Prerequisite: Mus. E., 237 and 238 or equivalent.

739A. Advanced Brass Techniques. (2). Special problems and techniques in the teaching of brass instruments. Surveys current materials. Prerequisite: Mus. E., 239 or equivalent.

740A. Advanced Percussion Techniques. (2). Special problems and techniques in the teaching of percussion instruments. Surveys current materials. Prerequisite: Mus. E., 241 or equivalent.


781. 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. Prerequisite: satisfactory academic standing prior to the first job assignment. May be repeated for credit. Offered CR/NC only.


790. Special Topics in Music. (1-4). For individual or group instruction. Individual study enrollment requires departmental consent. Repeatable with departmental consent.

Courses for Graduate Students Only


822. Advanced Techniques in Special Music Education. (3). For the special music education MME candidates only. Studies research literature and trends in special music education includes an evaluation of materials and techniques and special projects exploring the development of musical understanding in the dysfunctioning child. Course satisfies the requirement, effective September 1, 1981, that applicants for initial certification or renewal of secondary and/or elementary certification shall present a survey course, or equivalent content from other courses, in the subject area of exceptional children. This provision applies to initial certification and recertification of music teachers only. Prerequisite: Mus. E., 403 or 404.

823. Special Music Education Practicum. (3). For the special music education MME candidate only. Supervised teaching in special education classrooms. A companion course to Mus. E., 822; gives the MME special education candidate experience in teaching in special education classrooms. Prerequisite: Mus. E., 822 or concurrent enrollment.

851. Developing the Child's Musical Understanding. (3). Definition of understandings necessary for the attainment of musical awareness in the child. Directs the exploration of classroom experiences toward the successful development of understanding through the application of basic learning principles. Prerequisite: Mus. E., 403.


841. Special Project in Music. (1-3). Individually supervised study or research emphasizing the student's personal needs. Repeatable for credit. Prerequisite: instructor's consent.

842. Special Project in Music. (1-3). Individually supervised study or research emphasizing the personal needs of the student. Repeatable for credit. Prerequisite: instructor's consent.

844. Terminal Conducting Project. (1-3). Individually supervised project for those accepted for the conducting option on the instrumental or choral emphasis under the MME degree. Prerequisites: instructor and departmental consent.


851. Psychology of Music. (2). An overview of music behaviors from a psychological perspective. Relates recent literature concerning human psychoacoustics; melodic, rhythmic and harmonic perception; and major learning theories to current trends in music education.

852. Introduction to Bibliography and Research. (3). See course listing under musicology-composition area.

854. Research Seminar in Music Education. (3). Continued application of techniques of research. Requires the completion of a major research project. May be selected as the MME terminal requirement for specified programs. Prerequisite: Mus. C.E. 852.

871. History and Philosophy of Music Education. (2). A study of historical and contemporary philosophies relevant to music education. Prerequisite: Mus. E. 851.


876. Thesis. (2).

Music Performance

Graduate Faculty

Professors: Harrison C. Bougon., Joseph C. Combs, Dorothy Crum (director, voice, choral), Harry Davidson (director, strings/orchestra), James W. Jones, Walter J. Myers (Dean), Harold A. Popp, Frances K. Shelly

Associate Professors: Julie Bees, Sylvia Coats, Catherine Consiglato, Robert Glasemann, Jean Lansing, Nancy Lattei, Victor A. Markovich (director, wind/percussion and bands), Paul E. Reed (director, keyboard). David Schepp, Robert Town, Andrew Trechak, Vernon L. Yets overn

Assistant Professors: Deborah E. Baxter, John Harrison, Kevin Hartman, Russell D. Widener

Master of Music—Performance Concentration

Admission to the Master of Music (MM) program with emphasis in music performance requires a performance background, with a Bachelor of Music (BM) degree in the performance area of specialization or the equivalent of the BM. Back- ground deficiencies must be satisfied before admission to candidacy. 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. Permission to pursue the degree/certification is tentative pending 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 receive permission to schedule a degree recital, students must satisfy the expectations of the respective performance area. 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 respective performance area.

Students studying for the MM degree with emphasis in performance should plan to be in residence during at least one fall or spring semester, since continuous study opportunities may not exist in Summer Session.

Master of Music—Opera Performance Concentration

This degree program is designed to provide specialized training in opera performance with graduate students gaining more experience and training in all phases of opera production. While the present MM in Vocal Performance degree program offers some experience with opera performance, the opera concentration will provide more focus with more specialized coursework, training, and experience, which will better prepare students who are accepted into the program to succeed in this competitive career field. The degree requires four more hours (total of 36) than the MM in Vocal Performance.

Admission Requirements

Admission to the program will be based on the results of a live audition and an interview with the director of the WSU Opera Theatre and voice faculty. When a live audition is not possible, a video tape audition will be considered. Students admitted to this program must show potential for future success and should have already had some experience with opera. Specific requirements include: (1) strong operatic vocal potential; (2) good academic background with a minimum of 2.75 GPA; (3) some stage experience, including a basic staging class; and (4) working knowledge in at least one of the following languages: French, German, or Italian.

Degree Requirements

The Master of Music (MM) degree with emphasis in opera performance requires the completion of a minimum of 36 graduate hours, including a graduate performance recital, two leading roles in opera productions, and direction and assistance in two productions. This degree must include the following courses:

1. 12 credit hours in the MM core requirement, including 852, Introduction to Bibliography and Research (3); 830, Seminar in Music Theory (3); and 6 credit hours in selected graduate music history courses;
2. 10 credit hours of Applied Voice plus the 2 credit hours of Graduate Voice Recital;
3. 12 credit hours of courses in the major area, including 632, Opera Literature (3); 760, Opera Styles (2); 773, Acting for Singers (3); 711K, Opera Leading Role (2); 711K, Opera Direction and Assistance (2).

Master of Music—Instrumental Conducting Concentration

The Master of Music (MM) degree, instrumental conducting concentration, is designed to accommodate a small number of students (up to four per year) who receive individualized conductive preparation with the University's resident band and orchestra conductors. Candidates have been referred to the University of Cincinnati for conducting experience with large and small ensembles. The program culminates in a conducting recital utilizing University students and ensembles; metropolitan or ad hoc ensembles may be substituted with faculty approval.

Admission Requirements

Candidates must have completed an accredited bachelor's degree in music or music education, provide evidence of demonstrable success in prior conducting experiences, and obtain approval of the instrumental conducting faculty. All candidates must complete an acceptable conducting audition; admission to the instrumental conducting concentration is tentative pending approval of the audition. Background deficiencies, if noted, must be satisfied before admission to candidacy for the degree.

Degree Requirements

The Master of Music (MM) degree, instrumental conducting concentration, required completion of a minimum of 36 graduate hours, including a graduate conducting recital as the terminal requirement. Of these hours, 24 must be in courses numbered 700-800. The degree must include the following courses:

1. 12 credit hours in the MM core requirement, including 852, Introduction to Bibliography and Research (3); 830, Seminar in Music Theory (3); and 6 credit hours in selected graduate music history courses;
2. 12 credit hours in 700 and 800 level courses specified in the conducting concentration;
3. 12 credit hours in graduate music courses elected with advisor's approval.

Master of Music—Piano Pedagogy Concentration

The Master of Music (MM) degree with emphasis in piano pedagogy gives primary attention 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 to performance to selected repertoire and teaching-skill development.

Admission Requirements

Students must have completed a Bachelor of Music in piano performance or its equivalent. All candidates must complete a satisfactory audition early in the program—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, piano pedagogy concentration, requires the completion (minimum) of 32 graduate hours, including a graduate degree recital as the terminal requirement. Of these hours, 20 must be in courses numbered 700-800. The degree must include the following courses:

1. 852, Introduction to Bibliography and Research, 3 hours;
2. 830, Seminar in Music Theory, 3 hours;
3. 712, Applied Music Instruction for Non-major, 2 hours (for majors only. Repeatable for credit.
4. 732, For majors only. Repeatable for credit.

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.

731. (1). For majors only; study on secondary instruments. Basic instruction. Repeatable for credit.

732. (2) For majors only. Repeatable for credit.
Applied Music Classes

717W. Violin Class for Adult Beginners. (2). Beginning violin class; violin fundamentals, emphasizing tone and intonation development; basic techniques for reading notes and rhythm. May not be applied to music major requirements. Repeatable for credit.

717Y. Popular Vocal Styles. (2). Class voice instruction for adults emphasizing basic vocal technique and how it can be applied for use in popular styles of singing, including vocal jazz, pop, musical theatre, etc. Gives students an opportunity to explore techniques for developing their own voices and to practice singing in a supportive environment, includes information via lecture, demonstration, listening to recordings related to stylistic differences in the popular idiom. Intended for nonmusic majors; not applicable to music degree requirements. Repeatable.

General Performance

Courses for Graduate/Undergraduate Credit

530. Musical Theatre Workshop II. (2). Cross-listed as Thea. 530. An interdisciplinary practicum class with opportunities for student performers to refine techniques in a variety of musical theatre genres, including opera, book musicals, and rock musicals. Provides opportunities for student directors and choreographers to gain experience in their discipline with faculty guidance and supervision. Admission is by audition.

555. Senior Project. (1). Cross-listed as Thea. 555. An interdisciplinary course to showcase the talents of graduating seniors to professional producers, agents, and casting directors. Students develop and produce a variety of shows demonstrating their talents in singing, dancing, acting, directing, and choreography. For majors only. Prerequisite: instructor's consent.

580. Piano Pedagogy. (2). Pertinently concerned with the art and science of teaching. Includes observations of master teachers in the University and community.


620. String Pedagogy: Violin and Viola. (2). Required for viola and viola performance majors. A study of rudimentary techniques for viola and viola, including the teaching of mini-lessons for instructor and class critique. Prerequisite: viola or viola performance capability or instructor's consent.

625. Voice Pedagogy. (2). Acquaints the voice major with vocal techniques, concepts and materials of private and class instruction.

651. Advanced Conducting and Score Reading. (2). Baton technique, score reading and musicianship. Prerequisite: Mus. 217 or 219 or equivalent.

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 instructor's consent.

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 instructor's consent.

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 instructor's consent.

691. Advanced Choral Conducting. (2). A comprehensive study of conducting and rehearsal techniques, analysis and ear training in choral composition for the advanced student. Prerequisite: Mus. 537 or 219 or equivalent.

707. Piano Repertoire. (1). Performs and listens to advanced piano repertoire majors. Repeatable for credit.

710-711-712-713-714. Ensembles. (1-1-1-1-1-1). (A) Orchestra: (B) Symphonic Band/Wind Ensemble; (C) Choir Ensemble: (D) Cappella Choir; University Singers; Concert Chorale; (E) Madrigal Singers; Chamber Singers; (F) Woodwind Ensemble; (G) Sting Ensemble; (H) Brass Ensemble; (I) Percussion Ensemble; (J) Brass Chamber Ensemble; (K) Percussion Ensemble; (L) String Ensemble and String Chamber Ensemble; (M) Jazz Ensemble; (N) International Choir; (O) New Music Ensemble. Prerequisite: audition required. Repeatable for credit.

71E. Opera Lab. (1). See Mus. P. 211E.

71K. Opera Theatre. (1). See Mus. P. 211K.


712K. Opera Theatre. (2). See Mus. P. 212K.


715V. Voice for Music Theater. (2). Basic repertoire and singing techniques with weekly master class devoted to music theater techniques and concepts. Restricted to persons other than vocal majors. Repeatable.


760. Group Piano Practicum. (2). Supervised group piano teaching for graduate students. Prerequisites: Mus. P. 580 and 581.


762. Opera Styles. (2). A comprehensive study of the performance styles and practices in opera singing, ranging from the seventeenth century to the present. Prerequisites: professor's permission.

802. Acting for Singers. (1). A study of the external and internal techniques of acting for the singer, emphasizing characterization and development of a role; to ensure that students have the necessary understanding and skills to integrate the acting process while singing. Prerequisite: instructor's consent.

803. Special Topics in Music. (1-4). For individual or group instruction. Repeatable with departmental consent.

841. Special Project in Music. (1-3). Individual supervised study or research emphasizing the personal needs of the student. Repeatable for credit. Prerequisite: instructor's consent.

842. Special Project in Music. (1-3). Individual supervised study or research emphasizing the personal needs of the student. Repeatable for credit. Prerequisite: instructor's consent.

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 less-advanced students; (4) class piano in public or private schools; extending the advanced preparation of piano pedagogy students as needed. Repeatable for credit. Prerequisite: Mus. P. 580.

852. Introduction to Bibliography and Research. (1). See course listing under musicology-composition area.

873. Graduate Recital. (2). Performance of a full recital featuring the student performing medium. Prerequisite: consent of instructor in applied area.
Musicology-Composition

Graduate Faculty
Professor: Walter A. Mays
Associate Professors: Dean Roush (director, musicology-composition), Katherine Murdock
Assistant Professor: Silvia Herzog

Master of Music

Emphasis in Music History-Literature

Completion of a Master of Music (MM) degree, history-literature concentration, requires a demonstrated reading proficiency in one of three languages: German, French, or Italian. Students must demonstrate proficiency by satisfactorily completing the Graduate School Foreign Language Test designed by the Educational Testing Service or by completing a departmental language translation exam. A thesis also is 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 Master of Music (MM) degree program, theory-composition concentration, 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 submit representative compositions for examination by the composition faculty; approval for admission to candidacy is contingent upon the candidate's demonstrated ability to complete a final project in composition.

Completion of the MM degree, theory-composition concentration, 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 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.

Courses for Graduate/Undergraduate Credit

510. Interrelated Arts. (3). Presents an aesthetic analysis of the fine arts: music, visual arts, drama, literature, and dance. Emphasizes style and commonality among the arts disciplines.

523. Form and Analysis. (2). Extensive analysis of the forms and formal processes of musical literature. Prerequisite: Mus. C. 228.

531. Introduction to Electronic Music. (2). Basic techniques of electronic music. Directed toward musicians who wish to use the electronic medium in teaching, performing, or communicating through music in any way.


561. 18th Century Counterpoint. (2). Counterpoint devices of the 18th century as found in the works of J.S. Bach. Prerequisite: Mus. C. 228.


597-598. Organ Literature and Practice. (1-1). Performance and discussion of works for the instrument of all periods, study of organ design and construction, and practice in aspects of service playing, such as hymn playing, meditations, accompanying and improvisation. Required of all organ majors. Repeatable. Prerequisite: Mus. C. 228 or departmental consent.

615. Symphonic Literature. (3). General education further studies course. An advanced course in orchestral literature covering the development of the symphonic music from Baroque to the present day. Designed primarily for music majors who have already had Mus. C. 334Q and 335Q.

625. Opera Literature. (3). General education further studies course. A comprehensive survey of Italian, German, French, Russian, English and American opera literature from the 17th century to the present. Must. C. 113 is strongly recommended before taking the course. Should be upper division or graduate students. Not limited to music majors.

624. Oratorio and Cantata Literature. (2). A study of the solo vocal literature of the larger sacred and secular forms from the 17th century to the present. Not limited to music majors.

641. Orchestration. (2). The study of instrumentation, emphasizing idiomatic scoring for various instrumental combinations with an approach to the problems of full orchestra and band scores. Prerequisite: Mus. C. 227.

645. Choral Arranging. (2). Scoring for women's, men's, and mixed choirs. Includes performance and analysis of student's arrangements in class. Prerequisites: Mus. C. 228 and 230.

660. Applied Composition. (2). Individual study in musical composition emphasizing writing for both small ensembles and large groups in the larger forms. Repeatable. Prerequisites: Mus. C. 503 and instructor's consent.

661. 16th Century Counterpoint. (2). Analysis and application of the contrapuntal composition techniques of the 16th century. Prerequisite: Mus. C. 228.

671. Chromatic Harmony. (2). Advanced study of chromatic harmonic materials of all periods with special attention to the 19th century. Emphasizes analysis and creative writing. Prerequisite: Mus. C. 228.

672. Contemporary Techniques. (2). Advanced study of music from impressionism to the present emphasizing related literature and creative writing. Prerequisite: Mus. C. 228.

685. String Literature and Materials. (2). A survey and stylistic analysis of music for solo strings and chamber combinations, beginning with the early Baroque period.

726. Voice Literature. (3). A comprehensive survey of early Italian arias, French chansons, German lieder, contemporary English songs, and Russian and Spanish literature.

750. Musicology-Composition Workshop (1-4). Repeatable for credit. Prerequisite: Instructor's consent.

753. Choral Literature I. (2). A historical and stylistic survey of choral literature of the Renaissance and Baroque eras.


790. Special Topics in Music. (1-4). For individual or group instruction. Repeatable with departmental consent.

791-792. Seminar in Music History. (3-3). Develops areas of interest in music history as time permits. Makes no effort at a chronological survey. Includes ideas evoking the most interest and considered by the instructor to be
of the greatest professional benefit when interest warrants.

Courses for Graduate Students Only

830. Seminar in Music Theory. (3). An analytical study of the materials used in musical composition from antiquity to the present, employing analytical approaches such as Schenker, Hindemith and serial techniques. Develops analytical perspective rather than compositional skills.

840A-C. Seminar in the Techniques of Composition. (2). Examines the nature of compositional techniques through selected works in different media: (A) large ensembles, (B) small ensembles and (C) solo literature. Prerequisites: Mus. C. 671, 672 and 641, or departmental consent.

841-842. Special Project in Music; (1-3; 1-3). Individually supervised study or research emphasizing the professional needs of the student. Repeatable for credit. Prerequisite: instructor's consent.

845. Methods of Teaching Dance. (3). Teaches foundational 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.

845. Choral Conducting. (3). Introduces the process of choreography for the musical theatre from casting the chorus in a musical to staging a solo to choreographing an ensemble of 30 dancers/singers. Includes interpreting the score and script for dance, staging, directing, and other projects to develop the craft of choreography for the musical stage. Prerequisites: Dance 330 or instructor's consent.

860. Advanced Composition. (2). Original work in the large forms and a continuation and expansion of Mus. C. 659-660. Prerequisite: Mus. C. 660 or equivalent.


876. Thesis. (2).

893. Music of Antiquity Through the Renaissance. (3).

894. Music of the Baroque Era. (3).

895. Music of the 18th Century. (3).

896. Music of the 19th Century. (3).

897. Music of the 20th Century. (3).

School of Performing Arts

Leroy W. Clark, 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. Emphasizes professional technique and performance quality. Repeatable for credit. Prerequisite: instructor's consent or by audition.

505. Choreography III. (3). Focuses on the choreographic process. Students create choreographic 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. Prerequisites: Dance 205 and concurrent enrollment in appropriate level: modern dance or ballet technique class.


545. Methods of Teaching Dance. (3). Teaches 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.

605. Choreography for the Musical Theatre. (3). Introduces the process of choreography for the musical theatre from casting the chorus in a musical to staging a solo to choreographing an ensemble of 30 dancers/singers. Includes interpreting the score and script for dance, staging, directing, and other projects to develop the craft of choreography for the musical stage. Prerequisites: Dance 330 or instructor's consent.

645. Practice in Teaching Dance. (3). Actual placement in teaching situation with responsibility of teaching, dance class or jazz in private studios, elementary, high schools, Ys or recreation centers. Prerequisite: Dance 545.

690. Special Topics in Dance. (1-6). For individual or group instruction. Repeatable for credit with departmental consent.

750. Dance Workshop. (1-4). Repeatable for credit.

Theatre

Graduate Faculty

Professors: Leroy W. Clark (Chair), Bela Kiralyfalvi

Associate Professors: Judith Babich, J. David Blatt, Joyce Cavarozzi, Betty Monroe

Master of Arts in Communication

Wichita State's Master of Arts in Communication degree program includes an emphasis in theatre/drama. See degree requirements and more information in the Elliott School of Communication listing in the Fairmount College of Liberal Arts and Sciences section of the Graduate Bulletin.

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 designs for specific productions for either Mainstage or Experimental Theatre. Repeatable twice for credit if taken in different design areas. Prerequisite: instructor's consent.

516 & 517. Playwriting I and II. (3 & 3). General education further studies courses. Cross-listed as Engl. 517 and 518. The writing of scripts for performance. Emphasizes both verbal and visual aspects of playwriting. It possible, the scripts are performed. Prerequisite: instructor's consent.

530. Musical Theatre Workshop II. (2). Cross-listed as Mus. P. 530. An interdisciplinary practicum class with opportunities for student performers to refine techniques in a variety of musical theatre genres, including operetta, book musicals, and rock musicals. Provides opportunities for student directors and choreographers to gain experience in their discipline with faculty guidance and supervision. Admission by audition.

534. Advanced Stagecraft. (3; R/L arr. Explores advanced construction techniques for the fabrication of stage scenery and stage properties. Such operations may include welding, vacuum forming, carpentry, and woodworking, with a variety of new materials. Students complete a research project and presentation/demonstration of research findings. Independent projects relating to materials and techniques studied are pursued in arranged labs. Prerequisite: Theatre 244.

546. Scene Painting. (3). Presented with a lecture-demonstration-studio arrangement. Explores various theatre painting materials and techniques enabling the student to develop skill as a scenic artist. Prerequisite: Theatre 244.

555. Senior Project. (1). Cross-listed as Mus. P. 555. An interdisciplinary course to showcase the talents of graduating seniors to professional producers, agents, and casting directors. Students develop and produce a variety of shows demonstrating their talents in singing, dancing, acting, directing, and choreography. For majors only. Prerequisite: instructor's consent.

559. Directing II. (1; R/L arr. Staging and rehearsal techniques emphasizing the problems of the period and stylized play. Prerequisite: Theatre 359 or departmental consent and junior standing.

590. Theatre. Special Topics. (2-3). Designed to extend and strengthen the experience of the student academically and professionally. Study of developments in theatre that go beyond, or are related to, courses already offered. Will give students a much richer preparation for their field of study. Topics include new technology, new materials, contemporary explorations in performance, and in depth study of production methods.


610. Directing the Musical. (1). An interdisciplinary course utilizing interdepartmental expertise (theatre, dance, music) to teach the student how to produce a musical. Prerequisite: instructor's consent.
622, Academic Theatre Practicum. (2). The investigation and exploration of the theatrical act in the classroom situation within the University community. Reinforces the research, writing, directing and performing skills. Enrolled students, functioning as a company, produce and perform for various disciplines on campus. Repeatable once for credit.

623Q. Development of the Theatre I. (3). General education further studies course. The history of theatrical activity as a social institution and an art form from its beginnings to the 17th century. Includes representative plays, methods of staging and theatrical architecture of various periods.

624Q. Development of the Theatre II. (3). General education further studies course. History of theatrical activity as a social institution and an art form from the 17th century to the present. Includes representative plays, methods of staging and theatrical architecture of various periods.

636. Opera/Musical Theatre Audition. (1). Cross-listed as Mus. P. 790E. A practicum course which develops techniques and audition repertoire. Singers will need to gain professional employment and/or successfully compete for placement in advanced training programs. Also covers the business skills necessary to a professional career, and brings students into contact with professional guest artists who can provide additional insight and contacts. Prerequisite: instructor's consent.

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, and Restoration styles. Prerequisites: Thea. 243Q, 342 and junior standing.

647. Scene Design II. (3). Continuation of Thea. 344 with more advanced work in designing settings for the stage and including studies in scenographic techniques and exercises in model building. Student designs settings for a production having a single set, a production requiring a simultaneous setting and a production using multiple settings. Requires no laboratory work in theatre production. Prerequisite: Thea. 244 and 344.

649. Stage Lighting II and Theatre Sound. (3). Continues the study and application of the theories and techniques of Thea. 345, emphasizing advanced concepts of design and provides an introduction to theatre sound production. Prerequisite: Thea. 345.

651. Scene Study. (3). The synthesis of all previous acting courses. Studies scenes in depth as preparation for performance. Course goal is the presentation of fully realized characterizations in those scenes studied, integrating the elements of the actor's craft learned in the prerequisite courses. Prerequisites: Thea. 243 and junior standing.

653. History of Costume. (3). R; L; arr. Historical survey and individual research of dress from ancient Egypt to present day emphasizing social, political, economic and religious influences. Theory and practice of adapting period styles to the stage. Prerequisite: Thea. 253 or departmental consent.

657. Costume Design I. (3). Covers the techniques of costume design for the stage. Students strengthen and expand their knowledge of techniques in costume design for the stage, film, and television. Prerequisites: Art F. 145, Thea. 253.

675. Directed Study. (2-4). Cross-listed as Comm. 675. Individual study or projects. Repeatable for credit with departmental consent. Prerequisite: departmental consent.

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. 253Q, 254Q or departmental consent.

728. Playscript Analysis. (3). Develops students' abilities to analyze playscripts from the point of view of those who face the task of staging them. Focuses on studying and testing practical methods of analysis developed by outstanding theatre directors, teachers and critics. Collective analysis and individual projects are part of the course work. Prerequisite: Thea. 623Q or 624Q.

780. Theatre Internship. (3-15). Advanced theatre production work as arranged by students in directing, acting, scenery and lighting; costume design and construction; or theatre management with a professional theatre company. Work is evaluated by graduate faculty. Prerequisite: junior standing or departmental consent. Total of internship activity applicable toward graduation is 15 credits.

Courses for Graduate Students Only

820. Investigation and Conference. (2-3). Cross-listed as Comm. 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.

823. History of Dramatic Criticism. (3). A survey and analysis of major critical theories from Aristotle to the present.

824. Development of Modern Theatre Styles. (3). An examination of the major movements in the modern theatre since 1870. Emphasizes both literary and physical elements of styles.

The following abbreviations are used in the course descriptions: R stands for lecture and L for laboratory. For example, 40, 2L means four hours of lecture.
College of Health Professions

Offices: 400 Ahlberg Hall
Peter A. Cohen, dean, effective January 1939
Stephen C. Gladhart, assistant dean

School of Health Sciences, (316) 978-3060—Stephen C. Gladhart, assistant dean
Dental Hygiene, (316) 978-3614—Denise Masenian, interim chairperson
Medical Technology, (316) 978-3146—Matry Conrad, chairperson
Physical Therapy, (316) 978-3604—Linda Black, interim chairperson
Physical Therapist Assistant, (316) 978-3604—Linda Black, interim chairperson
Physician Assistant, (316) 978-3011—Marcia Lary, chairperson
Public Health Sciences, (316) 978-3060—Amalzda Colbeck, chairperson

School of Nursing, (316) 978-3610—Betty Sullivan, interim chairperson

The College of Health Professions offers graduate programs leading to a Master of Public Health, Master of Science in Nursing, and Master of Physical Therapy. Admission to these programs requires a bachelor's degree and the fulfillment of requirements listed for each program elsewhere in this Graduate Bulletin.

School of Health Sciences
Stephen C. Gladhart, assistant dean

The School of Health Sciences offers graduate programs leading to the Master of Public Health and Master of Physical Therapy degrees. Specific requirements for each degree are described under the appropriate listing below.

Public Health Sciences
Graduate Faculty
Professors: Amanda L. Colbeck (chairperson), Michael Long, Kenneth Pitetti
Associate Professors: John Carter, James H. Swan
Assistant Professors: Stephen C. Gladhart (assistant dean), Mary Lescoe-Long, Joyce B. Morris, Ruth B. (Toni) Pickard

The Department of Public Health Sciences offers the Master of Public Health degree, as well as course work in the basic sciences to serve a variety of programs in the college and University.

Master of Public Health (MPH)
MPH Kansas is a joint degree program of Wichita State University and the University of Kansas. The MPH program is fully accredited by the Council on Education for Public Health (CEPH). The program prepares graduates to evolve public health problems as practitioners who can apply a breadth of core public health knowledge as well as expertise and experience in a specific area of public health. At WSU, students acquire career-building skills in one of the following areas of interest: public health administration, health policy, health education, health promotion, community development, long-term care systems, and public health research design and analysis.

The program also offers an opportunity to actively involve current public health practitioners, other health professionals, and physicians specializing in preventive medicine in a manner that enhances the quality of instruction and provides a greater depth of expertise and experience. It is designed to meet the needs of working health care professionals in the state who may complete the degree on either a part-time or full-time basis through evening course work. The MPH degree program may be completed on an intensive basis in eighteen months or in two to four years on a part-time basis. The variety of pedagogies used in the program includes interactive television technology for distance education.

While there are dozens of specialties in public health, most career opportunities are found in the following fields: health services administration, public health practice and program management, biostatistics, epidemiology, community development, nutrition, biomedical and laboratory practice, health education, environmental sciences, occupational safety and health, and international public health. Recent graduates from the MPH program at WSU are working at such places as the Kansas Health Institute in Topeka, the Wichita-Sedgwick County Department of Community Health, and Via Christ Health Systems in Wichita.

Admission Requirements
Admission to the MPH degree program requires that the applicant

1. Have a bachelor's degree (or its equivalent) and a grade point average of 3.000 or its equivalent awarded by a regionally accredited institution of higher learning or a foreign university with substantially equivalent requirements for the bachelor's degree.
2. Demonstrate one or more years of responsible work experience in the health field, or possess a degree in a recognized health profession, or produce other evidence of training and/or experience indicative of adequate preparation for the curriculum. Assessment of work experience will be conducted on the basis of written job description(s) or other description(s) of the scope of duties obtained from prior or current employers.
3. Have obtained an averaged percentile score of 50th percentile or better on the Graduate Record Examination (GRE) or have successfully completed a postbaccalaureate degree program. Scores from other nationally recognized tests of aptitude for postbaccalaureate study may be substituted for the GRE, e.g., Medical College Admissions Test (MCAT), Law School Aptitude Test (LSAT), Graduate Management Aptitude Test (GMAT), Dental School Admission Test (DSAT).
4. Submit an official report of completion of the Test of English as a Foreign Language (TOEFL) with a composite score of 570 or better if the native language is not English. This report must be no more than two years old at the time it is reviewed by the MPH admissions committee.

To be considered for admission to the program through WSU, applicants should assure receipt of the following at WSU:

1. Official transcripts(s) from all institutions of higher learning attended;
2. Official report of Graduate Record Examination scores;
3. Three (3) letters of recommendation from employers, instructors, or other persons with knowledge of the applicant that is pertinent to an assessment of their potential for success in the MPH program and/or subsequent career in public health or a related discipline;
4. A properly completed Application for Admission to MPH Program of Study;
5. A resume or curriculum vita;
6. A completed graduate school application for Wichita State University.
Degree Requirements
The award of the MPH degree requires 36 credit hours including successful completion of the practicum-project or thesis. Students are expected to maintain a B average of better to remain a degree candidate. The MPH student will develop competencies in the five basic public health specialty areas, including public health administration, epidemiology, biostatistics, social-behavioral sciences, and environmental health. The student must complete 15 core course hours, a one hour biostatistics laboratory, and the six-hour block of the practicum-project or thesis, as well as a minimum of 14 elective hours, as follows:

Core courses
- HS 804, Principles of Statistics in the Health Sciences 3
- HS 808, Principles of Epidemiology 3
- HS 812, Health Care Policy and Administration 3
- HS 814, Social and Behavioral Aspects of Public Health 3
- HS 816, Environmental Health 3

Total 15

Program required course
- HS 805, Public Health Biostatistics Laboratory 1

Program electives...a minimum of 14 hours

Practicum-project option
- HS 840, Practicum Project 6

The second requirement
- HS 818, Fundamental Research Methods in Public Health 3
- HS 885, Thesis 1-3

Total 36

Public Health Courses for Graduate/Undergraduate Credit

638. Concepts of Quality. (3). For health care personnel, covers issues of quality assurance and improvement in health care provision, including definition and measurement of quality. Prerequisite: HSOP 320 or departmental consent.

641. Health Care for Special Populations. (3). Examines the characteristics and needs of many at-risk groups in America today, including homeless people, refugees and immigrants, people with AIDS, alcohol and substance abusers, high-risk mothers and infants, victims of family or other violence, the chronically or mentally ill, and people with mental retardation and developmental disabilities. Demographics of the populations at risk, their access to health care and the quality of health care services they receive are reviewed as are the cost, financing, and regulation of such care. Consideration is given to relevant research initiatives and program interventions. Prerequisites: HSOP 320 and 325 or concurrent enrollment or departmental consent.

647. Health Care Operations Analysis. (3). An examination of methods for measuring the operational efficiency and effectiveness of health care and medical care programs. Includes methods to analyze and evaluate current operations and approaches to plan better management, facility, technology, financial planning and management control systems in a health setting. Prerequisites: HSOP 320 and 325 or Mgmt. 360 or departmental consent.

652. Strategic Management in Health Service Organizations. (3). Provides an analysis of business problems seen in health care organizations from a strategic management perspective. Uses a variety of case studies which require that the student integrate the functional areas of business, including management, marketing, finance and operations. Discusses all types and sizes of health service organizations in the context of the current environment for these organizations. Prerequisites: HSOP 320 or departmental consent.

656. Seminar in Health Services Organization and Policy. (3). In-depth discussion and analysis of selected topics in health care delivery. Topics vary from semester to semester and include examination of specific financial, managerial, and operational problems and characteristics of health service organizations and agencies.

Courses for Graduate Students Only

800A. Seminar in Health Science. (1). Recent developments and issues affecting the organization and management of health care resources in both the public and private sector of our nation's medical care system. Prerequisite: HS 701 or program consent.

800B. Seminar in Health Education. (1). Covers current trends and directions in allied health education in both patient care and academic settings. Prerequisite: HS 701 or program consent.

802. Introduction to Public Health. (3). Introduction to the organization and activities of the public health system, its roles and problems, introduction to administrative problem-solving as a structured process. Prerequisite: Instructor's consent.

804. Principles of Statistics in the Health Sciences. (3). An introductory graduate level course concerning the concepts of statistical reasoning, statistical principles, and their role as the scientific basis for clinical research, and public health research and practice.

805. Public Health Biostatistics Laboratory. (1). A laboratory to complement HS 804. Emphasizes the application of statistical methodology to public health practice and public health research. Prerequisite: concurrent enrollment in HS 804.

808. Principles of Epidemiology. (3). An introductory graduate level course concerning epidemiologic principles and how these form the scientific basis for public health.

809. Management of Public Health Data. (3). Covers basic computing skills necessary for any advanced epidemiologic or administrative quantitative methods. Includes basics of variable and dataset creation, building, maintenance, and basic descriptive (not interpretation) analysis. For students entering a variety of research, analysis, and public health settings in public health, clinical, or other fields. Software covered includes SAS, SPSS, Epi Info, Kansas Integrated Public Health System Software (KIPHS), Microsoft-Excel and ACCESS. Can be stand-alone or prepare students for biostatistics and epidemiology courses. Covers public data presentations to prepare students to communicate about data in the real world.

812. Health Care Policy and Administration. (3). An in-depth look at policy and management issues in the health system from a public health perspective. Topics include health policy, trends in the health care system, and administrative issues. Topics are critiqued with regard to public health goals, the interests of providers and, and ethics.

814. Social and Behavioral Aspects of Public Health. (3). Examines the characteristics beliefs and behaviors of individuals and groups involved at the process of health care. Draws on concepts and principles of the social, behavioral, and clinical sciences, especially dynamics of the public health system, its roles and problems, and its impact on public health research and practice. Prerequisite: HSOP 320 or departmental consent.

816. Key Issues in Environmental Health. (3). A survey course in the environmental health designed to provide an understanding of the fundamental theory and methods for the control of disease. Includes environmental law, disease systems, the control of pollution, and the management of hazardous waste. Prerequisite: HSOP 320 or departmental consent.

817. Clinical Epidemiology. (3). Involves the application and elaboration of epidemiologic principles, including evidence-based medicine and critical appraisal of the literature in the context of clinical decision-making, design, and interpretation of studies relating to diagnosis, prognosis, prevention, and therapies; techniques of economic analysis and meta-analysis; use of clinical epidemiology to develop practice guidelines. Prerequisite: Instructor's permission.

818. Fundamental Research Methods in Public Health. (3). Stresses mastery of basic concepts and techniques of research methodology used in the health professions. Focuses on acquisition of the generic tools of research design and their application to the real-world problems confronting those who deliver health care, those who facilitate and/ or manage the delivery of care, those who conduct clinical and health services studies, and those who make policy affecting the delivery arrangements. Prerequisites: HSOP 320 and 808.

820. Advanced Research Methods in Community and Clinical Settings. (3). Study research methods for use in any of the health science...
disciplines. Topics include power and sample size, randomized control trials, and integrated qualitative-quantitative techniques. Prerequisites: HS 814 and 818.

821. Community Health Assessment and Development. (3) Focuses on three areas: (1) Value issues related to community health assessment and development, including value choices, clarification of choices, trade-offs, and public judgment. Explores the value and belief systems of libertarians, daisie libera's, and communitarians. (2) Development of tools, both conceptual and technical, needed to conduct community health assessments. Includes measurement of health status and development of health care information systems. Policy issues related to community development including allocation of health resources by comparing benefits of competing interventions. Addresses major allocation issues, such as who allocates resources, using the Health Resource Allocation Strategy.

822. Advanced Research Methods. (3) Advanced topics in health services research: advanced descriptive analysis, advanced multivariate analysis, modeling, causal interpretations, issues in evaluation, proposal writing, and special issues in research on health care settings, and problems encountered on research projects. Prerequisite: HS 818.

823. Social Epidemiology. (3) Examines the patterns and explanations for diversity in mortality and morbidity in populations, focusing on social factors including social class, race, ethnicity, culture, stress, and social relationships, both formal and informal. Explores current thinking about the explanations for mortality and morbidity patterns.

824. Advanced Epidemiological Methods. (3) Additional statistical techniques and their application in the analysis of public health data are presented with special emphasis on the analysis of cross-sectional, retrospective, longitudinal, and case-control data. Prerequisites: HS 804 and 808.

825. Health Care Marketing. (3) An examination of marketing principles as applied in the health care sector. Recognizes, discusses, and applies marketing principles to health care environments. Prerequisite: Mkt. 810.

826. Health Policy. (3) Examines the forces shaping key aspects of health care policy. Analyses the role of economics, social, clinical, and scientific factors which recognize in health policy decisions. Particulate attention is paid to the pivotal role that health services research plays in the process, including its centrality to the link between policy and the management of public health problems.

827. Reproductive Epidemiology. (3) Applies epidemiologic concepts to problems in reproductive health of men and women. Critical analysis of epidemiologic studies on sexual, social, and reproductive behavior and scientific factors which recognize in health policy decisions. Particulate attention is paid to the pivotal role that health services research plays in the process, including its centrality to the link between policy and the management of public health problems. Effective methods and practical exercises are offered in this course to improve skills in the use of computer systems as a tool for research.


829. Clinical Trials. (3) The design, implementation, analysis, and assessment of controlled clinical trials. Emphasizes basic biostatistical concepts and models. Explores issues of current concern to trialists. Prerequisite: HS 804 or instructor's permission.

830. Issues in Health Services. (3) An in-depth look at current issues facing health professionals. Topics, presented in lecture and student presentations and discussed in small groups, include health reform, access to care, other system issues, and organizational trends and strategies. Topics are critiqued with regard to public and private goals, consumer and provider interests, and ethics.

832. Quality Assurance of Health Care. (3) Covers issues of quality assurance in health care provision, including definition and measurement of quality.

833. Health Economics. (3) An application of classical economic theories, principles, and concepts to the traditional U.S. medical care. Considers the dual methods and unique determinants of demand and supply, emphasizing the role of need for care, provider-induced demand, and health insurance. Also considers the legitimate role of government in health care.

834. Financing Health Care Services. (3) Provides an examination of the principles of financial analysis and management used in health care institutions which are most useful to financial personnel. It emphasizes understanding and application of general financial concepts to the health setting and includes consideration of financial organization, sources of operating revenues, budgeting, and cost allocation methods.

835. Organization, Financing, and Delivery of Health Care. (3) Introduces the organization, financing, and delivery modalities of the U.S. medical care system. Examines the development and application of hospital reinsurance methodology (ORC-based PPS) and payment reimbursement methodology (RRLUS). Introduces the principles of health insurance and examines the role of private and public (Medicare, Medicaid) health insurance in health care utilization. Also explores health status outcomes and quality of life measures.

836. Maternal and Child Health in a Social Context. (3) Explores the effects of the social context on maternal and child health. Emphasizes the patterns and the social values and beliefs that affect it since it is the most immediate context of mothers and children. Includes other contextual influences such as race and ethnicity, social class, work, and community resources and support. Develops and assesses models of influence. Discusses the effects of public policies on maternal and child health.

837. Community-Oriented Primary Care Epidemiology. (3) Overview of how population-based epidemiological concepts are applied to primary care settings, within the framework of community-oriented primary care (COPC). Emphasizes community and clinic populations. Teaches epidemiology theory and primary care research applications. Prerequisite: HS 808 or instructor's permission.

838. Applied Data Analysis. (3) Guides students through the data analysis and data management aspects of population-based research and evaluation studies. Includes managing data on personal computers using SPSS for Windows® preparing data for computerization, cleaning and assessing the quality of data, developing and assessing measures, choosing appropriate statistical methods, reading and analyzing computer printouts, and reporting the results in research papers or technical reports. Requires application of statistical methods as demonstrated in introductory courses as well as regression analysis. Students learn to use SPSS for Windows®. Uses population-based data, both survey and administrative. Analytic portion of course is organized around specific research questions and the statistical tools appropriate for answering them.

840. Practicum. (1-9) Links academic studies with actual practice through observation and participation in the administrative and educational processes of public, voluntary, and private health organizations, under the direction of a preceptor from the host agency. Graded C/NC only.

842. Public Health Applications to the World Wide Web. (3) Documents the creation and evolution of the Internet and World Wide Web and applications that allow these tools to be of relevance to public health and preventive medicine in the community setting. Student needs an understanding of biostatistics and some familiarity with computer systems.

843. Health Program Planning. (3) An introductory course for students interested in developing health programs. Provides a conceptual framework of program planning and development. Develops and practice skills in the planning and evaluation of health programs by developing a program plan for a health program in a community of interest.

844. Health Promotion Methods and Materials. (3) Develops competency in selecting and evaluating appropriate methods and materials for effective health promotion programs. Includes foundations of health communication, adult education theories and practice, community health education, and health promotion materials development and evaluation. Integrates theory into practice by developing the methods and materials for a health promotion program.

858. Long-Term Care Systems. (3) Analyzes long-term care in the U.S. as a response to chronic illness and disability, emphasizing the diversity of long-term care systems addressing the needs of persons of all ages. Addresses systemic and organizational concerns affecting costs, outcomes, and quality. Explicitly applies a trajectory model of chronic illness and disability, conceptualizing long-term care systems
in their response to chronically ill and disabled individuals. Students are encouraged to have taken HS 812 or to take it concurrently.

875. Special Topics. (3). New or special topics presented based on sufficient demand. Prerequisite: instructor's consent.

876. Directed Study. (1-3). Individual study of the various aspects and problems within public health. Repeatable for credit with departmental consent. Prerequisite: instructor's consent.

885. Thesis. (1-3). Repeatable to a maximum of six hours. Prerequisite: consent of thesis advisor.

Basic Health Sciences

Courses for Graduate/Undergraduate Credit

510. Clinical Departmental Management. (3). Presents concepts and methods of clinical department management through lectures, discussions, group interaction and individual problem-solving and situational analysis projects. 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. Prerequisite: senior standing or greater than 90 semester hours with laboratory biology (which would lead to a biology major), Robert Mankse, Susan Torke

511. Neuroanatomy and Neurophysiology. (3). 2R. 2L. Study of the structure, physiology, and functions of the central and peripheral nervous systems. Prerequisite: HS 311 or CDS 214.

572. Special Topics or Selected Topics. (1-4). Lecture/discussion; focuses in a discrete area relevant to the health disciplines. Depth study of particular topic or concept, including didactic and current research readings and technological advances relevant to the topic. Open to nonmajors. Repeatable up to six credit hours per program consent.

583. Anatomy of the Body Cavities. (3). The gross anatomy of the human body cavities presented in a four-week summer term using a regional approach. Teams of eight students dissect thoracic, abdominal, and pelvic cavities on human cadavers, emphasizing cardiovascular, respiratory, gastrointestinal, and urogenital systems. Prerequisite: BID 205 or BID 223.

631. Normal and Clinical Nutrition. (4). Studies human nutritional needs in normal development and the life cycle. Covers composition, classification, and function of foods and nutrients, food handling and public health safety and laws, and nutrition in special situations. Includes a study of principles or nutritional support and diet as therapy. Addresses the dietary concerns of a variety of clinical disorders. Includes gastrointestinal disorders, diabetes mellitus, cancer, burns, liver disease, obesity and weight loss, eating disorders, HIV infections, kidney and cardiovascular disease, parental and enteral nutrition, and surgical conditions. Studies nutritional assessment, data interpretation, care planning, record keeping, and diet communications. Prerequisites: general chemistry, anatomy, and physiology.

700. Gross Anatomy. (6). 3R. 9L. For students in the physical therapy program. Study of the structure of the human body including embryology; emphasizes integration of embryological and anatomical information with human functional abilities. Prerequisites: four semesters of biological sciences or program consent.

720. Neurosciences. (3) 3R. 2L. Integration of embryology, anatomical structure, physiology, and functions of the central and peripheral nervous systems with human functional abilities. Prerequisites: HS 711 or program consent.

750. Workshop in Health Related Professions. (1-4). An examination of relevant topics directly and/or indirectly related to the delivery of health care services.

Medical Technology

Graduate Faculty

Professor: James A. Jackson
Associate Professors: JoLynne Campbell, Mary Conrad (chairperson)
Assistant Professors: Diana Cochran, Linda S. Hogan

Although there is no graduate degree in medical technology, the following courses are available for graduate credit.

Courses for Graduate/Undergraduate Credit

550. Clinical Endocrinology. (3). Describes endocrine hormone functions and the practical application of modern clinical laboratory methods for the diagnosis of functional hormonal disorders. Open to nonmajors in medical technology. Prerequisites: BID 223 or equivalent and Chem 103Q or 111Q or equivalent or instructor's consent. An understanding of biochemistry is recommended.

752. Method Evaluation and Selection. (3). Presents an objective, practical approach to the evaluation of laboratory methodologies. This approach incorporates the use of statistical analysis to evaluate of technology and clinical application. Prerequisites: Med. T 459, 469, 479 and 498, or equivalent, HS 705 or instructor's consent.

760. Hematologic Neoplasms. (3). 3R. Deals with the etiology, pathophysiology and morphology of hematologic neoplasms and the health care practitioners' interactions with persons with those disorders.

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. Prerequisite: Med. T 462 or instructor's consent.

775. Advanced Clinical Pathophysiology. (3). Advanced studies in the mechanisms of the disease process and pathologic changes that can occur in various pathophysiologic states. Prerequisite: HS 400 or 15 hours of biology or instructor's consent.

780. Issues in Immunohematology. (3). 3R. In-depth analysis of current issues in a modern transfusion service emphasizing responding to changes in patient care through application of technology, research and supervision. Prerequisites: Med. T 479 and HS 701 or instructor's consent.

500. Seminar in Laboratory Sciences. (1). Discusses recent issues and advances in the field of clinical laboratory science, including the areas of microbiology, chemistry, hematology, immunology and immunohematology. Students are responsible for assigned topics, using current journal articles as resource material. Prerequisite: program consent.

Physical Therapy

Graduate Faculty

Associate Professor: Barbara Smith
Assistant Professors: Dale Barb, Linda Black (chairperson), Robert Manske, Susan Torke

Master of Physical Therapy

The program prepares individuals to enter beginning practice as a physical therapist. The graduates are prepared to evaluate neuromuscular, musculoskeletal, sensorimotor, and related functions to determine the degree of muscle strength, motor development, motion, respiratory ventilation, or peripheral circulatory efficiency of individuals. Following referrals from physicians, podiatrists, or dentists, the physical therapist plans and implements appropriate treatment plans for their clients. Graduates are prepared to work in preventive health care as well as rehabilitative care. The program requires full-time study for a period of 26 consecutive months. Students enter the program in the summer semester only.

Admission Requirements

Admission to the program requires that the student:

1. Have a bachelor's degree from an accredited four-year institution acceptable to the Graduate School.

2. Have a cumulative grade point average of 3.00 in the last 60 hours of graded undergraduate courses, in prerequisite courses, and in all math and science courses.

3. Show evidence of completing the following:

   Biology — two semesters of introductory biology (which would lead to a biology major) with a laboratory

   Anatomy and Physiology — eight to 10 semester hours with laboratory

   College Chemistry — two semesters with laboratory

   College Physics — two semesters with laboratory
English Composition—two semesters
Exercise Physiology—one semester
Computers—one semester computer applications course or the equivalent
Speech—one semester
Mathematics—college trigonometry or equivalent
Statistics—one semester
Social Sciences—psychology, sociology, plus four more courses in any social science area
Humanities—ethics, plus four more courses in any humanities area

4. Show evidence of 20 hours of observation or work in one or more physical therapy settings.

To be reviewed for admission, applicants should do the following:

1. Seek an application packet from the Department of Physical Therapy.
2. Submit the designated Application for Admission and supporting transcripts to the Graduate School.
3. Submit the designated Physical Therapy Application, along with three references by the published deadlines.

Applications will be accepted for review only if they are postmarked in the last two weeks in January. Applications received at any other time will be returned to the sender unreviewed. Applicants will be notified of their admission status by the Graduate School. Applicants should be aware that their records can only be reviewed when all materials have been submitted and they have met eligibility rules. Once an applicant has been admitted, he or she will be asked to submit a $100 nonrefundable tuition deposit to reserve a space for the summer admission. Once the student enrolls, this money will be counted toward payment of tuition.

Students are advised to contact the department for any changes in the program course requirements or in prerequisite requirements.

Degree Requirements
The student must maintain a 3.000 grade point average and a C or better in each of the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Summer I</th>
<th>Hrs.</th>
<th>Fall I</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT 715, Professional Issues and Ethics</td>
<td>3</td>
<td></td>
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<tr>
<td>PT 705, Clinical Medicine I</td>
<td>2</td>
<td></td>
<td></td>
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<tr>
<td>PT 707, Introduction to Basic Patient Management</td>
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<tr>
<td>PT 701, Research Methods and Statistics</td>
<td>2</td>
<td>2</td>
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<tr>
<td>HS 700, Gross Human Anatomy</td>
<td>6</td>
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PT 710, Foundations for Evaluation and Treatment of Musculoskeletal Conditions.................................................. 3
HS 771, Clinical Biomechanics ............................................. 3
PT 726, Clinical Medicine II ............................................ 2

Spring I

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>PT 841, Directed Research</td>
<td>1-3</td>
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<tr>
<td>HS 726, Neuroscience</td>
<td>3</td>
</tr>
<tr>
<td>PT 745, Clinical Medicine II</td>
<td>3</td>
</tr>
<tr>
<td>PT 730, Therapeutic Exercise</td>
<td>1</td>
</tr>
<tr>
<td>PT 747, Assessment and Intervention in Acute Conditions</td>
<td>2</td>
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<tr>
<td>PT 735, Physical Agents in Physical Therapy</td>
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Summer II

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
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<tbody>
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<td>PT 800, Clinical Education I</td>
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Fall II

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<tr>
<th>Course</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>PT 841, Directed Research</td>
<td>1-3</td>
</tr>
<tr>
<td>PT 816, Administration II</td>
<td>2</td>
</tr>
<tr>
<td>PT 809, Orthopedic Assessment and Intervention I</td>
<td>3</td>
</tr>
<tr>
<td>PT 832, Neurological Assessment and Intervention</td>
<td>3</td>
</tr>
<tr>
<td>PT 865, Lifespan Assessment, Intervention, and Prevention</td>
<td>2</td>
</tr>
<tr>
<td>PT 824, Education Methods in Physical Therapy</td>
<td>1</td>
</tr>
<tr>
<td>PT 840, Directed Study, elective</td>
<td>1-3</td>
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</tbody>
</table>

Spring II

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<tr>
<th>Course</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>PT 841, Directed Research</td>
<td>1-3</td>
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<tr>
<td>PT 818, Administration II</td>
<td>2</td>
</tr>
<tr>
<td>PT 811, Orthopedic Assessment and Intervention II</td>
<td>2</td>
</tr>
<tr>
<td>PT 862, Cardiopulmonary Assessment and Intervention</td>
<td>3</td>
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<tr>
<td>PT 850, Clinical Education II</td>
<td>6</td>
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<tr>
<td>PT 840, Directed Study, elective</td>
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Summer III

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<th>Course</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>PT 860, Clinical Education III</td>
<td>6</td>
</tr>
<tr>
<td>PT 870, Clinical Education IV</td>
<td>6</td>
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<tr>
<td>Total hours</td>
<td>80-86</td>
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</tbody>
</table>

Special Requirements
Students will be required to purchase uniforms and other clinical apparel, professional liability insurance, health insurance coverage and specified immunizations as well as submit evidence of an annual physical examination while in the program. Students must also be certified in cardiopulmonary resuscitation (CPR) prior to entering the clinical rotations.

Students are expected to provide their own transportation to and from the health care facilities used for clinical experiences. During clinical assignments outside Wichita, students may be required to pay all living and travel expenses.

Students are referred to the Department of Physical Therapy Student Handbook for more details on specific departmental policies and procedures.

Courses for Graduate/Undergraduate Credit

701. Research Methods and Statistics. (2). Discussion and application of scientific principles, methodology, and the development of a research proposal and major literature review. Prerequisite: departmental consent.

705. Clinical Medicine I. (2). Presents the causes, diagnosis, treatment, and progress of general medical conditions seen by physical therapists. Coordinated by the department faculty and organized around the medical model. Prerequisite: departmental consent.

707. Introduction to Basic Patient Management. (2). Introduces the student to basic patient care and medical terminology. Through clinical observation sessions, students become familiar with various types of physical therapy settings. Prerequisite: departmental consent.

716. Foundations for Education and Treatment of Musculoskeletal Conditions. (3). Introduces the basic scientific foundation and clinical rationale used during evaluation and treatment of musculoskeletal conditions. In depth studies of the art of palpating surface anatomy, performance of manual muscle testing (MMT), and goniometric measurements. Emphasizes review of clinical and scientific literature pertaining to evaluation and treatment of musculoskeletal conditions. Prerequisite: departmental consent.

711. Clinical Biomechanics (3). Presents a kinesiological foundation of all joints so students have the ability to differentiate causes of musculoskeletal problems. Prerequisite: departmental consent.

715. Professional Issues and Ethics. (3). Introduces the profession of physical therapy. Addresses the profession, settings for delivery of services, professional ethics, regulation of the profession, levels of personnel, and other issues directly related to the practice of the profession. Introduces specific issues and challenges the profession is addressing as the larger system for health and medical services changes. Prerequisite: departmental consent.

726. Therapeutic Exercise. (1). Gives basic skills for assisting in patients with neurological impairments. Prerequisite: departmental consent.

735. Physical Agents in Physical Therapy. (4). Presents utilization of physical modalities related to sound, light, electricity, water, paraffin, traction, and massage to achieve physio-
logical and mechanical results. Incorporates evaluation and treatment methods for the above modalities along with analysis of relevant scientific literature. Prerequisite: departmental consent.

745. Clinical Medicine III. (2). Presents the causes, diagnoses, effects, treatment, and prognoses for neurological, pulmonary, and cardiac conditions seen by physical therapists. Coordinated by department faculty and organized around the medical model. Prerequisite: departmental consent.

747. Assessment and Intervention in Acute Conditions. (2). Addresses the management of acute physical conditions, including industrial medicine intervention, lower extremity amputation management, and upper extremity orthotic devices. Also includes the management of intensive care patients in the hospital and at home. Prerequisite: departmental consent.

750. Selected Topics in Physical Therapy. (1-4). Intensive study of current issues, technology, research, and application of selected topics. Repeatable up to 6 credits. Prerequisite: departmental consent.

798. Experimental Courses. (1-4). One-time course offerings. Prerequisite: departmental consent.

Courses for Graduate Credit Only

800. Clinical Education I. (6). Introduction to physical therapy care in varied settings requiring communication and interpersonal relations skills; application of basic physical therapy procedures; beginning professional socialization; beginning development of a generalist in physical therapy. Prerequisite: departmental consent.

802. Cardiopulmonary Assessment and Intervention. (2). Continuation of PT 745. Adds concepts and material to allow students to assess and treat patients with cardiopulmonary conditions. Prerequisite: departmental consent.

809. Orthopedic Assessment and Intervention I. (3). Introduces the basic scientific foundation and clinical rationale used during evaluation, assessment, and treatment of musculoskeletal conditions. Builds on first year PT courses. In-depth study of different injuries and lesions, specific evaluation techniques, and treatments of those injuries and pathologies. Deals mainly with the upper quarter and includes the entire upper extremity, cervical and thoracic spine. Emphasizes organizing and synthesizing information from PT curriculum to allow integration and problem-solving skills to enable students to become competent practicing physical therapists. Prerequisite: departmental consent.

811. Orthopedic Assessment and Intervention II. (3). Continuation of PT 809. Deals mainly with the lower quarter and includes the entire lower extremity, lumbar spine, sacroiliac joint, and pelvis. Emphasizes organizing and synthesizing information from PT curriculum to allow integration and problem-solving skills to enable students to become competent practicing physical therapists. Prerequisite: departmental consent.

816. Physical Therapy Administration I. (2). Studies management systems including assessment, planning, organization, staffing, leadership and motivation, control, and evaluation methods. Includes environmental assessment and strategic planning, organizational design, human resource management, fiscal considerations, and leadership and management styles. Prerequisite: departmental consent.

818. Physical Therapy Administration II. (2). Studies payment systems, legal aspects of physical therapy, risk management, assurance of quality physical therapy care. Includes consumer review, audit, documentation, ethical and legal aspects, fiscal consideration, and community resources. Prerequisite: departmental consent.

824. Educational Methods in Physical Therapy. (1). Discusses teaching and learning theories as they apply to physical therapy education of patients, students, health professionals, and the community. Includes methods of developing and evaluating content, instructional strategies, and learning outcomes. Prerequisite: departmental consent.

832. Neurological Assessment and Intervention. (3). Continuation of PT 745. Adds concepts and material to allow students to assess and treat patients with neurological conditions. Prerequisite: departmental consent.

836. Physical Therapy in Pediatrics. (2). Provides supplemental skills for the entry-level physical therapist in the area of pediatrics. Didactic work and clinical exposure is incorporated in the course. Offered as an elective in the physical therapy program. Prerequisite: PT 735.

837. Special Populations. (3). Expands upon basic evaluation and treatment skills of geriatric, women's health, and industrial medicine regarding physical therapy practice. Also includes psychosocial elements, medical complications, health promotion and prevention interventions as it pertains to the three special populations listed. Prerequisite: PT 735.

840. Directed Study. (1-3). Individual study with a focus developed in collaboration with a departmental faculty member. Allows students to pursue an area of special interest. Prerequisite: departmental consent.

841. Clinical Education II. (S). First in a series of three six-week courses offering continued development of clinical management of patients in varied clinical settings. Includes managerial aspects of care, teaching, and some opportunities for clinical research. Prerequisite: program consent.

856. Clinical Education III. (S). Continuation of PT 850. Prerequisite: program consent.

865. Life Span Assessment, Intervention, and Prevention. (2). Incorporates specific areas of physical therapy as they are applied to individuals throughout their lifetimes. Includes embryology; normal growth and development; healthy lifestyles for children, teens, and adults; obstetrics; and gerontology. Emphasizes prevention. Prerequisite: departmental consent.

870. Clinical Education IV. (6). Continuation of PT 860. Prerequisite: program consent.

890. Thesis. (1-6). Repeatable to a maximum of six hours. Prerequisites: enrollment in graduate studies and consent of thesis advisor.

*In the series of three clinical courses, students experience four different settings including general and rehabilitation practices and a selected area of specialization not limited to pediatrics, geriatrics, and orthopedics. The order of the settings is flexible. There is an increase in the level of expectation of performance with each clinical course which is guided by the evaluation process.

School of Nursing

Graduate Faculty

Professor: Donna Hawley (director of graduate program)

Associate Professors: Alicia Huckstadt, Pamela Larsen, Mary McFugh, Janice Riordan, Elsie Steinke

Assistant Professors: LaDonna Hale, Karen Hayes, Martha Shawver, Betty Smith-Campbell, Betty Sullivan

Master of Science in Nursing

The program is individualized to meet the needs and professional goals of each student. The curriculum has been developed to accommodate part-time study (6 or fewer credit hours), as well as full-time study (9-12 credit hours). The purpose of the graduate program is to prepare advanced practitioners who function as clinical nurse specialists, nurse practitioners, administrators, and educators.

Admission Requirements

In addition to the general University requirements for admission to graduate studies, the School of Nursing requires:

1. A bachelor's degree with a major in nursing from a nationally accredited (NLN or CCNE) school. Applicants with degrees in other disciplines will be considered and counseled on an individual basis.

2. Admission to the Graduate School at Wichita State University.

3. Cumulative grade point average of 3.00 or better in the last 60 hours for full standing.

4. School of Nursing approval.

5. Evidence of Registered Nurse licensure.

6. Coverage by professional liability insurance in the amount of $1/3 million individual/aggregate, to be renewed annually.
7. One year of nursing practice following professional licensure is recommended.

8. Admission to the Nurse Practitioner clinical tracks require a separate application.

Students may be admitted conditionally until all requirements for admission are completed. Items 5 and 6 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 School of Nursing and an undergraduate research course is required. Prerequisite courses are not credited to the degree.

Comprehensive Examination
A comprehensive written examination is required of all graduate nursing students and generally is completed during the student's last semester.

Degree Requirements—Clinical Nurse Specialist and Nurse Practitioner
Satisfactory completion of the following three areas is the minimum requirement for the MSN degree as clinical nurse specialist or nurse practitioner (acute care, adult, family, or pediatric).

Note: Neonatal nurse practitioner, nursing administration, and the dual MSN/MBA degree are listed separately.

Clinical Nurse Specialist
Course Hrs.
I. CNS Core Courses—12 hours
Nurs 703, Scientific Inquiry I.................3
Nurs 705, Scientific Inquiry II................3
Nurs 715, Advanced Nursing Practice: Roles and Issues.............3
Nurs 851, Clinical Data Management..........3
(to be taken towards end of course work)

II. CNS Common Courses—9-12 hours
Nurs 701, Advanced Health Assessment...................2
Nurs 702, Lab for Advanced Health Assessment.................1
Nurs 808, Advanced Role Practicum...............3
Elective course(s), Thesis, or Project........3-6
See Possible Elective Sequences below.

III. CNS Clinical Track Courses—18-21 hours (choose one)
a. Acute Care—18 hours
Nurs 781, Pathophysiology for Acute and Critical Care..............3
Nurs 791A, Acute Care Drug Therapeutics........................3
Nurs 805, Health Promotion Through the Life Span..................3
Nurs 834, Adult Nursing Practicum...................3
Nurs 839, Management of Acute/Chronic Health Problems of Adult..3
Nurs 852, Adult Case Management..................3

b. Pediatrics—18 hours
Nurs 793, Advanced Pathophysiology...........3
Nurs 795, Applied Drug Therapy...................3
Nurs 805, Health Promotion...................3
Nurs 829, Foundations of Pediatric Women's Health Nursing........3
Nurs 832, Pediatric Women's Health Nursing: Practicum I...........3
Nurs 836, Pediatric Women's Health Nursing: Practicum II............3
c. Psychiatric/Mental Health—18 hours
Nurs 783, Brain Disorders in Mental Illness: Assessment and Nursing Interventions................3
Nurs 795, Applied Drug Therapy or Nurs 791A, Acute Care Drug Therapeutics......................3
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
d. Women's Health—18 hours
Nurs 793, Advanced Pathophysiology...........3
Nurs 795, Applied Drug Therapy...................3
Nurs 805, Health Promotion...................3
Nurs 829, Foundations of Pediatric Women's Health Nursing........3
Nurs 832, Pediatric Women's Health Nursing: Practicum I............3
Nurs 836, Pediatric Women's Health Nursing: Practicum II............3
Nurs 853, Reproductive Health of Women..............3

Family Nurse Practitioner
Course Hrs.
I. NP Core Courses—12 hours
Nurs 703, Scientific Inquiry I.................3
Nurs 705, Scientific Inquiry II................3
Nurs 715, Advanced Nursing Practice: Roles and Issues...............3
Nurs 851, Clinical Data Management...........3
(to be taken towards end of course work)

II. NP Common Courses—13-16 hours
Nurs 701, Advanced Health Assessment...................2
Nurs 702, Lab for Advanced Health Assessment...................1

III. Neonatal Nurse Practitioner
Clinical Track Courses—15 hours, tentative
Course Hrs.
Basic Core Courses—15 hours
Nurs 703, Scientific Inquiry I...............3
Nurs 705, Scientific Inquiry II...............3
Nurs 715, Advanced Nursing Practice: Roles and Issues...............3
Nurs 805, Health Promotion Through the Lifespan..................3
Nurs 851, Clinical Data Management................3
(to be taken towards end of course work)
Neonatal Courses — 30 hours
Nurs 703, Neonatal Nursing II ............................................. 4
Nurs 705, Neonatal Nursing III ............................................. 4
Nurs 815, Neonatal Nursing I ............................................. 4
Nurs 861, Neonatal Nursing II ............................................. 4
Nurs 862, Neonatal Nurse Practitioner Preceptorship I ............ 6
Nurs 864, Neonatal Nurse Practitioner Preceptorship II .......... 6

Degree Requirements — Nursing Administration/Nursing Systems — 39-42 hours

I. Core Courses — 12 hours
Nurs 700, Foundations of Nursing Administration .................... 3
Nurs 705, Scientific Inquiry II ............................................. 3
Nurs 815, Advanced Nursing Practice: Roles and Issues ............. 6
Nurs 851, Clinical Data Management ................................... 3
(to be taken towards end of course work)

II. Nursing Administration Courses and Electives — 27-30 hours
Nurs 811, Foundations of Nursing Administration .................... 3
Nurs 812, Nursing Administration Practicum ............................ 6
Nurs 827, Resource Management in Nursing ............................ 3
Nurs 814, Education; or Nurs. 776, Informatics ....................... 3
Electives, Thesis, or Project ............................................. 12-15
See Possible Elective Sequences below. Administration students are encouraged to take the Informatics elective sequence.

Possible Elective Sequences

Administrative
Nurs 811, Foundations of Nursing Administration .................... 3
Nurs 812, Nursing Administration Practicum ............................ 6

Education
Nurs 813, Foundations of Nursing Education ............................ 3
Nurs 814, Nursing Education Practicum .................................. 3
Nurs 757, Clinical Teaching Strategies .................................. 3
Nurs 784, Nursing Education Practicum .................................. 3

Informatics
Nurs 775, Health Care Information Systems ............................ 3
Nurs 776, Health Care Information Systems Practicum ............... 3

II. Dual MSN/MBA Degree

The School of Nursing and the W. Frank Barton School of Business offer a dual degree program in which both the MSN and the MBA degrees are received. The 63-hour program includes a minimum of 27 hours in nursing, 33 hours in business administration, and 3 hours in health care administration. Seeking these degrees separately would require 87-93 credit hours.

There are additional admission requirements for the Master of Business Administration portion of the dual degree:

Admission. To be admitted, applicants must have 1,050 points based on the formula: 200 times a student's overall grade point average (GPA) plus the GMAT score; or 1,080 points based on 200 times the GPA in the last 60 hours of graduate and undergraduate work completed, plus the GMAT score.

Curriculum Notes

The prerequisites, MSN core curriculum, and MBA background fundamentals are taken before the practicum courses and the required MBA courses. Practica should be planned late in the program. Either full- or part-time enrollment is possible.

Curriculum Plan

Master of Science in Nursing Portion — 30 hours

Core Curriculum
Nurs 531, Nursing and Computer Technology (MBA prerequisite) .... 3
Nurs 703, Scientific Inquiry I ............................................. 3
Nurs 705, Scientific Inquiry II ............................................ 3
Nurs 815, Advanced Nursing Practice Roles and Issues ............... 3

Clinical Concentration
Nurs 775, Health Care Information Systems ......................... 3
Nurs 811, Foundations of Nursing Administration ................... 3

Nurs 812, Nursing Administration Practicum ........................... 6
Nurs 827, Resource Management in Nursing ........................... 3
HS 834, Financing Health Care Services ............................... 3

Master of Business Administration Portion — 33 hours

Prerequisites (not included in degree hours)
Math.111, College Algebra ............................................. (3)
Math. 144, Business Calculus ........................................... (3)
Nurs. 531, Nursing and Computer Technology (see above)

Background Fundamentals
Acc. 800, Financial Accounting ......................................... 3
Econ. 880, Analysis of Economic Theory ............................... 3
Mkt. 800, Marketing Systems ............................................. 3
DS 874, Management Information Systems ............................ 3

Required Courses
Acc. 801, Managerial Accounting ....................................... 3
Mkt. 801, Marketing Management ........................................ 3
Mgmt. 803, Business Decision Making .................................. 3
Econ. 880, Managerial Economics ....................................... 3
Fin. 880, Managerial Finance ............................................ 3
Mgmt. 804, Organizational Behavior ................................... 3
Mgmt. 885, Advanced Strategic Management ........................ 3

Courses for Graduate/Undergraduate Credit

505. Directed Study in Nursing, (1-4). Elective. Individual study of the various aspects and/or problems of professional nursing. Repeatable. Prerequisite: departmental consent.


531. Nursing and Computer Technology. (3). Focuses on basic terminology and use of computer software for nursing education, practice and administration. Opportunity for hands-on experience with microcomputers. Prerequisite: admission to the nursing program or instructor's consent. Previous knowledge of computers or computer technology is not required.

543. Women and Health Care. (3). Cross-listed as Wom. S. 543. 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. Examines self-care practices of women and studies ways to promote...
positive health practices. Open to nonnursing majors.

700. Assessment of Pediatric and Adolescent Clients. (3). 2R; 3L. A theoretical and clinical laboratory experience; students focus on the assessment of pediatric and adolescent clients. Open admission to RN and graduate students.

701. Advanced Assessment. (2). Designed to assist students to refine history taking, psychosocial assessment and physical assessment skills. Focuses on assessment of individuals throughout the life span. Emphasizes detailed health history taking, differentiation, interpretation and documentation of normal and abnormal findings. Includes lecture, discussion and demonstration of history taking and an integrated physical assessment. Prerequisite: admission to graduate nursing program. Corequisite: Nurs 702.

702. Advanced Assessment Laboratory. (1). Companion course for Nurs 701. Applies history taking and assessment skills within a laboratory setting. Emphasizes differentiation, interpretation and documentation of normal and abnormal findings. Requires a complete history and physical examination of a client. Prerequisite: admission to graduate nursing program. Corequisite: Nurs 701.


704. Health Maintenance of the School Age Child. (3). Examines and applies major theories, clinical concepts and research studies related to school health nursing. Open to RN and graduate students.

705. Scientific Inquiry II. (3). Builds on Nurs 703. Discusses the research process in relationship to concepts, frameworks/theories. Explores various methodological approaches to research. Considers current issues in nursing research. Demonstrates the research process in a preliminary proposal related to student’s practice area. Prerequisite: Nurs 703 or departmental consent and admission to graduate nursing program.

706. Organization and Management of the School-Health Program. (3). Examines and applies concepts of organization and management to the school-health delivery system. Explores political, economic and social factors which influence the school-health delivery system. Open to RN and graduate students.

707. Alternative and Complementary Health Care. (3). Analyzes the theoretical and empirical basis for various alternative and complementary modalities. Includes an exploration of issues involved with the use of specific modalities within today’s health care environment. Research-based discussion focuses on how to best prepare the health care professional to provide guidance to a client and the family to best achieve a physiological, mental, emotional, and spiritual state most responsive to therapeutic interventions. Emphasizes total evaluation and support of health influences on lifestyle, environment, culture and other cognitive, safety, and affective factors. Open to nonnursing majors.

708. School Nurse Practicum. (2). An intensive clinical experience; students 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.

713. Advanced Assessment of the Neonate. (4). A developmental and systematic approach to the advanced assessment of physiological, psychological, sociocultural and developmental aspects of the fetus, mother in the prenatal period, and the neonate is discussed. Builds on basic assessment skills and emphasizes perinatal, genetic and embryologic factors impacting neonatal development. Emphasizes ways to assess the pregnant woman for problems, the use of special diagnostic tests and the assessment of the newborn. Requires 40 laboratory/clinical hours, providing opportunities to implement various assessment and diagnostic procedures, complete health histories, perform complete physical examinations and complete a perinatal history. Prerequisite: admission to graduate nursing program.

715. Advanced Nursing Practice: Roles and Issues. (3). Designed for students preparing for advanced practice. Discusses historical development of advanced practice role, the ethical, legal, political, and economic issues of such a role and current trends and future directions. Focuses on issues ranging from concerns within the local practice setting to national policy issues related to advanced nursing practice. Prerequisite: admission to graduate nursing program.

718. Advanced Technologies. (2). Focuses on application of clinical skills and interpretation of technologies utilized in a variety of clinical settings. Nurse practitioner students practice these skills in laboratory and/or clinical settings. Prerequisite: admission to one of the NP options and departmental consent. Enrollment is limited.

723. Diabetes Mellitus Nursing. (3). Explores clinical theories, identities and studies appropriate nursing systems for clients with diabetes mellitus. Emphasizes attainment and maintaining optimal levels of functioning and the psychological adjustment of the client and family to a potentially devastating disease. Open to nonnursing majors.

734. Diabetes Mellitus Nursing Practicum. (3). An intensive clinical experience; the student studies, designs and implements nursing systems for individuals or groups in the area of diabetes mellitus nursing management. A weekly hour seminar accompanies the practicum. Open to nonnursing majors.

750. Workshops in Nursing (1-4). An opportunity for intensive study of special topics related to nursing practice, education or research. Open to nonnursing majors.

757. Clinical Teaching Strategies. (3). Explores alternative teaching strategies for the clinical educator to accommodate the changing health care scene. Discusses clinical teaching methods. A clinical rotation plan with accompanying clinical evaluation tool is constructed after the student, subject and setting are delineated. Investigates roles of the educator in teaching clinically.

775. Health Care Information Systems. (3). Examines information systems as they relate to health care. Analyzes information systems in clinical management, administration, education and research. Emphasizes issues surrounding information systems and hands on experience with selected health care information management exercises.

776. Health Care Information Systems Practicum. (3). Provides an individualized opportunity to apply theories of information systems to a health care setting. Includes analyzing existing information programs, identifying applications for automation and undertaking small-scale development efforts. Prerequisite or corequisite: Nurs 775.

777. Physiology/Pathophysiology of the Neonate. (3). Uses concepts of embryology, neonatal physiology and pathophysiology to provide an in-depth study of normal functioning and alteration of normal physiological functioning in cells, tissues, organs and organ systems. Emphasizes form the basis for understanding a variety of pathophysiological conditions and the manifestations and impact of abnormal physiological functioning on neonates. Addresses both generalized processes and major system dysfunctions. Prerequisite: admission to NP track or department consent.

781. Pathophysiology for Acute and Critical Care. (3). Examines pathophysiological concepts relevant to acute and critical care nursing practice. Explores the scientific knowledge base for selected clinical problems in acute care. Emphasizes pathophysiological mechanisms of disease and the relevance to clinical decision making. Prerequisite: admission to graduate program.

783. Brain Disorders in Mental Illness: Assessment and Nursing Interventions. (3). For the student preparing for advanced practice in psychiatric nursing. Considers neurotransmitters, neuroanatomy, neuropathology in the assessment and intervention approaches to the brain disorders of major mental illness. Prerequisite: admission to graduate program.

786. Advanced Health Assessment Practicum. (2). A concentrated assessment practicum focusing on application of knowledge from advanced health assessment courses. Students apply history taking and assessment skills in a specified setting. Emphasizes differentiation, interpretation, and documentation of normal and abnormal findings. Graded S/U. Prerequisites: Nurs 701, 702 and departmental consent and admission to one of the NP options.

789. Pharmacology for the Neonate. (3). Discusses pharmacological agents used in the
management of neonates. Reviews pharmacologic principles and applies them to the use of drugs in the level II or III NICU. Explores the clinical use of drugs in the management of specific illnesses of the neonate. Stresses legal considerations for the Advanced Practice Nurse. Prerequisites: admission to NNP track or departmental consent.

791. Special Studies in Nursing. (1-6). Students engage in extensive study of particular content and skills directly or indirectly related to nursing practice. Repeatably. Open to graduate or undergraduate students. Prerequisites: departmental consent.

793. Advanced Pathophysiology. (3). Explores in-depth scientific knowledge base relevant to selected pathophysiological states encountered in primary care. This provides the basis for the foundation of clinical decisions related to diagnostic tests and the initiation of therapeutic regimens. Age specific and developmental alterations are correlated with clinical diagnosis and management. Application is made through age appropriate examples. Prerequisites: admission to graduate nursing program and departmental consent.

795. Applied Drug Therapy. (3). Discusses the clinical application of specific categories of drugs, commonly encountered in primary care settings. Explores the use of protocols, prescription writing and the ethical/legal and economic issues surrounding the advanced nurse's role in prescribing and monitoring pharmacological therapies in the ambulatory setting. Discusses factors such as age appropriate content related to pharmacokinetics, dosages, expected outcomes and side effects of the drugs. Addresses first line versus second line drugs, alternate drugs, drug interactions, adjusting drug dosages, patient education and compliance issues related to drug therapy. Explores the nurse's role and responsibility related to data collection, problem identification and consultation with the physician. Application is made through age appropriate case studies. Prerequisites: admission to graduate nursing program and departmental consent.

796. Nursing Practicum in Special Setting. (1-5). Opportunity for directed practice in various settings including clinical specialties, nursing administration, nursing education and consultation. Prerequisites: departmental consent.

799. Directed Readings in Nursing. (1-2). Student engages in critical search of the literature in areas related to the profession and practice of nursing. Prerequisites: departmental consent.

Courses for Graduate Students Only

803. Primary Care I: Management of Common Health Problems through the Life Span. (3). Focuses on common health problems seen in individuals and families throughout the life span. Stresses applications of current research and theory-based interventions appropriate for management by advanced registered nurse practitioners. Emphasizes strategies and protocols to manage common problems in urban and rural patients. Interventions to restore individual and family levels of pre-morbid health, and positive behaviors. Prerequisites: all core courses, Nurs. 718, 736 and admission to the FNP option. Prerequisites: admission to the FNP option. Corequisites: Nurs. 604, 605.

804. Primary Care I: Practicum. (4). Concentrates clinical practice in a primary care setting that addresses individuals and families throughout the life span within the context of the community. Theory and research used in clinical settings. Emphasizes health promotion, maintenance, and prevention interventions. Prerequisite: admission to the FNP option. Corequisite: Nurs. 605.

805. Health Promotion through the Life Span. (3). Focuses on the wellness of individuals and families through the life span seeking to maintain or improve health and prevent illness. Interventions reflect a preventive framework, enhanced by theory and research that provide an understanding of health and lifestyle behaviors. Prerequisites: Nurs. 703 and 705.

808. Advanced Role Practicum. (3). Prepares the student for advanced nursing practice. An intensive practicum experience; the student works with an advanced nurse practitioner in a selected clinical setting. Emphasizes role development, case management and analysis of strategies to improve nursing practice. Prerequisites: all core courses, Nurs. 791A or 795, pathophysiology. (Nurs. 781, 783 or 793) and at least 6 hours of clinical concentration.

809. Primary Care II: Management of Complex Health Problems through the Life Span. (3). Focuses on complex problems seen in individuals and families throughout the life span. Stresses applications of current research and theory-based interventions appropriate for management by advanced registered nurse practitioners. Emphasizes strategies and protocols to manage complex patient problems in urban and rural patients; interventions to restore individual and family levels of pre-morbid health, including secondary and tertiary prevention. Prerequisites: Nurs. 803, 804 and admission to the FNP option. Corequisite: Nurs. 810.

810. Primary Care III: Practicum. (4). Emphasizes assessment and management of common health problems across the life span, based upon knowledge of theory and research. Primary care clients with common conditions affecting major body systems assessed and managed. Weekly seminars focus upon analysis and evaluation of clinical situations and cases. Prerequisites: admission to the FNP option. Corequisite: Nurs. 809.

811. Foundations of Nursing Administration. (3). Assists the student in acquiring theoretical knowledge of organizations. Considers current issues and research in nursing administration and impact on nursing practice. Prerequisites: Nurs. 703 and 705. Prerequisite or corequisite: Nurs. 715.

812. Nursing Administration Practicum. (3). Practicum in a nursing administration setting; student, under professional guidance, becomes directly involved. A seminar accompanies the field experience. Types of experience may include roles in nursing education or service, mid-level nursing administration, staff development or community health. May be repeated twice. Prerequisite: Nurs. 811 or 827.

813. Foundations of Nursing Education. (3). Assists the student explore theoretical and practical aspects to curriculum development and teaching of nursing in higher education and continuing education. Prerequisites: Nurs. 703 and 705. Prerequisite or corequisite: Nurs. 715.

814. Nursing Education Practicum. (3 or 6). 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: departmental consent and Nurs. 813.

815. Neonatal Nursing I. (4). First of two courses that integrate the physiologic pharmacologic, and assessment skills and principles in determining appropriate care of the neonate. Uses current research and evidenced-based practices as the course framework. Emphasizes the effects of critical conditions on the growth and development of the neonate, including subsequent chronic health problems and the short and long-term consequences to the child's family. Discusses disorders of the central nervous, pulmonary, and cardiovascular systems. Demonstrates and applies the use of specific interventions and diagnostic procedures in laboratory and clinical settings during 40 hours of required clinical activities. Prerequisites: core courses, Nurs. 713, 777 and 789.

817. Foundations of Psychiatric Mental Health Nursing. (3). Evaluates major theories, clinical concepts and current research in psychiatric/mental health in relation to formulating a conceptual model for nursing practice. Prerequisites: Nurs. 701, 702, 703 and 705. Prerequisite or corequisite: Nurs. 713.

821. Thesis. (1-6). Graded S/U only. Student, in conjunction with the academic advisor and a three-member thesis committee, designs and conducts a formal research project. Prerequisites: admission to graduate nursing program and departmental consent.

822. Psychiatric/Mental Health Nursing Practicum I. (3). Intensive clinical experience; student plans, implements and evaluates nurse-therapist strategies with individual clients/patients. A seminar accompanies the practicum. Prerequisite or corequisite: Nurs. 819.

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, a historical study, a philosophical paper or other type project developed in conjunction with the student's faculty advisor. Prerequisites: admission to graduate nursing program and departmental consent.
825. Independent Study. (1-6). Provides opportunity for the student to develop, in collaboration with a school faculty member, objectives and protocol for independent work related to the practice of nursing. Prerequisites: admission to graduate nursing program and departmental consent.

827. Resource Management in Nursing. (3). Focuses on the assessment of human and material resources and informational systems needed to manage nursing care delivery. Emphasizes Nursing Personnel Management, patient classification systems, costing out of nursing services, strategic planning and marketing. Prerequisites: Nurs. 203 and 705. Prerequisite or corequisite: Nurs. 715.

829. Health Care During Growth and Development of Children and Families. (1-4). Focuses on physical and psychosocial development changes from infancy through young adulthood. Considers factors that facilitate or interfere with healthy development. Provides an introduction to family theories including family development, family systems, and family stress. Emphasizes the role of the Advanced Practice Nurse in assisting children and families during the developmental years. Modular format allows students to select specific units: Unit One: Growth and Development: The Infant and Young Child (1 credit); Unit Two: Growth and Development: The Adolescent and Young Adult (1 credit); Unit Three: Family Issues; Part I and II (1 credit each). Prerequisites: Nurs. 703 and 705.

832. Pediatric and/or Women's Health Nursing Practicum I (1). 9P. An intensive clinical experience; student focuses on the process of systematic developmental, psychosocial and health assessment of individuals within a family system. Experiences based on the student's clinical interests. Prerequisite: all core courses. Prerequisite or corequisite: Nurs. 829.

834. Adult Nursing Practicum. (1). An intensive clinical experience; student designs, implements and evaluates nursing care for adults. Selects specialized areas of study; may involve health maintenance or illness care of acutely or chronically ill adults. Prerequisites: all core courses, Nurs. 781 and 791A. Prerequisite or corequisite: Nurs. 805 or 839.

836. Pediatric and/or Women's Health Nursing Practicum II. (3). An intensive clinical experience; student analyzes, prioritizes and designs therapeutic interventions in the management of common health problems affecting individuals and family systems. Experiences based on the student's clinical interests. Prerequisites: all core courses and Nurs. 805. Prerequisite or corequisite: Nurs. 833.

839. Management of Acute and Chronic Health Problems of the Adult. (3). Examines clinical concepts and issues related to major disruptions in the health status of adults. Emphasizes assessment, measurement and interventions related to acute and chronic health problems. Prerequisites: all core courses, Nurs. 781 and 791A. Prerequisite or corequisite: Nurs. 803.


845. Pediatric Primary Care I: Management of Common Health Issues. (3). Focuses on comprehensive assessment, diagnosis, and management of health and common health problems seen in children and families during the infant, childhood, and adolescent years. Emphasizes applications of current research and theory-based interventions appropriate for management by Advanced Registered Nurse Practitioners. Emphasizes strategies and protocols to manage common problems in urban and rural settings, interventions to reduce children's and family's levels of pre-illness health, and positive behaviors. Prerequisites: Nurs. 701, 702, 703, 705, 708, 785, 786, 829 and admission to the PNP option. Prerequisites or corequisites: Nurs. 715, 793, and 805.

848. Pediatric Primary Care I Practicum: Clinical Management of Common Health Issues. (3). Concentrated clinical practicum in a primary care setting that addresses individuals and families during the infancy, childhood, and adolescent age span, within the context of the community. Emphasizes history taking; cultural, developmental, nutritional, and physical assessment; and documentation skills. Seminars focus on analysis and evaluation of clinical situations. Prerequisites: admission to the PNP option. Prerequisite or corequisite: Nurs. 847.

849. Nurse Practitioner Preceptorship. (3 or 6). A concentrated clinical practicum in an acute or primary health care setting that emphasizes the management of care for individuals. Students synthesize concepts and principles from previous classes and clinical experiences, applying theoretical and research content to acute, chronic, urgent and/or common health problems. Preceptorship is in a clinical agency appropriate to the student's clinical interests. Prerequisite: departmental consent and admission to one of the NP options.

851. Clinical Data Management. (3). Management of clinical data and its relationship to advanced nursing practice. Existing data from clinical practice settings are identified and analyzed for presentation both verbally and in report form. Emphasizes using existing data both to determine health care outcomes and to evaluate delivery of care. Communication of findings will occur. Prerequisites: all core courses and at least 6 hours of clinical concentration. Computer literacy is an expectation.

852. Adult Case Management Practicum. (3). Applies the case management principles to this intensive clinical experience as the student designs, implements and evaluates nursing care for adults. Emphasizes measuring clinical outcomes and management of resources. Prerequisites: all core courses, Nurs. 781 and 791A. Prerequisite or corequisite: Nurs. 805 or 839.


855. Management of the Acutely and Critically Ill Adult. (3). Examines advanced nursing interventions focused on care stabilization and management of complications in the acutely/critically ill adult. Emphasizes management of the adult with complex health problems. Interventions focus on application of advanced practice nursing care to the restoration of health/well being. Prerequisites: Nurs. 805, 854, 839, 852, admission to the ACNP option and departmental consent.

857. Pediatric Primary Care II: Management of Common Health Issues. (3). Focuses on health promotion, health maintenance, and risk reduction for children and adolescents with special health care needs. Emphasizes comprehensive assessment, diagnosis, and management of health, developmental, and chronic health problems with a family and developmental framework. Considers children with developmental and learning disabilities and children with selected complex and chronic health problems. Emphasizes the collaborative and interdisciplinary nature of a child's care in school and other settings. Addresses the unique needs of children in underserved communities. Stress applications of current research and theory-based interventions appropriate for management by advanced registered nurses as part of the primary health care delivery team. Emphasizes strategies and protocols to manage complex patient problems in urban and rural patients and interventions to reduce children's and family levels of pre-illness health, including secondary and tertiary prevention. Prerequisites: Nurs. 847 and 848.


859. Pediatric Primary Care III: Advanced Health Care for School Nurse Practitioners. (3). This multidisciplinary course builds upon the dimensions of assessment and health care for children and adolescents in a family and community framework and provides a foundation for advanced practice in school health.
from the perspectives of educators and health care providers. Focuses on major contemporary issues that affect the health and education of children and adolescents in the school community. Considers theories, models, and concepts from education, public health, and nursing as they relate to schools. Focuses on the link between health and education. Examines political, sociological, economic, and environmental factors, as well as major causes of morbidity and mortality. Special emphasis on cultural diversity and vulnerable and underserved populations-at-risk and strategies that enhance learning and health promotion. Prerequisites: previous courses in the PNP specialization or departmental consent.


861. Neonatal Nursing II. (4). Continuation of Nurs. 815. Discusses disorders of the gastrointestinal, renal, endocrine, hematologic, musculoskeletal, ophthalmologic, dermatologic, and immune systems, the use of specific interventions and diagnostic procedures are demonstrated and applied in laboratory/clinical settings during 40 hours of required clinical activities. Prerequisites: core courses, Nurs. 713, 777 and 789.

862. Neonatal Nurse Practitioner Preceptorship I. (6). First of two preceptorship experiences which can be taken concurrently or in consecutive semesters for a minimum of 300 clinical hours. Provides opportunities to apply knowledge and skills from advanced nursing role, theory, research, and neonatal clinical courses to the advanced therapeutic management of high risk neonates. Emphasizes therapeutic measure within a conceptual framework or model and applying findings from research relevant to comprehensive care of neonates. The client system is the neonate and family. Prerequisites: Nurs. 815 and 861.

864. Neonatal Nurse Practitioner Preceptorship II. (6). Continuation of Nurs. 862. Need a minimum of 300 clinical hours. Provides opportunities to build upon knowledge and skills gained during Nurs. 862, regarding the advanced therapeutic management of high risk neonates. Emphasizes therapeutic measure within a conceptual framework or model and applying findings from research relevant to comprehensive care of neonates. The client system is the neonate and family. Prerequisites: Nurs. 815 and 861. Corequisite or prerequisite: Nurs. 862.

School Nurse

For registered nurses who desire school nurse certification but who do not wish to pursue a degree. Students generally take three courses in the College of Education and three courses in the School of Nursing. The total program requires 14-18 credit hours.

Contact the School of Nursing for details.

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. P stands for practicum/clinical hours. 40P means 40 hours of practicum per week.
Women's Studies, (316) 978-3358 — Dorothy Miller, chairperson

Urban and Public Affairs, Hugo Wall School of, (316) 978-7200 — Paul Cromwell, director

Criminal Justice, (316) 978-7200 — Michael Palmiotto, graduate coordinator

Gerontology, (316) 978-7200 — William Hays, graduate coordinator

Minority Studies, (316) 978-7200 — Daisy Kabogananu, graduate coordinator

Public Administration, (316) 978-7200 — Samuel Yeager, graduate coordinator

Social Work, (316) 978-7250 — Catherine Lewandowski, graduate coordinator

Anthropology

Graduate Faculty

Professors: Donald Blakeslee, Robert Lawless (chairperson), Clayton A. Robarchek
Associate Professors: Dorothy Billings, David Hughes, Peer Moore-Jansen

Assistant Professor: John Carpenter

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 a minimum of 15 semester hours in anthropology to include a course in history and theory of anthropology and a foundation in the main subdivisions of the discipline, 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 has three tracks. Track 1 requires the completion of 30 semester hours, including the presentation of a thesis and comprehensive exams. At least 60 percent (18) of these hours must be in courses numbered 700 or above. The 30 hours must include a core course in archaeological anthropology (Anth. 736), cultural anthropology (Anth. 746), and biological anthropology (Anth. 756), and two seminars. Track 2 requires the completion of 33 semester hours, including the three core courses (Anth. 736, 746, and 756), two seminars, and the presentation of a thesis or approved project. Track 3 requires the completion of 36 semester hours, at least 21 in anthropology including Anth. 736, 746, and 756, and four seminars. At least 12 are from (in) other discipline(s) are also required. Either an examination or an internship is also required. A total of four hours of thesis, project, or internship, to complete the 30, 33, or 36 semester hours requirements for each track shall include either two hours each of Anth. 871 and 872 (internship), Anth. 873 and 874 (project), or Anth. 875 and 876 (thesis). Comprehensive exams are graded by the all full-time teaching faculty in the department. Theses, projects, and internships are approved by committee. Students in all tracks are required to form a thesis/project/internship committee of at least two full-time graduate teaching faculty from within the anthropology department and at least one graduate faculty from another department.

Examinations

All students in Track 1 and those students in Track 2 who so elect must pass a written proficiency examination in the fundamentals of anthropology. Students must complete a minimum of 15 hours of graduate work in anthropology before taking the examination. All students who present a thesis, project, or internship must pass an oral defense of their effort. A foreign language examination is contingent upon the nature of the thesis topic.

Courses for Graduate/Undergraduate Credit

502. Introduction to Archaeological Laboratory Techniques. (1-3). Maximum of three hours. An introduction to the laboratory processing of archaeological materials. Direct experience in all phases of preparing excavated materials for analysis, including cleaning, restoring, preserving, numbering, and cataloging of ceramic and lithic artifacts and other remains. Prerequisites: Anthr. 124Q or 305Q.

506. Peoples of the Pacific. (3). General education further studies course. A survey of the races, languages and cultures of nonliterate peoples of Polynesia, Micronesia and Indonesia.

508Q. Ancient Civilizations of the Americas. (3). General education further studies course. A cultural survey of the Aztec Maya and Inca. Prerequisites: Anthr. 124Q or instructor’s consent.

511. The Indians of North America. (3). General education further studies course. A survey of tribal societies and native confederations of Mexico from the prehistoric through...
512. Twentieth Century Problems in American Studies. (3) Analysis and study of problems in various disciplines that influence American development.

514. Anthropology of Aging. (3) General education further studies course. Cross-listed as Geront. 514. An anthropological analysis of the latter stages of the life cycle with historical and cross-cultural perspectives.

515Q. China. (3) General education further studies course. An introduction to the people of China and aspects of their culture: economy, government, society, religion, and the arts. Historical attention on the many adjustments the Chinese have made during the 20th century following political revolutions, industrialization and expanding trade relations.

516Q. Japan: People and Culture. (3) General education further studies course. An introduction to the culture of Japan including its history and prehistory, aspects of traditional culture and 20th century Japan, its economy, politics and social organization.

519. Applying Anthropology. (3) General education further studies course. The application of anthropological knowledge to the solution of social problems in industry, public health and public administration. Prerequisite: Anthr. 102Q or 124Q.

522Q. Art and Culture. (3) General education further studies course. A survey of the visual and performing arts of non-Western peoples with special attention to their relationship in the cultural setting. Prerequisite: Anthr. 102Q or 124Q.

526. Social Organization. (3) General education further studies course. A survey of the varieties of social organization among non-industrialized peoples throughout the world. Deals with family systems, kinsship, residence pattern and lineage, clan and tribal organizations. Prerequisite: six hours of anthropology.

528. Medical Anthropology. (3) General education further studies course. Studies the health and behaviors of various human societies, especially in but not limited to, those outside the western scientific tradition. Covers attitudes toward the etiology of disease, the techniques of healing, the use of curative drugs and other agents, the roles of healers and therapists and the attitudes of the community toward the ill. A library or field research project is required. Prerequisite: 3 hours of nursing, 3 hours of anthropology or instructor's consent.

538. Early Man in the New World. (3) A critical examination of the facts and theories concerning early man in the New World from the peopling of the continent to the beginning of the Archaic Tradition, and of the role of cultural contacts between eastern Asia and North America. Prerequisite: Anthr. 124Q or 305Q.

540. The Indians of the United States: Conquest and Survival. (3) An anthropological inquiry into four centuries of cultural contact, conflict, resistance and reassessment. Prerequisite: Anthr. 102Q or 124Q or instructor's consent.

542. Women in Other Cultures. (3) General education further studies course. Cross-listed as Wom. S. 542. Deals with the place of women in primitive and non-Western societies, in various aspects of culture: political, economic, social, religious, domestic, intellectual, psychological and aesthetic. Compares and contrasts societies in order to see how different kinds of roles for women are related to different kinds of societies.

555. Paleanthropology and Human Paleontology. (3) General education further studies course. A detailed examination of human evolutionary history as evidenced by fossil remains and a survey of various interpretative expansions of the fossil record. Prerequisite: Anthr. 101Q or Biol. 205Q or equivalent.

557. Human Osteology. (3) Deals with human skeletal and dental materials with applications to both physical anthropology and archaeology. Lecture and extensive laboratory sessions; includes bone and tooth identifications, measurement and analysis and skeletal preservation and reconstruction. Individual projects are undertaken. Prerequisite: Anthr. 101Q or equivalent.


567. Theories of Culture. (3) A survey of the main theoretical movements in cultural anthropology, including both historical and contemporary schools of thought. Prerequisite: six hours of anthropology.

569. Biological Anthropology Laboratory Analysis. (1-3) Analyze biological anthropology materials including human and nonhuman skeletal material of both forensic contemporary or prehistoric origin according to standardized methods for recording and data collecting in biological anthropology. Learn methods of identification, analysis, and interpretation and prepare a standard technical report, Prerequisites: Anthropology 101Q, 106, 355 or 557.

601. Southwestern Archaeology. (3) General education further studies course. A comprehensive survey of the prehistoric and historic cultures of the American Southwest particularly emphasizing the cultural continuities and changes covering 11,000 years. Prerequisites: one introductory course in anthropology or departmental consent.

612. Indians of the Great Plains. (3) An investigation of the cultural dynamics of the Great Plains area from the protohistoric period to the present. Prerequisites: six hours of anthropology and departmental consent.

613. Archaeology of the Great Plains. (3) The archaeology of the Great Plains area from earliest evidence to the historic period. Prerequisite: one introductory course in anthropology or departmental consent.

647. Theories of Culture. (3) A survey of the main theoretical movements in cultural anthropology, including both historical and contemporary schools of thought. Prerequisite: six hours of anthropology.

651. Language and Culture. (3) Cross-listed as Ling. 651. An introduction to historical and descriptive linguistics. Deals with the ethnography of communication, lexicostatistics and linguistic detection. Prerequisite: six hours of anthropology.


690. Field Methods in Anthropology. (3-6) A maximum of six hours can be counted as anthropology hours toward either degree. Instructors the student in anthropological and ethnological field methods through actual participation in a field research project. The project depends upon the specific Summer Session and varies from year to year. Prerequisite: instructor's consent.

701. Directed Readings in American Studies. (1-3) Prerequisites: six hours of American studies course work or equivalent and instructor's consent.

736. Advanced Studies in Archaeology and Ethnohistory. (3) Special area and theory problems in a historical approach to culture. Prerequisites: six hours of anthropology and graduate status.

746. Advanced Studies in Cultural Anthropology. (3) Entails an in-depth coverage of
selected topics in cultural anthropology, including social structure, economic and political organization, religion, personality, arts and knowledge systems, and current research methods. Prerequisite: six hours of anthropology and graduate status.

750. Workshop. (1-4). Short-term courses focusing on anthropological problems. Prerequisite: instructor's consent.

756. Advanced Studies in Biological Anthropology. (3). In-depth coverage of selected topics in biological anthropology, including the history of evolutionary thought, human variation, growth and development, population dynamics, paleoanthropology, and primatology. Focuses on current issues, method, and theory in biological anthropology. Prerequisite: Anthr. 101Q or instructor's consent and graduate status.

781. Cooperative Education. (1-4). Provides practical experience that complements the student's academic program. Requires consultation with and approval by an appropriate faculty sponsor. Offered C/NC only. Prerequisite: graduate status.

798. Seminar in American Studies. (3). Focuses on anthropological problems and includes American studies course work or equivalent and instructor's consent.

799. Seminar in American Studies. (3). Exploration of various aspects of American studies, including American culture, history, and society. Prerequisite: six hours of American studies course work or equivalent and instructor's consent.

Courses for Graduate Students Only

801. Seminar in Archaeology. (3). Comprehensives. analysis of archaeological data emphasizing theoretical problems of interpretation and reconstruction. Repeatable up to six hours. Prerequisite: Anthr. 501 or instructor's consent.

802. Methods in Anthropology. (2-3). Develops 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.

820. Seminar in Biological Anthropology. (3). Analysis and discussion of ancient fossil, prehistoric, historic, and recent/modern biological variation in an anthropological perspective. Can include advanced studies of human variation and skeletal biology, demography and population genetics in anthropology, advanced studies in paleoanthropology and issues in the debate over micro and macro levels of evolution, and quantitative applications to the study of human variation in anthropological contexts. Repeatable up to 6 hours. Prerequisite: departmental consent.

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.

847. Colloquium in Anthropology. (1-2). S/U grade only. Repeatable for a maximum of three hours. Seminar-style experience in recent research in all of the subfields of anthropology. Allows those students preparing their first papers for presentation at professional conferences to present them before a critical audience. Students presenting colloquium papers receive two credits. Prerequisite: graduate standing in anthropology.

848. Recent Developments in Anthropology. (3). A review of the latest discoveries and interpretations in the science of human beings. Repeatable up to six hours. Prerequisite: five hours of anthropology.

870. Independent Reading. (2-3). Repeatable up to six hours. Prerequisite: departmental consent.

871-872. Internship in Anthropology. (2-2). Students following applied or multidisciplinary tracks, such as museology, international business education, or health professions receive professional work experience in their field through an internship at a designated work place approved by departmental committee. Course need not require a tangible end product (e.g., paper). May be repeated, but limited to a total of 4 credit hours. Prerequisite: committee consent.

873-874. Advanced Project in Anthropology. (2-2). In consultation with their major advisor and committee, students design a project (e.g., a museum exhibit, a written plan for an international business venture, a lesson plan for an anthropology unit in schools that applies anthropological method and theory to the specific needs of an institution, group, or population). Requires a tangible end product (e.g., paper, thesaurus, or visual production or exhibit). May be repeated, but limited to a total of 4 credit hours. Prerequisite: committee consent.

875-876. Thesis. (2-2). Biological Sciences

Professors: L. Raymond Fox, Wendell W. Leavitt (chairperson)

Associate Professors: George R. Bousfield, Karen L. Brown, Donald A. Distler

William J. Hendry III (graduate coordinator), J. David McDonald

Assistant Professors: M. Steven Doggett, Michael J. Lydy, John W. Schmidt, Arthur L. Youngman

Master of Science and Areas of Specialization

The Master of Science (MS) program offered by the Department of Biological Sciences provides an advanced education under either the research thesis option or nonthesis option. A variety of specializations in the broad areas of cell, molecular, endocrine, reproductive, and environmental biology are available. All incoming students are assigned to a temporary graduate advisor after which they choose a permanent graduate advisor and committee. The advisors work with the students to develop a program of studies that meets the student's educational goals.

Admission Requirements

Completed application forms and two official transcripts of all previous academic work must be submitted to the Graduate School at least four weeks before registration. Admission as a full-time standing student requires: (1) the completion of 24 semester hours in biological sciences and 15 semester hours in chemistry; (2) an overall grade point average of at least 2.750 (4.00 scale) for the most recent 60 semester hours completed; (3) a grade point average of at least 3.000 (4.00 scale) for all undergraduate biological sciences courses; (4) three letters of recommendation from science faculty; (5) receipt of GRE general aptitude and advanced test scores in biology scores; and (6) TOEFL scores if English is not the student's first language. Students who do not meet these requirements but who wish to begin graduate coursework may qualify for conditional acceptance into a nondegree category.

Degree Requirements

All students are required to attend the departmental seminar course (Biol. 797) each semester and must give at least two oral presentations. They are also required to take the research methods course (Biol. 740). Candidates selecting the research thesis option must complete 30 credit hours of graduate work, including the presentation and oral defense of a thesis based on original research. In addition, all students in the research thesis option must demonstrate proficiency in at least one research tool, such as knowledge of a modern foreign language or completion of acceptable course work in statistics or computer applications. Graduates who select this option may move on to advanced research degrees or careers in research science. Candidates selecting the nonthesis option must complete 36 credit hours of graduate work and successfully pass comprehensive exams in two areas of biology. The nonthesis option is 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 biology.

Nonmajor Courses
(May not be used to satisfy the requirements for the major)

Courses for Graduate/Undergraduate Credit

589C. Foundations of Human Heredity. (3). General education further studies course. Introduction to the mechanisms and societal significances of developmental, transmission and population genetics of humans. Attention to inborn errors of metabolism and development and the roles of genetic counseling and genetic engineering in their management. For students majoring outside of the natural sciences and does not carry credit toward a biological sciences major or minor. Students earning graduate credit produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisite: junior standing.

518Q. Biology of Aging. (3). Cross-listed as Geron. 518Q. An introduction to the phenomenon of aging including a survey of age-related processes and mechanisms of senescence emphasizing humans. Students earning graduate credit produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisite: a basic course in biological sciences that satisfies general education requirements.

Major Courses
(Used to satisfy the requirements for the major)

Courses for Graduate/Undergraduate Credit

502. Vascular Plants. (4). 2R; 4L. An introduction to the structure, reproduction and evolution of the major groups of living and extinct vascular plants. Includes an introduction to flowering plant systematics. Students earning graduate credit perform a primary literature survey on a topic selected in consultation with the instructor and deliver a 30-minute oral presentation to the class. Prerequisite: Biol. 204.

503. Taxonomy and Geography of Flowering Plants. (4). An introduction to the principles and methods of plant taxonomy and to the study of the patterns of plant distribution and the origin of these patterns. Class time is divided among lectures, laboratories and field work. Field trips throughout Sedgwick County and to the Flint and Chautauqua Hills provide an opportunity to collect specimens and to observe ecology and distribution of native species of flowering plants. Prerequisite: Biol. 204 or instructor's consent.

524. Vertebrate Zoology. (4). 2R; 4L. Evolution, distribution, systematics, natural history and special characters of vertebrate animals. Students earning graduate credit produce a term paper based on the technical literature on a topic chosen in consultation with instructor. Prerequisite: Biol. 204. Biol. 527 also is recommended.

534. Mammalian Physiology. (3). An organ systems approach to mammalian—primarily human—physiology. Emphasizes nervous and endocrine control systems and the coordination of both functions. Students earning graduate credit produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisite: Biol. 204 and Chem. 531 or instructor's consent.

540. Developmental Biology. (4). 2R; 4L. Developmental processes in animals emphasizing vertebrates. Centered on the cell interactions controlling differentiation and morphogenesis. Students earning graduate credit complete additional assignments chosen in consultation with the instructor. Prerequisite: Biol. 204 Biol. 420 recommended.

553. Ecological Risk Assessment. (4). Risk assessment is the process of assigning magnitudes and probabilities to the adverse effects of human activities or natural catastrophes. It involves global climate change, habitat loss, acid rain deposition, reduced biological diversity, and the ecological impacts of pesticides and toxic chemicals. It uses measurements, testing, and mathematical models to quantify the relationship between the initiating event and the effects. Course is an overview of the basic framework for conducting an Ecological Risk Assessment, and a discussion of individual case studies involving several important environmental issues. An introductory class for students interested in assessing the effects of various stressors on environmental health. Prerequisites: Biol. 418 or equivalent and Chem. 531 or equivalent or instructor's permission.

560. Plant Ecology. (4). 2R; 6L. Principles and patterns of plant distribution and of adaptation of plants to particular habitats. Emphasizes the experimental approach to plant ecology. Field trips are an integral part of the laboratory. Prerequisite: Biol. 418 or instructor's consent.

572. Computer Methods in Biology. (3). Includes mathematical modeling of biological systems, tools for recording and retrieving experimental results, computer-aided instruction, internet and on-line science resources, software for scientific publication including digital photo documentation and reference managers for bibliographies. Students select a biology topic of interest, study non-statistical and computer approaches previously used, and develop their own experiments. Half the course is lectures and demonstrations and half is individual student projects. Graduate students are expected to have had prior experience with the primary literature and be prepared to execute a more sophisticated laboratory research project. Prerequisite: one of the following: Biol. 418, 419, 420, or instructor's consent.

573. Statistical Applications in Biology. (3). Supplements Stat. 370 by providing experience with practical applications of statistical theory to biology and the design of biological experiments. Emphasizes the use of computer programs for certain statistical tests. Access to calculators with at least two memory banks is strongly encouraged. Students earning graduate credit complete an additional statistical analysis assignment involving the use of the computing facility. Prerequisites: Stat. 370.

575. Field Ecology. (3). Techniques for analysis of systems consisting of living organisms and their environments. Field trips are
required. Students earning graduate credit perform in individual projects on a comparative community structure and report the results as a technical paper. Prerequisite: Biol. 418 or instructor's consent.

578. Aquatic Ecology (5). 2R; 6L. Introduction to the biological and physical processes that operate in lakes, streams, and estuaries. Requires assigned readings, individual projects, and field trips. Students earning graduate credit investigate and compare the characteristics and properties of two freshwater ecosystems or investigate a specific taxon or trophic level in a freshwater ecosystem. The results of this investigation are reported as a technical paper. Prerequisites: Biol. 418 or instructor's consent.

560. Immunobiology. (3). The nature of antigens and antibodies and their interactions. Includes cellular and humoral aspects of immunologic phenomena. Students earning graduate credit prepare a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisites: Biol. 304 and Chem. 531.

591. Immunobiology Laboratory. (3). 6L. Methods of immunization and techniques for qualitative and quantitative determinations of antibody production and antigen-antibody reactions. Students earning graduate credit prepare a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisites or corequisites: Biol. 593. Chem. 531 or instructor's consent.

610. Topics in Botany. (3-4). Selected offerings in botany. Consult the Schedule of Courses for current offerings. Students wishing to enroll in courses not listed in the current Schedule must complete a Directed Independent Study Abstract form and obtain approval prior to enrollment. Students earning graduate credit produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisite: Biol. 204 and instructor's consent.

630. Behavioral Ecology. (3). A study of the biological basis of social behavior, stressing the underlying evolutionary and ecological mechanisms. Lectures will examine altruism and kin selection, kin recognition mechanisms, sexual behavior, sexual selection and mate choice, mating systems, and reproductive strategies from the perspective of natural selection. Students earning graduate credit will be expected to write a term paper based on the technical literature and to present this in a class seminar. Prerequisite: Biol. 418.

640. Topics in Zoology. (3-4). See Biol. 610. Prerequisite: Biol. 204 and instructor's consent.

654. Pathogenic Microbiology. (4). 2R; 4L. An introduction to the important pathogenic microorganisms and their relationships to health and disease in humans. Students earning graduate credit prepare a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisite: Biol. 320.

660. Topics in Microbiology. (2-4). See Biol. 610. Prerequisite: Biol. 350 and instructor's consent.

666. Special Topics in Biochemistry. (3). Primarily for students who choose the biochemistry field major. Discusses a small number of current problems in biochemistry in depth. Requires reading published research papers in the field. Students earning graduate credit produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisites: Biol. 204, Chem. 662 and 663.

669. Research in Biochemistry. (2). Cross-listed as Chem. 669. S/U grade only. Primarily for students who choose the biochemistry field major. Requires participation in a biochemistry research project under the direction of a faculty member and a written report summarizing the results. May be repeated once for credit. Prerequisites: Biol. 420 or 500, Chem. 662 or 663 and Chem. 664 and instructor's consent.

702. Environmental Science I. (4). 2R; 3L. Cross-listed as Geol. 702 and Chem. 702. Advanced theoretical and applied principles of the interdisciplinary study of environmental science. Includes chemical cycling, atmospheric chemistry, aquatic chemistry, and phase interactions. The laboratory portion addresses local environmental problems from risk assessment perspectives. Prerequisites: Biol. 702 and 703 (or equivalent) are required for all graduate students in the master's of environmental science program. Prerequisite: acceptance in the master's of environmental science program or instructor's consent.

703. Environmental Science II. (4). 2R; 3L. Cross-listed as Geol. 703 and Chem. 703. Advanced theoretical and applied principles of the interdisciplinary study of environmental science. Includes environmental chemical analysis, environmental toxicology, aquatic microbiology, environmental biochemistry, water treatment, phytoremediation, and hazardous waste chemistry. The laboratory portion addresses local environmental problems from a risk assessment perspective. Prerequisites: Biol. 702 and 703 (or equivalent) are required for all graduate students in the master's of environmental science program. Prerequisite: acceptance in the master's of environmental science program or instructor's consent.

704. Environmental Science Colloquium. (1). Cross-listed as Geol. 704 and Chem. 704. Students in the master's of environmental science program are required to enroll each semester. A maximum of 4 credit hours is possible. Presentations by guest speakers and required readings for class discussion. May also include student involvement in environmentally relevant community groups and projects.

706. Environmental Science Internship. (3-6). Cross-listed as Geol. 706 and Chem. 706. Students in the master's of environmental science program may gain interdisciplinary skills in environmental science by participating in applied and/or basic research internship projects with local business, industry, or government agencies. Internship option is an alternative to thesis research for degree requirements. Enrollment in internship projects requires an approved proposal. Completion of an internship requires a formal oral presentation of the internship activity and a written report. Prerequisites: Biol. 702 and 703 or equivalent.

720. Neurobiology. (3). Basic course in contemporary neurobiology emphasizing learning and memory. Exploration of the current research and neuroscience covering a wide area of organization from complex behavior to brain information processing pathways, neuronal cell biology, and molecular biology. Each student will choose a topic, complete a written report, and give an oral presentation to the class. Graduate students will do more reading in the preparation of their presentations. Prerequisite: Biol. 420 and 534 or equivalents and instructor's permission.

737. Aquatic Toxicology. (4). 2R; 2L. The qualitative and quantitative study of the rate and effects of toxic agents in the aquatic environment. Class examines the concentrations or quantities of chemicals that occur in the aquatic environment and includes a detailed study of molecular interactions and ultimate fate of various environmentally important chemicals. Class is for undergraduate or graduate students interested in advanced training in aquatic toxicology. Prerequisite: Biol. 525 or equivalent and Chem. 531 or equivalent or instructor's permission.

740. Research Methods. (1). 1R; 3L. A lecture/laboratory course to introduce graduate students to basic methods and instrumentation used in biological research. Prerequisite: Biol. 420.

750. Biology Workshop. (1-3).

760. Experimental Molecular Biology. (4). 2R; 6L. Introduces upper-level undergraduate and graduate students to molecular and cellular techniques. The methodology primarily involves the manipulation of DNA and the expression of specific genes. Prerequisites: Biol. 419 or 470.

767. Mechanisms of Hormone Action. (3). The mechanism of action of several hormones is described and used to illustrate the major intracellular signal transduction pathways. Includes adrenocorticotropin releasing hormone, the glucocorticoid hormones, the gonadotropins, the follicle-stimulating hormone, chorionic gonadotropin, thyroid-stimulating hormone, steroid hormones, thyroid hormone, and insulin. Mostly lectures covering signal transduction pathways. Students will write brief summaries of recent research papers related to the course's week's lectures topics. Each student will make an oral presentation of a research paper in journal club format. Students earning graduate credit will write a term paper describing in detail a hormone not described in class and its mechanism of action. Prerequisites: Biol. 420 and Chem. 662 or their equivalents, plus either Biol. 534 or 526 or their equivalents, and instructor's permission.

771. Evolutionary Ecology. (4). 3R; 2L. Presents a synthesis of basic principles in population genetics and ecology as a framework for the study of topics in evolutionary ecology. Emphasizes (1) the maintenance and structure of population level genetic variation, (2) mating structure and the evolutionary advantages of sex; (3) individual, kin, group selection; (4)
population demographic structure; (5) population regulation and dispersal; (6) The history of strategies in heterogeneous environments; and (7) demographic and genetic covariance. Teaches basic techniques in population ecology on several short field trips throughout the semester. Prerequisite: Biol. 418, 419, or instructor's consent.

780. Molecular Genetics. (3). Studies of the physiochemical nature of genetic material and the mechanisms of genetic regulation of metabolism. Students earning graduate credit 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. 419 or 584.

790. Advanced Immunology. (3). Contemporary problems in immunologic research. Includes lectures, assigned readings, and reports. Students earning graduate credit produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisite: Biol. 419 or instructor's consent.

797. Departmental Seminar. (1). Forum for the weekly presentation and discussion of the ongoing research projects performed by departmental faculty, graduate students, and guest scientists from outside departments and institutions. All MS-degree-bound graduate students are required to attend the seminar each semester and must enroll for credit during the two semesters in which they give presentations that will be the basis for their grade. One of these presentations may be their thesis defense. Prerequisite: Acceptance into MS program.


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 of the research results must be presented to the student's thesis committee before a grade is assigned.

891. Thesis. (2). S/U grade only. Students must be enrolled in this course during the semester in which the thesis is defended.

Chemistry

Graduate Faculty


Associate Professors: Dennis H. Burns (graduate coordinator), Kandatego Wimalasena

Assistant Professors: Francis D'Souza, David Eichhorn

The Department of Chemistry at Wichita State offers courses of study leading to the Master of Science (MS) and the Doctor of Philosophy (PhD) degrees in the areas of biochemistry and analytical, inorganic, organic, physical, and polymer chemistry.

Admission Requirements

To enroll in the graduate program in chemistry, students must follow the admission procedures required by the Graduate School. The chemistry department requires a baccalaureate degree in chemistry, a grade point average of at least 3.000/4.000 (both overall and in chemistry), two letters of recommendation from individuals familiar with the applicant's academic background, and a one page typed statement of goals and research interests. International students must have a minimum TOEFL score of 570. For the PhD program, the Department of Chemistry requires submission of test scores from the general aptitude portion of the GRE and strongly recommends test scores from the analytical and chemistry portions of the GRE as well. Students deficient in any of the requirements may be admitted conditionally provided they follow the specified procedures required to remove any deficiencies.

When admitted to the graduate program in chemistry, students are required to take proficiency examinations based on undergraduate chemistry curricula. The results are initially used to counsel graduate students about which courses are appropriate.

Students must select a faculty member to be their research advisor by the beginning of their second semester in the graduate program. The research advisor guides the students in their research.

Master of Science Requirements

The MS 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. 890. 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 once, 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.

Examinations. Master's students must pass four qualifying examinations in the areas of analytical, inorganic, organic, physical, and biochemistry, which are the same as proficiency examinations. Three must be passed the first year (three attempts permitted) and the fourth before completion of the degree.

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.

Doctor of Philosophy Requirements

All PhD students are required to take 24 course hours, 12 of which must be in the area of major interest. The courses must be numbered 710 or higher. Students are required to begin cumulative examinations at the beginning of their second year. Students must pass six cumulative examinations out of 16 attempts to remain in the program. After completion of the cumulative examinations, students are expected to develop and orally defend an original research proposal. Two enrollments in departmental seminars and continuous enrollment in departmental colloquia are required. The final requirement for the degree is the defense of a thesis based on original research. Well-prepared entering students should be able to complete the requirements within four years.

Examinations. PhD students must pass four qualifying examinations in the areas of analytical, inorganic, organic, physical, and biochemistry, which are the same as proficiency examinations, during the first year (three attempts permitted).

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.

Students in the PhD program in good standing, who have completed all required courses, have satisfactorily presented their Departmental Research Seminar, have defended their Creative Research Proposal, and have satisfied all other requirements for admittance to candidacy for the PhD degree, will upon request and approval by the thesis committee be awarded the MS degree.

Courses for Graduate/Undergraduate Credit

585. Chemical Literature. (1). A survey of chemical publications and the publication process. Gives the student the ability to conduct a proper search of the literature for chemical information. Also covers aspects of technical writing. Prerequisite: Chem. 531.
534. Instrumental Methods of Chemical Analysis. (4). 2R; 6L. Lab fee. Introduction to the study of data, theory and application of gravimetric analysis and precipitation, neutralization and oxidation-reduction, volumetric analysis. Prerequisite: Chem. 112Q with a grade of C or better.

533. Organic Chemistry. (3). 3R; 6L. Lab fee. General education further studies course. An introduction to the study of carbon compounds emphasizing reaction mechanisms, stereochemistry, and spectrographic analysis. Prerequisite: Chem. 112Q with a grade of C or better.

532. Organic Chemistry. (3). 3R; 6L. Lab fee. A continuation of Chem. 531 emphasizing the structure and reactions of principal functional groups and compounds of biological interest. Prerequisite: Chem. 531.

531. Elementary Organic Chemistry. (3). General education further studies course. Basic organic chemistry emphasizing topics of importance to health professions and education majors. Special emphasis on carbohydrates, proteins, drugs, pesticides and energy production. Students should enroll in Chem. 534 simultaneously. Credit is not allowed for both Chem. 533-534 and 531. This course does not meet the needs of chemistry majors or premed students. Prerequisite: Chem. 112Q or equivalent.

534. Elementary Organic Chemistry Laboratory. (2). Lab fee. A basic laboratory course to provide pertinent experiences in the laboratory to fortify the survey lecture course Chem. 533. Prerequisite or corequisite: Chem. 533.

545. Physical Chemistry. (3). General education further studies course. Thermodynamics. Studies gases, first law, thermodynamics, second and third laws, phase equilibrium, solutions, chemical equilibria, electrochemistry and surface chemistry. Prerequisites: Chem. 112Q, Math. 344 or equivalent and one semester of college physics.

546. Physical Chemistry. (3). Kinetic theory, kinetics, transport phenomena, quantum mechanics, spectroscopy and statistical thermodynamics. Prerequisites: one year of college physics and Math. 344 or equivalent.

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.

561. Introduction to Biochemistry. (3). General education further studies course. A brief history of biochemistry, emphasizing the development of molecular biology, chemistry of biopolymers—proteins, carbohydrates, lipids, nucleic acids and vitamins, molecular basis of bioenergetics and metabolism and storage, transfer and control of genetic information. 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.

601. Numerical Methods. (2). Application of numerical methods to problems in chemistry and physics. Roots of equations; curve fitting; interpolation, extrapolation, and smoothing of experimental data; numerical differentiation and integration; computer programming. Prerequisite: instructor's consent.

603. Industrial Chemistry. (3). Bridges the industrial-academic gap. Includes petroleum chemistry and major processes in industrial inorganic chemistry. Also discusses some aspects of environmental chemistry such as hazardous and nuclear waste disposal and air pollution. 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. 534 or concurrent enrolment.

605. Medicinal Chemistry. (3). For students interested in chemistry related to the design, development and mode of action 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 and chemical reactions of drugs in the body; to illustrate the importance and relevance of chemical reactions as a basis of pharmacological activity, drug toxicity, allergic reactions, carcinogenicity, etc. and to bring about a better understanding of drugs. Includes transport, basic receptor theory, metabolic transformation of drugs, discussion of physical and chemical properties in relation to biological activity, drug design, structure-activity relationships and discussion of a select number of organic medicinal agents. Prerequisites: Chem. 532 or 533 or equivalent, a semester of biochemistry (Chem. 561 or 662) and a year of biology are strongly recommended.

641. Advanced Physical Chemistry. (3). Introduction to quantum chemistry, atomic and molecular spectra, statistical thermodynamics and reaction rate theory. Prerequisite: Chem. 546.

642. Chemical Physics. (3). Topics in areas of overlapping interest for students of chemistry and physics, such as thermodynamics, kinetics, quantum mechanics, spectroscopy, and various types of spectroscopy. A team of chemists and physicists discusses standard theoretical and technical problems in research in chemical physics. Prerequisite: Chem. 641 or instructor's consent.

660. Biochemistry Laboratory. (2). 6L. Lab fee. Practical training in biochemical procedures and literature searching; experiments include isolation, characterization and assay of biomolecules and use of centrifugation, chromatography, electrophoresis, spectrophotometry, enzyme kinetics and radioactive labeling techniques. Should be taken concurrently with Chem. 662 or 663. Prerequisite: Chem. 552 or equivalent.

666. Special Topics in Biochemistry. (3). Offered spring semester in odd-numbered years. Discusses a small number of current problems in biochemistry in depth. Requires reading of published research in the field. Prerequisites: Bio. 214 and Chem. 662 and 663.

669. Research in Biochemistry. (2). Cross-listed as Biol. 669. S/U grade only. Students in the biochemistry major participate in a biochemistry research project under the direction of a faculty member. Requires a written report summarizing the results. May be repeated once for credit. Prerequisites: Biol. 500 and Chem. 662 or 663 and 664.

690. Independent Study and Research. (2-3). Studies performed must be directed by a faculty member in the Department of Chemistry. Repeatable for credit. A maximum of three credit hours may be counted toward graduation. Prerequisite: departmental consent.

700. Chemistry Seminar. (1). S/U grade only. Students give seminars on either papers
recently published in the literature or on their own research. Repeatable for credit.

701. Chemistry Colloquium. (1). S/U grade only. Speakers for the colloquium consist of outstanding chemists from other institutions and faculty. Repeatable for credit.

702. Environmental Science I. (4). (2S; 3L). Cross-listed as Biol. 703 and Geol. 703. Advanced theoretical and applied principles of the interdisciplinary study of environmental science. Includes chemical cycling, atmospheric chemistry, aquatic chemistry, and phase interactions. Prerequisite: acceptance in the master's of environmental science program or instructor's consent.

703. Environmental Science II. (4). (2S; 3L). Cross-listed as Biol. 703 and Geol. 703. Advanced theoretical and applied principles of the interdisciplinary study of environmental science. Includes environmental chemical analysis, environmental toxicology, aquatic microbiology, environmental biochemistry, water treatment and chemical water purification, and hazardous waste chemistry. Prerequisite: acceptance in the master's of environmental science program or instructor's consent.

704. Environmental Science Colloquium. (1). Cross-listed as Biol. 704 and Geol. 704. Students in the master's of environmental science program are required to enroll each semester. Open to the general public. Includes presentation by guest speakers and required readings for class discussion. May also include student involvement in environmentally related community groups and projects.

705. Molecular Symmetry. (1). A study of the chemically relevant aspects of group theory. Includes symmetry elements, character tables, and molecular and representations of groups.

706. Environmental Science Internship. (3-6). Cross-listed as Biol. 706 and Geol. 706. Students in the master's of environmental science program may gain interdisciplinary skills in environmental science by participating in an applied or basic research internship project with local business, industry, or government agencies. Internship option is an alternative to thesis research for degree requirements. Enrollment in an internship project requires an approved internship proposal. Completion of an internship for graduation requires a formal oral presentation of the internship activity and a written report. Prerequisite: completion of Environmental Science I and II.

709. Special Topics in Chemistry. (2-3). A discussion of topics of special significance and interest to faculty and students. Offerings announced in advance. Repeatable for credit.

712. Coordination Chemistry. (3). The study of the synthesis, characterization and properties of coordination compounds. Includes nomenclature, fundamental bonding concepts, principles of synthesis, mechanisms of substitution and electron transfer reactions, catalysis and solid-state phenomena. Prerequisite: Chem. 615 or equivalent.

713. Physical Methods in Inorganic Chemistry. (3). An introduction to electronic and vibrational spectroscopy, magnetic susceptibility, EPR, NMR, Mossbauer spectroscopy and X-ray crystallography as applied to inorganic systems. Emphasis on interpretation of results for understanding the electronic and molecular structure of compounds. Prerequisite: Chem. 705 or equivalent.

731. Physical Organic Chemistry. (3). Discussion of advanced topics in stereochemistry and conformational analysis and organic reaction mechanisms. Prerequisite: Chem. 532.

732. Advanced Organic Synthesis. (3). Discussion of modern synthetic methods in organic chemistry including carbon skeleton forming reactions, oxidation and reduction reactions, protective groups and organometallic chemistry. Prerequisite: Chem. 352.


741. Quantum Chemistry. (3). A theoretical basis of atomic and molecular structure. Includes the postulates of quantum mechanics, exact solutions for the particle-in-a-box and the hydrogen atom, and perturbation techniques. Prerequisite: Math. 344 or equivalent.

744. Computational Quantum Chemistry. (3). An introduction to molecular orbital procedures and methods for calculating a wide range of physical, chemical, and electronic properties of systems large enough to be of interest to inorganic, organic, and biochemists. Using commercial molecular orbital software such as MAC SPARTAN and GAUSSIAN, students learn to select appropriate model computational procedures to predict properties of molecules and reactions. By comparison with experiment, students learn to assess the range of applicability and accuracy of the "model" methods as applied to various categories of chemical systems. Properties considered include energies and structures of molecules, ions, and transition states; vibrational frequencies; heat of formation, bond and reaction energies; ionization energy barriers; reaction pathways; molecular orbitals; atomic charges; dipole moments; dipole and multipole moments; ionization potentials, bond orders; orbital energies and photoelectron spectroscopy; excited state properties, single and triplet surfaces. Prerequisite: Chem. 346 or equivalent. (Math. 344 is necessary.)

751. Chain Growth Polymerization. (3). Mechanisms, kinetics, and thermodynamic aspects of polymerization processes which proceed by a chain growth mechanism, tree radical, anionic, cationic and Zeigler-Natta and group transfer polymerization. Prerequisites: Chem. 531 and 545.

752. Step Growth Polymerization. (3). Polymerization process which proceed by a step growth or ring-opening mechanism. Preparation of thermoplastics, including relationships between molecular weight and reaction condition. Preparation of thermosets including relationships between structure, conversion and gelation. Discusses individual systems such as nylon, epoxy resin and polyvinyls in some detail. Prerequisites: Chem. 531 and 545.
sis of the alkaloids, steroids, terpenoids, carbohydrates and aromatic and aliphatic natural products. Prerequisite: Chem. 732.

85. Heterocyclic Chemistry. (3). An account of the physical and chemical properties of the main classes of heterocyclic compounds. Prerequisite: Chem. 752.

86. Bioorganic Chemistry. (3). Includes the chemistry of amino acids and peptides, enzyme structure and function and inhibitor design. Prerequisites: Chem. 662, 663 and 732 or 682 and concurrent enrollment in 663 and 732.

87. Advanced Quantum Chemistry. (3). Considers advanced applications of quantum mechanics to atomic and molecular problems. Includes determinant wave-functions, angular momentum coupling, time-dependent perturbation theory, relativity considerations, tensor operators and molecular orbital calculations. Prerequisites: Chem. 705 and 741 or equivalents.

88. Chemical Kinetics. (3). A description of reacting systems, including the mathematical and experimental characteristics of simple and complex kinetic systems. Discusses the theories of chemical kinetics, 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.

89. Statistical Thermodynamics. (3). Develops Boltzmann, Fermi-Dirac and Bose-Einstein statistical mechanics with applications to gaseous-state and solid-state chemical problems. Emphasizes the relationship of statistical mechanics and thermodynamics. Considers applications of statistical thermodynamics to polymers. Prerequisites: Chem. 546, 845 or equivalents.

90. Chemical Thermodynamics. (3). A presentation of the basic three laws of thermodynamics in a classical framework to increase understanding of real physical systems. Emphasizes theory and its application to chemical systems. Prerequisites: Chem. 546, 546 and Math. 344 or equivalents.

91. Molecular Spectroscopy. (3). A presentation of the basic three laws of spectroscopy and spectroscopic determinations of molecular structure. Includes polarizability tensors, time-dependent perturbation theory, vibration and rotation of diatomic molecules, vibration and rotation of polyatomic molecules, electronic spectra and magnetic resonance spectroscopy. Prerequisites: Chem. 741 or its equivalent and Chem. 705 or its equivalent.

92. Chemistry of Condensed Matter. (3). Includes thermodynamics, statistical mechanics, quantum chemistry and structural determinations of condensed phase matters. Emphasizes metals, alloys, intermetallic compounds, composite materials and advanced ceramics. Prerequisites: Chem. 741 and 745 or equivalents.

93. Techniques of Polymer Characterization. (3). A study of physical, spectroscopic and diffraction techniques to determine the size, structure and morphology of polymers.

94. Polymer Properties. (3). Kinetics and thermodynamics of the crystallization process and the influence of sample history on the gross morphology of the crystallites. Structural features which preclude the development of polymer crystals and encourage amorphous character, relationships between structure, Tm and Tg, theoretical strengths of materials, the time-dependent mechanical behavior of polymers and the Maxwell and Voigt models of viscoelasticity. The Boltzmann superposition principle and how it can be used to predict creep behavior, mechanisms of deformation, yielding and fracture in polymers. Prerequisite: degree in chemistry or related subject.

95. 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.

96. Biotechnology: Principles and Applications. (3). Presents a broad informal view of contemporary biotechnology including its role in the production of products from biological raw materials. Biotechnology involves the production of products that are pure, food, drink, flavors, chemicals, biopolymers, medicines and agricultural materials. Prerequisites: Biol. 203 and 204 and Chem. 662 or 663 or equivalents.

97. Analytical Biochemistry. (3). A review of modern analytical methods used in biochemical and molecular biology including absorbance and fluorescence spectroscopy, chromatography, affinity, gel-filtration, HPLC, ion exchange, ion-pair, gel electrophoresis, radioactive tracer methods, cloning, sequencing and recombinant DNA techniques. Prerequisites: Biol. 203 and 204 and Chem. 662 or 663 or equivalents.

98. Nucleic Acids: Structure, Chemistry and Function. (3). A comprehensive examination of the structure and conformation of DNA, RNA, and their components. Studies reactivity and modification of nucleotides and polynucleotides for different chemicals and mutations. Reviews chemical synthesis of polynucleotides and sequence analysis of nucleic acids, including site-specific mutagenesis. Studies nucleic acid functions and information transfer in biochemical systems. Also studies major nucleases and discusses DNA-protein interactions. Prerequisites: Biol. 741 or its equivalent and Chem. 705 or its equivalent.

99. Research in Chemistry. (2-12). S/U grade only. Research for the student planning to receive an MS. Research is directed by a faculty member. Repeatable for credit.

100. 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.

Communication, Elliott School of Graduate Faculty

Professors: Philip Gaunt (director, Elliott School), Vernon Keel
associate Professors: Katherine Hawkins (associate director), Susan S. Huxman, Sharon H. Iorio (graduate coordinator), Keith Williamson

Assistant Professors: Les Anderson, Richard Armstrong, Dan Close, Pat Dooley, Gary Larson

Master of Arts in Communication, Areas of Emphasis and Graduate Certificate

The Master of Arts in Communication degree program at Wichita State is designed to provide students with a multidisciplinary foundation in human communication that will serve a broad spectrum of interests and needs in many fields of endeavor. The program is based upon integration and synthesis of academic resources in communication. The degree includes two areas of interest: Communication and Theatre/Drama. Also available is a Graduate (Post-Baccalaureate) Certificate awarded for completing a group of related, upper-level skills courses in applied communication.

Admission Requirements

In addition to the general Graduate School admission requirements, applicants for full standing status must have a 3.00 GPA over their last 60 hours of coursework, must submit results of the Graduate Record Exam, and must write a statement of purpose for pursuing the Master of Arts in Communication. International students must score at least 600 on the TOEFL and, if applying for a Graduate Teaching Assistantship, must score at least 55 on the TSE.

Degree Requirements

Program Core (Required) Courses.
MAC students emphasizing the Communication area must complete the following courses:

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<th>Course Code</th>
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<th>Credits</th>
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<tr>
<td>Comm. 801</td>
<td>Introduction to Communication Research</td>
<td>3</td>
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<tr>
<td>Comm. 802, 803</td>
<td>Historical and Qualitative Methodologies in Communication Research</td>
<td>3</td>
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<tr>
<td>Comm. 804</td>
<td>Empirical/Quantitative Methodologies in Communication Research</td>
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<tr>
<td>Comm. 812, 813</td>
<td>Contemporary Theories of Oral Communication</td>
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<tr>
<td>Comm. 865</td>
<td>Organizational Communication</td>
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*Thea.623Q, Development of the Theatre I ........................................... 3
*Thea.624Q, Development of the Theatre II ............................................ 3
and other
Thea.823, History of Dramatic Criticism ........................................... 3
t or
Thea.824, Development of Modern Theatre Styles ........................ 3
* Students who have taken Thea. 623Q and 624Q as undergraduates will substitute appropriate graduate level courses.

Other Courses. In addition to the required courses, students in each area of interest, with the advice and consent of their faculty advisor, must select courses to complete the Plan of Study, as discussed in the Graduate School section 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 701-899 level (i.e., 18 hours for the thesis program of 30 hours or 21 hours for the non-thesis program of 36 hours).

Examinations
Written comprehensive examinations will be administered to all candidates during the final semester of their degree program. In addition, students writing a thesis will present an oral defense of the thesis.

Graduate Certificate in Applied Communication
Designed for students who want concentrated study in communication skills, the Graduate Certificate in Applied Communication is awarded for the successful completion of a program totaling 14 credit hours of graduate course work selected from a prescribed subset of MAC courses. The curriculum is integrated by a 2-hour foundation course and a more advanced course in organizational communication. The remaining 9 credit hours of course work are chosen from a group of elective courses in speaking, writing, and visual communication. An applicant for the program must meet WSU Graduate School Category A requirements. In addition, students whose first language is not English must achieve a TOEFL score of at least 600.

Courses for Graduate/Undergraduate Credit
500. Advanced Reporting. (O) 1R; 4L. For juniors and seniors: 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 or Comm. 301 with a C or better and either 401 or 422.

501. Public Information Writing. (3). Uses basic journalistic skills of clear, precise writing to communicate effectively with various audiences. Students write press releases, speeches and popularizations of complex documents. Techniques learned in this course are valuable in writing grant proposals, committee reports, pamphlets and journal articles. Prerequisite: Comm. 301 with a grade of C or better, junior standing or departmental consent.

510. Editing for Print. (3). Selection, evaluation and preparation of copy and pictures for publication. Covers copy editing, rewriting, headline and copy writing and page layout. Prerequisites: junior standing and Comm. 301 with a grade of C or better.


525. Advertising Copywriting. (3). Detailed practice in writing various kinds of advertising copy, including print and broadcast forms. Emphasizes terse, precise writing that evokes response sought by advertiser. Prerequisite: Comm. 324 and Comm. 301 with a grade of C or better or departmental consent.

526. Media Buying and Selling. (3). Principles, methods, and strategies of buying and selling media for advertising, including such topics as study of television and radio, and the examination of traditional and new techniques. Emphasizes buying and new strategies. Prerequisite: Comm. 324 or instructor's consent.

550. Opinion Writing. (3). Studies editorial judgment, including practice in the writing of print, broadcast, and electronic opinion pieces, and the examination of current and new techniques available to opinion writers. Prerequisites: Comm. 301 with a C or better and junior standing.

570. Magazine Production. (3). Magazine production, including the choosing of subjects, approaches and illustrations; the shooting and editing of photos, graphic stories, and layout; the handling of production and management concerns. Prerequisite: Comm. 301 and 510 or departmental consent.

571. Feature Writing. (3). Writing features for newspapers and magazines. Nonfiction topics may include personal experience essays, consumer pieces, and personality profiles. Prerequisites: Comm. 301 with a C or better and junior standing.

581. Communication Pracicum. (1-3). Application of theory, principles and practices to professional settings where students work under instructor's supervision to combine their professional preparation in various areas of media and communication. Prerequisite: Comm. 301 and instructor's consent.

604. Field Video Production. (3). Application of video equipment and techniques for field productions. Execution of visual and audio expression in relation to effective video productions in a field setting. Prerequisite: Comm. 324 or instructor's consent.

609. Interactive Media Production. (3). Investigation and application of production techniques for educational and instructional broadcast, emphasizing television. Prerequisite: Comm. 304.

611. Media Management. (3). A study of the business and management operations of the mass media to give journalism students an understanding of the relationships in mass media enterprises. Prerequisite: junior standing or departmental consent.

612. School Publications Advising. (3). Assists those who are preparing to advise and teachers who currently supervise a student newspaper or yearbook. Emphasizes techniques for teaching various aspects of writing and design duties relating to production and finance of school publications, and methods to help students become better communicators. Prerequisite: Comm. 301 with a C or better or instructor's consent.


628. Integrated Marketing Communications Campaigns. (3). Instruction and practice in planning and developing integrated advertising and public relations campaigns. Teaches students to perform a situation analysis, identify objectives, develop strategies and tactics, and write a plans book, as well as produce advertising and public relations campaign materials. Prerequisite: Comm. 324 or instructor's consent.

650. Communication Training and Development. (3). Examination of communication concepts, processes, technologies and strategies related to training and development. Course includes the application of these elements to formal instruction across disciplines and at various educational levels as well as in most professional training settings.
660. Seminar in Communication. (1-3). Special seminars dealing with current problems, issues or interests in various areas of communication. Repeatable for credit in different topics only.

661. Directing the Forensics Program. (3). A study of the methods and procedures in coaching and directing the high school and collegiate forensic programs (debate and individual events). The future teacher is made aware of the literature and professional organizations in the field.

675. Directed Study. (2-4). Cross-listed as Thea. 675. Individual study or projects. Repeatable for credit with departmental consent. Prerequisite: departmental consent.

690. Communication Internship. (1-2). Credit for professional experience that integrates theory with a planned and supervised professional experience designed to complement and enhance academic program. Individualized programs must be formulated in consultation with and approved by appropriate faculty sponsors. May be repeated but limited to a total of four credits in Comm. 690 and Comm. 481. Graded Cr/NCr. Prerequisite: departmental consent.

712. Advanced Interpersonal Communication. (3). Advanced 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. Prerequisite: Comm. 376 or instructor's consent.

715. International Communication Systems. (3). A comparative study of communication systems around the world, including print media, broadcasting, and new technologies. Examines the relationship between communication systems and the different social, cultural, and political contexts in which they exist, and explores some of the international conflicts that have arisen from these differences. Prerequisite: senior standing.

720Q. Dimensions of Mass Communication. (3). A detailed study of mass media: their role as social institutions; their control, support, content and audience and their effects.

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. Helps participants enhance their understanding and appreciation of it, as well as their skill in the art of conversation. Includes the nature of conversation, principles of conversational format, types of conversation, conversation in the media and conversation analysis. Prerequisites: Comm. 302 and junior standing or departmental consent.

750. Workshops in Communication. (1-4).

779. The Audience. (3). Application of research techniques to the measurement of audience behavior emphasizing mass media audiences. Includes focus group interviews, survey research and radio and television ratings.

Courses for Graduate Students Only

801. Introduction to Communication Research. (3). An integrative approach to an understanding of the nature and scope of communication research and graduate studies in communication and theatre/drama. Provides an overview of current research in the discipline. Instruction in the basic steps of research, availability of library and other sources, bibliographic search, computer accessing of source materials, organization, style, and format of a research report and citation of sources in accordance with standard style guides. Course should begin at the beginning of the graduate program.

802. Historical and Qualitative Methodologies in Communication Research. (3). An introduction to historical, critical and observational methodologies in communication research. Emphasizes historical, critical and observational research, particularly those forms of research common to communication studies. Prerequisite: Comm. 901.

803. Empirical/Quantitative Research Methodology in Communication. (3). An introduction to empirical research methods in communication. Emphasizes both experimental and non-experimental research, particularly those forms of research common to communication studies. Studies research design methods and reporting techniques. Prerequisite: Comm. 901.

812. Contemporary Theories of Communication. (3). Studies selected conceptual models useful in the academic study of human communication, including theories involving such contexts as interpersonal communication, public communication, and mass communication.

820. Investigation and Conference. (2-3). Cross-listed as Thea. 820. 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.

830. Theories of Rhetoric: Classical. (3). Cross-listed as Engl. 825. An intensive study of the rhetorical theories of classical writers from Thucydides to the decline of Roman oratory. Principal emphasis on Isocrates, Plato, Aristotle, Quintilian, Cicero and Longinus.

831. Theories of Rhetoric: Renaissance to Early Modern. (3). Cross-listed as Engl. 826. A study of the emerging patterns of rhetoric from the Second Sophistic to modern times. Analyzes the rhetorical systems associated with such figures as Augustine, Fellenon, Bulwer, Sheridan, Steele, Rush, Johnston, Adams, Blair, Campbell and Whately.

860. Seminar in Communication. (6-3). Special seminars dealing with current problems, issues or interests in various areas of communication. Repeatable for credit in different topics only.

865. Organizational Communication. (3). Cross-listed as Mgmt. 865. An analysis of communication models emphasizing their applications to communication problems in organizations. Explores social psychological processes underlying persuasion in interpersonal relations and through the mass media. Critically analyzes communication systems and techniques within formal organizations.

870. Directed Study. (1-3). Individual study or projects. Repeatable for credit with departmental consent. Prerequisite: departmental consent.

875-876. Thesis. (2-2). Prerequisite: departmental consent.

Computer Science
Graduate Faculty
Professors: Suad Alagic, Shang-Ching Chou (Chairperson)
Associate Professors: Rajiv Bagai (Graduate Coordinator), Prakash Ramana
Assistant Professors: Thomas Haynes, Nicholas Tran

Master of Science
The Department of Computer Science offers the Master of Science (MS) degree program. Through a combination of advanced courses and electives, 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
All candidates for graduate study must have a bachelor's degree (in any field) from an accredited institution. In addition, for MS degree status for non-degree students, a candidate's GPA in the last 60 hours of course work should be at least 2.750. (A probationary admission can be granted to a candidate with a GPA in the last 60 hours of course work between 2.600 and 2.750.) All international applicants must have a score of at least 550 on the TOEFL exam.

The MS degree and Non-Degree students are expected to have at least a B average in the following background courses:

1. Math 242Q and 243, Calculus I and II
2. CS 300 and 560, Data Structures and Algorithms I and II
3. CS 320, Discrete Structures in Computer Science
4. CS 440, Computer Organization and Architecture
5. CS 510, Programming Language Concepts
6. CS 540, Operating Systems

However, if the candidate has not taken, or satisfactorily performed in, any or all of the above courses, admission can be granted on the condition that the required courses be satisfactorily completed within one year of admission.

Degree Requirements
The MS degree requires 30-36 credit hours of graduate-level work, as follows:
Courses for Graduate/Undergraduate Credit

2R; 2L. A study of the programming techniques used to solve nonlinear equations, interpolate and integrate solutions of linear equations. Discusses the implications of finite precision floating point arithmetic. Also covers techniques for initial and boundary value problems in ordinary differential equations. Selected algorithms are implemented on the computer. Prerequisites: Math. 243 and CS 306 with grades of C or better.

Theoretical concepts in the design and use of programming languages, including scope of declarations, storage allocation, subroutines, modules, formal methods for the description of syntax and semantics. Introduction to the concepts of different styles of languages—impertative languages, functional languages, logic languages, object-oriented languages, etc. Prerequisite: CS 410 with a grade of C or better.

540. Operating Systems. (3).
Covers the fundamental principles of operating systems: process synchronization, scheduling, resource allocation, deadlocks, memory management, file systems. Studies a specific operating system in depth. Programming assignments consist of modifications and enhancements to the operating system studied. Prerequisite: CS 440 with a grade of C or better.

560. Data Structures and Algorithms II. (3).
3R; 1L. Design and analysis of algorithms. Techniques for design and analysis of algorithms and proof of correctness. Analysis of space and time complexities of various algorithms including several sorting algorithms. Hashing, binary search trees and height balanced trees. Algorithm design techniques including divide and conquer, greedy strategies, and dynamic programming. Elementary graph algorithms. Prerequisites: CS 300, CS 510, and Math 344 or 511, and Stat. 460 with a grade of C or better in each.

612. Systems Programming. (3).
2R; 2L. A study of system software including assemblers, disassemblers, macroprocessors, link editors, loaders, language translators and debuggers. Practical experience in building system software through programming laboratory exercises. Prerequisites: CS 300 and 312 with a C or better grade.

615. Compiler Construction. (3).
2R; 2L. First compiler course for students with a good background in programming languages and sufficient programming experience. Covers overall design and organization of compilers and interpreters, lexical and syntax analysis, construction of symbol tables, scope analysis, type checking, error recovery, run-time organization, intermediate code and its interpretation, code generation and optimization. Project-oriented course. Emphasizes practical experience gained through the design and implementation of a simplified but non-trivial compiler for a strongly typed, procedural language. The implementation is in a modern systems programming environment. Prerequisite: CS 510 or equivalent with a grade of C or better.

622. Symbolic Computation with LISP. (3).
An in-depth study of LISP as a functional programming language with its application to artificial intelligence, polynomial computation and theorem proving. Complete substantial programming projects in LISP. Prerequisites: Math. 243 with a grade of C or better, and CS 300 and CS 320 with a grade of B or better in each; or CS 410 or CS 560 with a grade of C or better; or departmental consent.

665. Introduction to Database Systems. (3).
Fundamental aspects of database systems, including conceptual database design, entity relationship modeling, and object-oriented modeling; the relational data model and its foundations, relational languages, and SQL (Structured Query Language); logical database design, dependency theory, and normal forms; physical database design, file structures, indexed and external storage, integrity, security, concurrency control, recovery techniques, and optimization of relational queries. Prerequisite: CS 300 and 320 with a grade of C or better.

680. Introduction to Software Engineering. (3).
2R; 2L. An introduction to the body of knowledge, processes, available tools and current theorems and conjectures regarding the process of program development. Studies these topics from several different viewpoints, ranging from the individual program statement to a large programming project. Prerequisites: CS 300 and 410, each with a grade of C or better.

684. Applications Systems Analysis. (3).
A study of the methods for analyzing business systems problems and other large-scale applications of the computer. At the crossroads of computer technology, management science and human relations, systems analysis is the keystone in the edifice of the well-trained computer applications analyst. Includes systems design, cost benefit analysis, data base design, distributed processing, project management and documentation. Prerequisite: CS 300 with a grade of C or better.

690. Information Systems Engineering. (3).
Study of information systems design techniques, issues of systems evolution, project management, engineering design, various views of information systems and software and formal design approaches. Covers structured analysis and design approach, object-oriented approach, software design, database design, rule modeling, user interface design, performance evaluation issues relative to software design, systems evolution aspects from a software maintenance perspective, project management techniques and information systems engineering. Prerequisite: CS 300 with a grade of C or better.

997. Selected Topics. (1-3).
Selected topics of current interest. Repeatable for credit with departmental consent. Prerequisite: departmental consent.

720. Theoretical Foundations of Computer Science. (3).
Provides an advanced level introduction to the theoretical bases of computer science. Computer science theory includes the various models of finite state machines, both
Deterministic and non-deterministic, and concepts of decidability, computability and formal language theory. Prerequisite: CS 420 or equivalent with a grade of C or better or department consent.

742. Computer Communication Networks. (3). 2R, 2L. Introduction to network programming for the internet environment, including the basic concepts of TCP/IP, client server paradigm, programming of clients, and various types of servers, remote procedure calls, concurrency management, and interconnection techniques. Emphasizes the design principles that underlie implementation of practical applications. Prerequisite: CS 300 with a grade of C or better or department consent.

750. Workshop in Computer Science. (1.5). Short-term courses with special focus on introducing computer science concepts. Repeatable for credit. Prerequisite: departmental consent.

771. Artificial Intelligence. (3). Heuristic versus algorithmic methods, principles of heuristic approach and cognitive processes. Also covers objectives and methods of artificial intelligence research and simulation of cognitive behavior. Includes a survey of appropriate examples for the study of artificial intelligence research. Prerequisite: CS 300.

776. Expert Systems. (3). Planning, construction and application of expert systems. Discusses major aspects of expert systems: illustrates with various examples, including data representation, knowledge bases, inference engines, user interfaces, explanatory facilities, metarules and dealing with uncertainty. Introduces basics of a production system language. Prerequisite: CS 412 with a grade of C or better or instructor's consent.

781. Cooperative Education in Computer Science. (1-3). Practical experience in a professional environment to complement and enhance the student's academic program. For master's level CS students. Repeatable, but may not be used to satisfy degree requirements. Offered Conc or only. Prerequisites: departmental consent and graduate GPA of 3.0 or above.

798. Individual Projects. (1-3). Allows beginning graduate students and mature undergraduates to pursue individual projects of current interest in computer science. Graded S/U only. Prerequisite: departmental consent.

Courses for Graduate Students Only


821. Analysis of Algorithms. (3). Deals with advanced topics in the design and analysis of algorithms, including sorting networks, algorithms for parallel computers, Strassen's algorithm for matrix multiplication, polynomial multiplication and the FFT, number theoretic algorithms (gcd computation), and hard problems and intractability. Prerequisites: CS 560 with a grade of B or better; 720 is recommended.

822. Parallel Algorithms. (3). Deals with the design and analysis of parallel algorithms for various combinatorial problems in the Parallel Random Access Machine (PRAM) model. Covers models of parallel computation, the PRAM model, basic techniques for designing parallel algorithms, design and analysis of algorithms for selection, merging, sorting, searching as well as algorithms for graph problems. Prerequisite: CS 560 with a grade of B or better.

841. Advanced Computer Architecture. (3). A study of advanced topics in computer architecture like parallel processing, stack architectures, computer performance evaluation and reliability of computing systems. Studies architectures of typical systems belonging to the IBM, CDC and Burroughs families of computers. Prerequisite: CS 540.


843. Distributed Computing Systems. (3). A study of hardware and software features of on-line multiple computer systems emphasizing network design and telecommunications. Includes distributed data bases, multiprocessor communication and centralization versus distribution. Also includes study of the use of microcomputers in representative configurations. Prerequisite: CS 540 or ECE 694.

862. Advanced Database Systems. (3). Covers recent developments and advances in database technology. For students who have had a first database course and have a good background in the related computer science disciplines. Possible topics include extended database management systems, object-oriented database management systems, deductive databases, database type systems and database programming language, persistent languages and systems, distributed databases. Prerequisite: CS 560.

872. Machine Learning and Discovery. (3). An advanced study of computer programs that learn, improve performance and make discoveries. Includes objectives, methods and research paradigms for such systems, a survey of existing methods and applications, including some recent developments: theoretical principles for learning and discovery systems; computational theories of learning processes and cognitive models of human learning; concept and theory formation, and use of analogy in learning. Includes participation in a group project such as developing a computer learning system. Prerequisites: CS 771 or 776.

873. Computer Vision. (3). An introduction to computer vision, a rapidly growing subfield of artificial intelligence. The basic topic is the understanding of or description of images by a computer or robot. Covers two-dimensional Fourier analysis, scene matching and understanding, texture, motion, shape recognition, relational image structure and human perception. Prerequisite: CS 771 or instructor's consent.

874. Simulation and Modeling. (3). An up-to-date treatment of important aspects of simulation modeling, including data collection, input and output data analyses, modeling principles, simulation with general-purpose programming languages and special purpose simulation languages. Emphasizes theory, design, and implementation of modeling languages. Prerequisites: CS 300 and Stat 410 with a grade of C or better or each; or instructor's consent.

881. Software Specification and Design. (3). A detailed presentation of the techniques and tools available for the specification of software requirements and their translation into a design. Includes formalization of design methods such as structured analysis, object oriented design and SD. Prerequisite: CS 680.

886. Software Project Management. (3). Presents the knowledge, techniques and tools necessary to manage the development of software products. Topics include phases and activities involved in building a project; the skills and tools required for estimating and scheduling and the responsibilities of the individuals involved. Prerequisite: CS 680.

889. Graduate Seminar. (2). A series of seminars on topics of current research interest in computer science. Participants are required to present one or two seminars on topics selected with the approval of their graduate advisor(s). Repeatable up to four credit hours. Graded S/U only. Prerequisite: departmental consent.

891. Project. (3). An intensive project involving the analysis and solution of a significant practical problem which must be supervised by a CS graduate faculty advisor and can be job-related. Students must write a report on the project and pass an oral final examination by an ad hoc faculty committee headed by the project advisor. Graded S/U only. Prerequisite: departmental consent.

892. Thesis. (1-6). May be repeated for up to six hours of credit. Graded S/U only. Prerequisite: departmental consent.

893. Individual Reading. (0-5). Graded S/U only. Prerequisite: departmental consent.

898. Special Topics. (2-3). Topics of current interest to advanced students of computer sci-
American literature or in other work acceptable to the Department of English. 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.

Applicants who earned their undergraduate degrees more than 10 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 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 MA degree program in English.

Counseling. All MA candidates in English are advised by the coordinator of graduate studies in English. The coordinator and the student establish a Plan of Study that takes into account the student's interests and future vocational plans.

Transfer of Credit. Students must complete 24 hours of credit at Wichita State University. Transfer must be to the English department. Students may transfer up to nine 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 course, the time limits imposed by the Graduate School on other transfers of credit will not apply.

Language Requirement. Master's degree candidates in English may fulfill the department's foreign language requirements 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 Fairmount College of Liberal Arts and Sciences

2. By completing the required 15 hours of undergraduate work in a single foreign language

3. By taking a test administered by the Department of Modern and Classical Languages and Literatures 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 six 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

Engl. 800 (Introduction to Graduate Study in English) normally should 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 680 (Theory and Practice in Composition)—and the following courses in linguistics and in literature: Engl. 515, 521, 522, 524, 526, 527, 610, 615, 667, and 672. Engl. 515 and 615 may be taken to fulfill part major author and/or optional course requirements of 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, which emphasizes literature, composition, and pedagogy, is especially designed for teachers. Plan B, which requires the student to submit a master's essay, places more emphasis on research, scholarly writing, and the independent study of literature. 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: Engl. 800 (Introduction to Graduate Study in English); two genre courses; three period courses in the Engl. 817-823 series and/or 521-527 series, with a minimum of two courses in English literature and one course in American literature; one course in composition theory and pedagogy (Engl. 680 or 780); and four elective courses in linguistics, literature, or methods of teaching English. With the approval of the Graduate Studies Committee, one of these electives may be taken in the College of Education. Regents' rules require that at least seven courses be at or above the 700 level. A master's essay is not required, but students must take a comprehensive examination on one period, one genre, and one area of composition, rhetoric, or linguistics.
with the candidate, an advisor in each of the three examination fields will designate up to five books, in addition to those covered in the candidate's course work, for which the student will be responsible. The book list will thus include a maximum of 15 works. This list must be approved by the graduate coordinator.

Plan B requires ten courses for a total of 30 semester hours distributed as follows: Engl. 800 (Introduction to Graduate Study in English); two major author or special topics courses (Engl. 515, 615, 803, 840, 841, 845, or 866), one of which may serve as a context for the development of a thesis prospectus; one genre course consistent with the thesis topic; one period course consistent with the thesis topic; four elective courses and Engl. 870 (Master's Essay). Regent's rules require that at least six courses be at or above the 700 level. A candidate's Plan of Study, approved by the graduate coordinator, should include an appropriate range of courses in canonical and modern literature. Plan B also requires a comprehensive examination on one period (or linguistics), one genre, and one major author or special topic related to the master's essay, as arranged with the thesis advisor. The first two examination fields should also be consistent with the subject of the master's essay. In consultation with the candidate, an advisor in each of the three examination fields will designate up to five books, in addition to those covered in the candidate's course work, for which the student will be responsible. The book list will thus include a maximum of 15 works. This list must be approved by the graduate coordinator.

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 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 places emphasis on the development of skills and understanding in the practice of imaginative writing and upon related academic study. It is not exclusively a studio program; rather, it encourages the development of writers who are able, as the result of additional course work in English, to demonstrate skills useful in teaching, editing, and other related areas. A core of workshops and tutorials leads to a substantial thesis: a collection of fiction or poetry, a novel, or some other appropriate work. Flexibility is provided in academic course work to allow for a variety of possible interests.

All MFA students are required to take Engl. 800 (Introduction to Graduate Study in English). Teaching assistants must take Engl. 780 (Advanced Theory and Practice in Composition) unless specifically exempted.

Admission Requirements
Applicants must meet the general requirements of the Graduate School, with the additional requirement of a 3.000 grade point average in their previous course work in English. 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 of acceptable course work in English. 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. With the permission of the director of creative writing, gifted writers may study in the program as special students with no specific degree intentions.

Applicants who earned their undergraduate degrees more than 10 years before their application for admission must be interviewed by the graduate coordinator before they are admitted into the program.

Applicants who have earned their degrees in countries where English is not the native language must score at least 600 on the TOEFL (Test of English as a Foreign Language) Examination before they may be admitted to the program.

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 (approximately 20 pages), poetry (about six poems), or other appropriate form to the director of creative writing at the time they seek admission.

Counseling
All MFA candidates in English are advised by the coordinator of graduate studies in English and the director of creative writing. The graduate coordinator will help the student establish a Plan of Study which will take 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 degree 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 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 transfer of credit will not apply.

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 Engl. 801 (Creative Writing: Fiction) or 805 (Creative Writing: Poetry) to a maximum of 12 semester hours.
2. Three hours in Engl. 800 (Introduction to Graduate Study in English) or the equivalent, required of all graduate students. Engl. 800 normally should be included in the student's first semester of graduate study.
3. Three hours in Engl. 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 Engl. 841 (Graduate Studies in Contemporary Literature), 860 (Graduate Seminar in Special Topics), or another suitable seminar in literature.
With departmental consent, seminars may be repeated for a maximum of 12 hours credit.

5. Two to six hours in Engl. 875 (Master of Fine Arts Essay).

6. For purposes of enrichment, candidates must take at least three graduate hours in the humanities or fine arts outside English. The choice is contingent upon the student's having the proper prerequisites.

7. Graduate teaching assistants are required to take Engl. 780 (Advanced Theory and Practice in Composition) unless specifically exempted.

B. Elective Courses

Elective courses may be taken to pursue historical, technical, or theoretical studies that the candidate finds useful, to strengthen areas of weakness, or simply to enrich their degree program appropriately. All candidates must successfully complete a minimum of 15 elective hours in English courses numbered 800 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 800 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. Graduate students in 500-, 600- and 700-level courses are expected to meet higher standards of achievement than those imposed on undergraduates in the same courses. Within this unit, as many as nine hours total of Engl. 880 (Writer’s Tutorial: Fiction), Engl. 881 (Writer’s Tutorial: Poetry), and Engl. 855 (Directed Reading) may be taken.

Comprehensive Examination. All candidates are required to pass a written 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.

Thesis. The MFA 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 preface 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

581. Composition Practicum. (1). Required for all teaching assistants in English. Does not count for credit toward the MA or MFA degree. Focuses on techniques and strategies for teaching composition. Each participant teaches in a composition group appropriate to the composition course he or she teaches. Graded S/U only. Repeatable for credit. Prerequisite: appointment as a graduate teaching assistant in the Department of English.

680. Theory and Practice in Composition. (3). Introduces 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 strategies by writing, revising, and evaluating their own and others’ work. Especially for prospective and practicing teachers: may not be taken for credit by students with credit in Engl. 780.

685Q. Advanced Composition. (3). Explores the relationships among contemporary issues, problem-solving and communication. The first objective is to engage students in interdisciplinary inquiry into some aspect of social policy, inquiry which asks students to apply the analytical approaches of their major field to current issues of broad, general interest. The second objective is to develop students’ abilities to communicate their knowledge and assumptions about this issue to a variety of audiences and for a variety of purposes. Prerequisites: Engl. 101 and 102 and upper-division standing.

780. Advanced Theory and Practice in Composition. (3). For teaching assistants in English. Review of new theories of rhetoric, recent research in composition and new promising developments in composition programs in schools and colleges. Students are given practice in advanced writing problems, situations and techniques and may propose projects for further special study.

Creative Writing

Courses for Graduate/Undergraduate Credit

517-518. Playwriting I and II. (3). Cross-listed as Thea. 516 and Anth. 667. A study of the basic principles of English syntax, covering the major acts of English sentence construction and relating them to linguistic theory. Prerequisite: Engl. 315 or equivalent or departmental consent.

570. English Syntax. (3). Cross-listed as Ling. 503 and Anth. 647. A study of the basic principles of English syntax, covering the major acts of English sentence construction and relating them to linguistic theory. Prerequisite: Engl. 315 or equivalent or departmental consent.

572. Studies in Language Variety. (3). Cross-listed as Art. 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: English 315 or departmental consent.


Literature

Courses for Graduate/Undergraduate Credit

501. Creative Writing: Fiction. (3). Advanced work in creative writing. Repeatable for credit. Prerequisite: consent of creative writing director.

503. Creative Writing: Nonfiction. (3). Advanced work in creative nonfiction, forms of nonfiction requiring a distinctive voice and demanding a formal artistry generally associated with fiction. Prerequisite: consent of creative writing director.

505. Creative Writing: Poetry. (3). Advanced work in the writing of poetry. Repeatable for credit. Prerequisite: consent of creative writing director.

575. Master of Fine Arts Essay. (1-6).

580. Writer’s Tutorial: Fiction. (3). Tutorial work in creative writing in prose fiction with visiting writer. Prerequisite: consent of creative writing director.

581. Writer’s Tutorial: Poetry. (3). Tutorial work in creative writing in poetry with visiting writer. Prerequisite: consent of creative writing director.

Courses for Graduate/Undergraduate Credit

517-518. Playwriting I and II. (3). Cross-listed as Thea. 516 and Anth. 667. A study of the basic principles of English syntax, covering the major acts of English sentence construction and relating them to linguistic theory. Prerequisite: Engl. 315 or equivalent or departmental consent.

570. English Syntax. (3). Cross-listed as Ling. 503 and Anth. 647. A study of the basic principles of English syntax, covering the major acts of English sentence construction and relating them to linguistic theory. Prerequisite: Engl. 315 or equivalent or departmental consent.

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501. Creative Writing: Fiction. (3). Advanced work in creative writing. Repeatable for credit. Prerequisite: consent of creative writing director.

503. Creative Writing: Nonfiction. (3). Advanced work in creative nonfiction, forms of nonfiction requiring a distinctive voice and demanding a formal artistry generally associated with fiction. Prerequisite: consent of creative writing director.

505. Creative Writing: Poetry. (3). Advanced work in the writing of poetry. Repeatable for credit. Prerequisite: consent of creative writing director.

575. Master of Fine Arts Essay. (1-6).

580. Writer’s Tutorial: Fiction. (3). Tutorial work in creative writing in prose fiction with visiting writer. Prerequisite: consent of creative writing director.

581. Writer’s Tutorial: Poetry. (3). Tutorial work in creative writing in poetry with visiting writer. Prerequisite: consent of creative writing director.
romantic, the transcendental period and the rise of western and regional literatures.

504. Studies in American Literature II. (3). Fiction, poetry and drama from the late 19th century to after World War II. Readings also may include literary criticism and other types of nonfiction prose. Discussions cover topics, themes and literary forms inspired by the social and cultural movements and events of the first half of the 20th century.

512. Studies in Fiction. (3). Subjects announced each semester. Repeatable for credit.


514. Studies in Drama. (3). Subjects announced each semester. Repeatable for credit.

515. Studies in Shakespeare. (3). Subjects announced each semester. Repeatable for credit except by students who take EngL 340Q. Prerequisites: junior standing and one college literature course or instructor's consent.

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.

522. Readings in Renaissance Literature. (3). Sidney, Spenser, Shakespeare (poetry), Donne, Jonson, Milton and their contemporaries. Prerequisites: junior standing and one college literature course or instructor's consent.

524. 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.

526. 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.

527. 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.


533. Studies in Contemporary Literature. (3). Modern literature, primarily British and American, since 1950. Subjects announced each semester. Repeatable for credit.

535. Literary Images of Women: Diverse Voices. (3). Cross-listed as Wom. S. 535. Explores literature written in English by women of diverse ethnic, racial, class and other backgrounds, as well as of varying sexual orientations, ages and degrees of physical ability. Materials analyzed both as literary works and as expressions of women's differences from one another. Works selected on their specific attention to the question of gender as it intersects with other elements of culture.

536. Writing by Women. (3). Cross-listed as Wom. S. 536Q. Explores various themes in critical approaches to literature composed by women writers, especially those whose works have been underrepresented in the literary canon. Genres and times periods covered, critical theories explored and specific authors studied vary in different semesters.

537. Contemporary Women's Drama. (3). Cross-listed as Wom. S. 537. Examines contemporary plays by and about women to discover and explore the insights of the various playwrights into the lives and roles of women. In addition to reading and analyzing plays, students write plays of their own.

538. Special Studies. (1-3). Topic selected and announced by the individual instructor. Repeatable for credit. Prerequisite: departmental consent.

560. Old English. (3). Cross-listed as Ling. 610. Studies the Old English language in enough detail to enable the reading of some prose and poetry, including parts of Beowulf in the original. Some literature, including all of Beowulf, is read in translation. With attention to important literary and cultural features of the period.

615. Chaucer. (3). Chaucer's Canterbury Tales, Troilus and Cressida, and selected lyrics, with a few works by other late 14th century authors and some critical and historical studies. Focuses on close reading of Chaucer in Middle English. Prerequisites: junior standing and one college literature course or instructor's consent.

750. Workshop. (2-4). Repeatable for credit.

Courses for Graduate Students Only

800. Introduction to Graduate Study in English. (3). Prepares students to perform effectively in graduate classes in English. Concerned with: (1) basic bibliographical tools; (2) terminology both technical and historical; (3) various approaches to the study of literature, such as intrinsic 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 interpretative and research essays. Throughout the semester a balance between criticism and research is maintained.

817. Graduate Readings in 20th Century British Literature. (3). Yeats, Joyce, Lawrence, Auden, Spender and their contemporaries.

821. Graduate Readings in American Literature I. (3). From the beginnings to 1870 emphasizing Emerson, Thoreau, Hawthorne, Melville, Whitman and Dickinson.

822. Graduate Readings in American Literature II. (3). From 1879 to 1920 emphasizing James, Twain, Crane, Dreiser, Robinson and Frost.


826. Theories of Rhetoric: Renaissance to Early Modern. (3). Cross-listed as Comm. 831. A study of the emerging patterns of rhetoric from the Second Sophistic to modern times. Analyzes the rhetorical systems associated with such figures as Augustine, Boethius, Bunyan, Calvin, and Whitgift.

830. Graduate Readings in Drama. (3). Selected topics in the history and nature of dramatic literature.

832. Graduate Studies in Fiction. (3). Selected topics in the development of the form and content of prose fiction.

834. Graduate Studies in Poetry. (3). Selected topics in forms, techniques and history of poetry.


841. Graduate Studies in Contemporary Literature. (3). Covers selected topics in the literature of the last quarter-century, including literature in translation. Deals with a broad range of authors and genres; but with change of content and departmental consent, it will be repeatable for credit.

845. Graduate Studies in a Major Author. (3). Careful study of the works of a major author with readings in secondary sources, reports, discussions, and papers. Repeatable for credit with change of content.

855. Directed Reading. (2-3). 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.

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.

870 Master's Essay. (2-3).

Environmental Science

The Master of Science degree program in environmental science is interdisciplinary. The purpose of providing this program is to allow graduates

1) to appreciate the complex working of natural systems,

2) to develop an appreciation for the interdisciplinary nature of this subject, and
3) to acquire the skills necessary to analyze and apply solutions to environmental problems.

The intent of this program is to educate scientists in a multidisciplinary approach involving primarily biology, chemistry, and geology rather than from the perspective of a single discipline. Such an effort will produce scientists who are able to approach environmental problems and environmental management from a multidisciplinary point of view. Both foundations and practical applications will be emphasized; classroom activity will be focused on local environmental issues to provide practical experience.

Prerequisites
Applicants for admission must present an undergraduate degree with a GPA that meets department and Graduate School requirements. Prerequisite courses are two semesters of chemistry and either analytical or organic chemistry; two semesters of physics; two semesters of calculus or one semester of calculus and one of statistics; and two semesters of biology including a course in general ecology. Students who have not completed these courses may be accepted in a conditional status with the expectation that prerequisites will be fulfilled concurrent with enrollment in the first year graduate courses. If too many prerequisite course are lacking, a nondegree status may be suggested. Some deficiencies may be required as specific prerequisites for enrollment in the environmental science core courses.

Core Curriculum
All students must enroll in a two-semester (8-credit-hour) environmental science core course that will include advanced topics in environmental biology, chemistry, and geology. During each semester of enrollment up to a maximum of four hours, students will be required to enroll in a 1-credit-hour environmental science colloquium. In addition to the required 8 hours of core and 4 hours of colloquium, students will complete a plan of study that totals a minimum of 30 hours, which includes credit for either an internship or research thesis.

Each student will choose a graduate advisor from one of the three participating departments. It is expected that the majority of elective courses will be taken in this particular department. A minimum of 3 hours of elective credit must be chosen in a department other than the one of major emphasis. Both the student’s advisor and the graduate program committee will help the student design a coherent, practical program of study.

During the second year of study, all graduate students will be required to take a comprehensive written examination based on material presented in the core curriculum. Students choosing the option of a research thesis for degree completion will be required to prepare and orally present a research proposal prior to research initiation. Students choosing an internship option will be required to submit a detailed description to the graduate faculty for approval. Both the research thesis and internship options require completion of a written research paper and formal seminar presentation.

Relevant Elective Courses in the Natural Sciences
- Biol. 560, Plant Ecology
- Biol. 573, Statistical Applications
- Biol. 575, Field Ecology
- Biol. 578, Aquatic Ecology
- Biol. 600, Behavioral Ecology
- Biol. 640, Environmental Risk Assessment
- Biol. 771, Evolutionary Ecology
- Biol. 7xx, Environmental Toxicology
- Chem. 514, Inorganic Chemistry
- Chem. 523-524, Analytical Chemistry
- Chem. 531-532, Organic Chemistry
- Chem. 561, Introduction to Biochemistry
- Chem. 603, Industrial Chemistry
- Chem. 821, Equilibrium and Statistics in Analytical Chemistry
- Chem. 822, Analytical Separations
- Chem. 823, Analytical Spectroscopy
- Chem. 824, Electroanalytical Chemistry
- Geol. 560, Geomorphology and Land Use
- Geol. 563, Remote Sensing Interpretation
- Geol. 603, Analytical Methods in Geology
- Geol. 621, Geochemical Cycling
- Geol. 630, 830, Field Studies in Geology
- Geol. 650, Hydrogeology
- Geol. 678, Geologic Perspectives on Climate Change
- Geol. 690, Geologic Resources in the Environment
- Geol. 684, Methods of Subsurface Analysis
- Geol. 720, Geochemistry
- Geol. 724, Soils
- Geol. 725, Clay Mineralogy
- Geol. 730, Geoscience and the Environment
- Geol. 751, Advanced Geohydrology
- Geol. 821, Special Studies in Geochemistry
- Geol. 870, Advanced Biogeology

Geography
Although there is no graduate program in geography, the following courses are available for graduate credit.

Courses for Graduate/Undergraduate Credit

510. World Geography. (3). A study of world regions including an analysis of each region's physical, political, economic, historical, and cultural geography. Focus on a specific geographical problem for an in-depth study and analysis. Prerequisite: instructor's consent. May not be taken if credit has been received for Geo 210Q.

520. Geography of the United States and Canada. (3). General education further studies course (social science). Physical, political, economic, historical and human geography of the United States and Canada.

530. Geography of Latin America. (3). General education further studies course (social science). Physical, political, economic, historical, and human geography of Latin America.

542. Geography of Europe. (3). General education further studies course (social science). Physical, political, economic, historical, and human geography of Europe.


562. Field Studies in Geography. (2-6). Off-campus, systematic field study in a selected area of geographic significance. Course given upon demand and may be repeated for credit when the locality and content differ. Where appropriate, travel, lodging and board costs are charged.

670. Urban Geography. (3). 2R; 3L. Lab fee. Geography of cities; the origin, growth, function, characteristics and environmental problems of urban areas; structure and dynamic elements of intracity space; use and land-use analysis and approaches to urban planning; and problems of urban ecology.

695. Special Studies in Geography. (1-3). 3R or 2R; 3L. Lab fee. (Lab fee is included when appropriate.) Systematic study in a selected area of topical interest in geography. Course given upon demand and may be repeated for credit when the locality and content differ. May require field trips. Prerequisite: junior standing.

750. Workshop in Geography. (1-4). Short-term courses with special focus on geographical problems. Prerequisite: instructor's consent.

Course for Graduate Students Only

820. Field Studies in Geography. (2-6). Off-campus, systematic field study in a selected area of geographic significance. Course given upon demand and may be repeated for credit when the locality and content differ. Where appropriate, travel, lodging and board costs are charged. Prerequisite: instructor's consent.

Geology
Graduate Faculty
Professors: James N. Gundersen, Salvatore J. Mazzullo (graduate coordinator)
Associate Professors: William D. Bischoff,
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 and speech); 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 hours 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 C are recommended.)

Examinations. The student is required to present the thesis proposal—Geol. 890—offically 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 satisfactorily the project 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.

Courses for Graduate/Undergraduate Credit

501. Raw Materials of Antiquity. (3). 2R; 2L. Nature of rocks, minerals and metallic ores used by prehistoric and ancient times. Also weathering, sedimentation and soil-forming processes: elements of stratigraphy; geologic history of the Pleistocene and Recent Epoch: relative and absolute dating; mineralogy of rocks and ceramics; and firing and metallurgical processes of antiquity. Prerequisite: Anth. 501 or equivalent or instructor's consent.

520. Optical Mineralogy. (3). 1R; 6L. Optical properties of amorphous and crystalline materials in polarized light. Introduces use of the petrographic microscope in the quantitative determination of rock-forming minerals and mineraloids in thin section and immersion oil methods. Prerequisite: Geol. 323.

526. Sedimentary Geology. (3). 2R; 3L. Origin, classification, primary structures and physical processes controlling deposition of sedimentary rocks, especially carbonates. Includes an analysis of modern and ancient sedimentary depositional environments and a systematic petrographic study of sedimentary rocks in thin section, insoluble residues and heavy mineral analysis. May require field trips. Prerequisite: Geol. 324.

540. Field Mapping Methods. (3). 9L. Field mapping methods with special reference to use of level, compass, barometer, alidade, and airphotos. Field trips required. Prerequisite: Geol. 201 or Geol. 111Q.

541. Plate Tectonics. (3). General education further studies course. The mathematical treatment of plate tectonics including aspects of spherical geometry necessary to understand the movement of plates over the earth's surface. Includes earthquake focal mechanisms and paleomagnetic interpretations of plate movements; driving forces for plate tectonics; the history of the development of plate tectonic theory. Prerequisites: Geol. 111Q and Math. 112 or 123 or equivalent mathematical background.

544. Structural Geology. (3). 2R; 3L. Stress-strain theory and mechanics of rock deformation, description and genesis of secondary structural features in crustal rocks resulting from diastrophism, elements of global tectonics, and laboratory solution of geologic problems in three dimensions and time. May require field trips and field problems. Prerequisites: Math. 112 or 123, Geol. 312 (or taken concurrently), and Geol. 324.

552. Physical Stratigraphy. (3). 2R; 3L. Description, classification, correlation and relative ages of stratigraphic rock units and the origin of primary structures of clastic sedimentary rocks. Laboratory emphasis on bioclastic microscopic examination and physical properties of unconsolidated sediments and clastic sedimentary rocks. Requires field instruction in stratigraphic mapping methods. Prerequisites: Geol. 312, 350 and 540 or equivalent.

556. Geomorphology and Land Use. (3). General education further studies course. Identification of landforms and their genesis; processes producing landforms; the influence of geomorphology in aspects of natural hazards such as landslides, floods, earthquakes, and volcanic activity, soil erosion; terrace, coastal, and desert environments; mineral resource exploitation, and their effects on humans; importance of these influences in environmental management and land use planning. Prerequisite: Geol. 111Q or Geol. 171Q or Geol. 300Q with a grade of B or better.

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. Requires field trips (instructor's option). Prerequisite: Geol. 560 or instructor's consent.

564. Remote Sensing Interpretation. (3). 2R; 3L. Introduces interpretation techniques for most types of images acquired by remotely sensed means. Physical principles that control various remote sensing processes using the electromagnetic spectra are applied to geology. Land use planning, geography, resource evaluation, and environmental problems. Derivative maps generated from a variety of images. May require field trips. Prerequisite: Geol. 111Q, Geog. 201 or equivalent.

570. Biogeology. (3). 2R; 3L. General education further studies course. Systematic survey of major fossil biogeological materials, analysis of the origin and evolution of life and paleoecological interpretation of ancient environments and climates. Includes landfauns and bioclastic microscopic examination of major fossil biogeological materials. Includes application of analyzed fossil data to the solution of problems in biogeochronology, paleoecology, paleoecology and palaeoecology. Cites examples from fields of invertebrate, vertebrate and micropaleontology, and palynology. May require museum and field trips. Prerequisite: Geol. 312 or 352.

574. Special Studies in Biogeology. (3). 2R; 3L. General education further studies course. A systematic study in selected areas of biogeology and paleoecology. Content differs, upon demand, to provide in-depth analysis in the fields of: (a) invertebrate paleontology, (b) vertebrate paleontology, (c) micropaleontology, (d) palynology and (e) paleoecology. Gives appropriate laboratory instruction in the systematic, taxonomy and biogeological relationships within the selected fields listed. May
require field trips. Repeatable for credit to cover all five areas listed.

581. Numerical Geology. (3). 2R; 3L. Introduces applications of numerical methods to problems in geology and environmental geology. Discusses algorithms and computer software for the analysis of numerical data including minimization and advanced analytical and deterministic techniques. Also applies to a higher order computer language (FORTRAN, C/C++, PASCAL) for the manipulation of measurements. Study principles of mapping data, quantification, and analysis of geological imagery and models of simulating geological phenomena. Prerequisite: Stat. 370 or equivalent. AE 222 is recommended knowledge of a higher order programming language. Math. 344 or 355 recommended or instructor's permission.

602. Laboratory Methods in Geology. (3). Methods of data collection and analysis of geological samples: special instruction in the use of the scanning electron microscope, atomic absorption spectrophotometer, cathodoluminescence, X-ray diffraction equipment computer-assisted image analysis system, particle size description by sieving methods, and staining techniques for qualitative and semi-quantitative mineral identification. Prerequisites: Geol. 312, 320, or instructor's consent.

621. Geochemical Cycling. (3). The chemistry of earth materials and the important geochemical processes: cycles operating within and throughout the atmosphere, hydrosphere and lithosphere through time; anthropogenic effects on these cycles today. Prerequisites: Geol. 111Q and Chem. 111Q or instructor's consent.

630. Field Studies in Geology. (2-6). Off-campus, systematic field study in a selected area of geological significance. Course given upon demand and may be repeated for credit when locality and content differ. Where appropriate, travel, lodging, and board costs are charged.

640. Field Geology. (6). Field investigation of sedimentary, igneous and metamorphic rock units and their structures. Includes the applications of mapping methods to solving geological problems. Held at an off-campus field camp for five weeks. Preparation of geological columns, sections, maps and an accompanying professionally written report are due on campus during the sixth week. Prerequisite: 12 credits of advanced geology or instructor's consent.

657. Earth Science Instructional Methods. (3). Practice in teaching an introductory course in the earth sciences. Developing and presenting the latest scientific laboratory techniques and evaluating their effectiveness. May be taken more than once if content and objectives differ. Prerequisite: senior standing and departmental permission.


578. Geologic Perspectives on Climatic Change. (3). Modern climate and climatic changes, and analysis of climatic deterioration; systematic study of geologic evidence of climate change through time. Emphasis on theoretical causes, feedback mechanisms, and recognition of effects of climatic perturbations in the rock record. Prerequisite: Geol. 312.


682. Petroleum Geology. (3). 2R; 3L. The origin, migration and accumulation of oil and gas in the earth's crust; reservoir trap types in common hydrocarbon fields, origins and types of porosity systems and distribution of world petroleum supplies. Introduces subsurface study techniques. May require field trips. Prerequisites: Geol. 526 and 590.

684. Methods of Subsurface Analysis. (3). 2R; 3L. Methods of remotely logging and describing the geologic occurrence of subsurface strata; characterization of subsurface strata, including laboratory analysis of recovered subsurface samples; application to petroleum geology, mineral resource evaluation, and environmental geology. Prerequisites: Geol. 312; Phys. 214Q or equivalent.

690. Special Studies in Geology. (1-5). Systematic study in selected areas of geology. Content differs and is repeatable for credit. Requires laboratory work or field trips (instructor's option). Offered on demand. Prerequisite: Instructor's consent.

698. Independent Study in Geology. (1-3). Independent study on special problems. Prerequisites: Geol. 312, but courses restricted to juniors, seniors, and graduate students; or instructor's consent.

500. Geohydrology. (3). 2R; 3L. The hydrologic cycle, physical and chemical properties of water: fluid flow through permeable media: exploration and evaluation of groundwater: water quality and pollution, and water law. Prerequisites: Geol. 552 and Math. 243 or instructor's consent.

703. Environmental Science II. (4). 2R; 3L. Cross-listed as Biol. 703 and Chem. 703. Advanced theoretical and applied principles of the interdisciplinary study of environmental science. Includes environmental chemical analysis, environmental toxicology, aquatic microbiology, environmental biochemistry, water treatment, photochemical smog, and hazardous waste chemistry. Prerequisite: acceptance in the master's of environmental science program or instructor's consent.

704. Environmental Science Colloquium. (1). Cross-listed as Biol. 704 and Chem. 704. Students in the master's of environmental science program are required to enroll each semester (maximum 4 credit hours). Includes presentations by guest speakers and required readings for all graduate, master's students. Also include student involvement in environmentally-related community groups and projects.

706. Environmental Science Internship. (3-6). Cross-listed as Biol. 706 and Chem. 706. Students in the master's of environmental science program may gain interdisciplinary skills in environmental science by participating in applied and/or basic research internship projects with local business, industry, or government agencies. Internship option is an alternative to thesis research for degree requirements. Enrollment in internship projects requires an approved proposal. Completion of an internship for graduation requires a formal oral presentation of the internship activity and a written report. Prerequisite: completion of Environmental Science I and II.

720. Geochemistry. (3). The chemistry of natural aqueous solutions and their interaction with minerals and rocks: thermodynamics and kinetics of reactions; emphasizes application to sedimentary environments and environmental problems. Requires some laboratory work. Prerequisites: Geol. 324 and Chem. 111Q or instructor's consent.

724. Soils. (3). Geologic analysis of soil types, their formation, occurrence, and mineralogy: soil management and conservation; environmental aspects of soil occurrence including stability studies, pollution, and reclamation.


726. Carbonate Sedimentology. (3). 2R; 3L. The origin and genetic description of carbonate particles, sediments, and rocks: mineralogy and textural classifications; depositional environments in carbonate rocks and analysis of modern and ancient depositional systems. May require field trips. Prerequisites: Geol. 526, 552 or equivalents.

727. Carbonate Diagenesis. (3). 2R; 3L. An in-depth analysis of diagenesis of carbonate sediments...
ments and rocks. Includes mineralogic stability in natural waters, meteoric, marine and deep-sea diagenesis, dolomitization processes and products; trace-elements and isotopes as diagenetic tools, cathodoluminescence and x-ray diffraction studies of carbonates; origin and porosity. Prerequisites: Geol. 520 (unless waived by instructor) and 726.

730. Perspectives: Geoscience and the Environment. (3). A perspective of global issues of geo-environmental concern with regard to past, present, and future exploitation, use, and availability of earth’s resources, marine and terrestrial pollution and resource use: water, minerals, and fuel resources; population growth and resource availability; the Greenhouse effect, global climate change, and sea level rise and their effects on populations; future trends in environmental management and remediation of environmental problems of geologic scope. Prerequisite: Geol. 312, 580; or instructor’s consent.

740. Basin Analysis. (3). A practical course in analysis of petroleum-bearing or other sedimentary basins. Emphasizes detailed subsurface mapping to determine depositional, tectonic and burial history of sedimentary basins; subsurface lithologic and geochemical sample analysis and evolution of sedimentary facies; systems and hydrocarbons maturation history. Includes compilation of existing data to determine geologic evolution of basins. Prerequisites: Geol. 682, 684 or instructor’s consent.

745. Advanced Stratigraphy. (3). Analysis of stratigraphic sequences at the local to global scales in terms of sequence stratigraphic concepts and high resolution interpretation of depositional sequences from outcrop and subsurface data; seismic sequence stratigraphy, and significance of unconformities in sequence identification and development; local to global correlation of sequences and sea level history through time; cratonic sequences of North America. Required 7-day field trip. Prerequisites: Geol. 312, 326, and 726.

750. Workshop in Geology. (1-3). Short-term courses with special focus on geological problems. Prerequisites: graduate standing and/or instructor’s consent.

751. Advanced Geochemistry. (3). Integration of practical and theoretical concepts of subsurface fluid flow as applied to shallow aquifers. Covers the mass transport in both the saturated and vadose zones as well as the occurrence and movement of non-aqueous fluids. Topics include cover groundwater quality, sources of groundwater contamination, retardation of contaminants, retardation and attenuation of dissolved solids and the response of inorganic and organic substances to subsurface aqueous and framework chemistry. Computer simulation models used whenever practical along with detailed analysis of case histories, including those related to environmental geoscience. Prerequisite: Geol. 680, 681, Math. 344 or instructor’s consent.

760. Exploration Geophysics. (3). An introduction to the theory and application of geophysical techniques for hydrocarbon, mineral, and groundwater prospecting. Topics include use of seismic techniques; instrumentation for acquisition on land and sea; seismic processing, structural and stratigraphic modeling; 3-D seismic exploration; and seismic refraction techniques. Prerequisite: completion of geology undergraduate math and physics requirements: Math. 344 or 555; Geol. 324 and 544; and instructor’s consent.

781. Advanced Numerical Geology. (3). Involves practical implementation of algorithms and computer code. Included is the analysis of multivariate techniques and the development of the computer algorithm skills needed to handle very large databases. Topics include standard statistical approaches to data analysis; treatment of applied linear algebra and matrix theory; and the application of linear and non-linear discriminant analysis, various factor analytic techniques, hard and fuzzy clustering, linear and non-linear unmixing analysis, and other forms of data modeling. Prerequisites: Geol. 581 or equivalent, competency in one or more high level computer languages, Math 344 or 555, and instructor’s consent.

Courses for Graduate Students Only

800. Research in Geology. (3). Research in special areas of geology: (a) general, (b) mineralogy, (c) petrology, (d) structural, (e) palynology, (f) economic geology, (g) sedimentation, (h) stratigraphy, (i) geophysics, and (k) petroleum. Requires a written final report. Prerequisite: consent of sponsoring faculty.

808. History of Geology. (1-3). Selected events and personalities in geology that have led to our present understanding of geology’s place in science. Prerequisite: instructor’s consent.

810. Advanced Graduate Studies in Geology. (1-6). Systematic study in a selected topic of professional or applied geology. Course given upon demand and may be repeated for credit when content differs. May require field trips. Prerequisites: graduate standing, instructor’s consent and two years of professional post-graduate practice in geology.

821. Special Studies in Geochemistry. (3). A systematic study in selected areas of geochemistry. Content differs upon demand to provide in-depth analysis in fields of (a) sedimentary carbonate and silicate geochemistry and mineralogy, (b) organic geochemistry, (c) high pressure and temperature thermodynamics of earth materials, (d) exploration geochemical geology, (e) organic geochemical cycling, (f) stable isotopes geochemistry, and may be repeated for credit to cover all six areas listed. May require some laboratory work. Prerequisite: Geol. 720 or instructor’s consent.

823. Igneous and Metamorphic Petrology. (3) or (4). Mineral paragenesis, bulk chemical compositions, physical chemical relationships, textures, structures, origin and classification of igneous and metamorphic rocks. Thin-section studies to facilitate rock identifications and the determination of petrogenetic relationships. May require field trips. Prerequisite: Geol. 520.

826. Sedimentary Petrology. (3) or (4). Detailed study of sedimentary rocks and their origins. Facilitates determinations of mineral compositions, textures, structures, fabrics and petrogenetic relationships by the use of thin sections, peels and chemical analyses. May require field trips. Prerequisite: Geol. 520.

830. Field Studies in Geology. (2-6). Off-campus systematic field study in a selected area or regional geologic significance. Course given upon demand and may be repeated for credit when locality and content differ. Where appropriate, travel, lodging and board costs are charged. Prerequisites: summer field geology or equivalent and instructor’s consent.

840. Geotectonics. (3). Physical and geologic principles of crustal deformation and tectonic interpretation. Studies the relationship of interior earth processes to crustal deformation with special reference to global tectonics. May require field trips. Prerequisite: instructor’s consent.

852 Field Stratigraphy. (3) or (4). Advanced concepts and principles of stratigraphic analysis and interpretation emphasizing original sources and current research investigations. Required field problem and field trips. Prerequisite: Geol. 544 and 552 or instructor’s consent.

860. Special Topics in Geophysics. (3). Systematic study in one or more selected topics of theoretical and applied geophysical techniques. Emphasis on applications of state-of-the-art concepts and principles to problems of regional to global significance. Potential topics include seismic stratigraphy, vertical seismic profiling, reservoir petrophysical response estimation, shallow aquifer geophysical modeling, geophysical basin modeling, and regional and global environmental modeling. Prerequisites: Geol. 581, 760; Math. 344 or 555; or instructor’s consent.

870. Advanced Biogeology. (3) or (4). Paleontological reconstruction of ancient plant/animal communities and environments. Emphasis on community structure, biostatigraphy, synthesis of total raw data and problem solving. May require field trips. Prerequisite: a course in biogeology or equivalent.

881. Special Topics in Numerical Geology. (3). Systematic study in one or more topics of theoretical and applied quantitative analysis appropriate for environmental and geological research. Emphasis on applications of state-of-the-art concepts and principles to problems of regional to global significance. Potential topics include quantitative shape analysis, petrographic image analysis, multi-variable linear and non-linear unmixing, geostatistical analysis and interpolation techniques, quantitative isotope chonostatigraphic techniques, modeling global phenomena, and simulations of multi-phase flow in aquifers and reservoirs. Prerequisites: Geol. 581, 781; and Math 344 or 555; or instructor’s consent.

880. Thesis. (1-6). Prerequisite: departmental consent

Gerontology

See Urban and Public Affairs, Hugo Wall School of.
History

Graduate Faculty
Distinguished Professor: H. Craig Miner (Willard W. Garvey Distinguished Professor of Business History and chairperson)

Professors: John E. Dreyfort, James C. Duram, Anthony P. Gwynel, Phillip D. Thomas

Associate Professor: John D. Born, Jr. (graduate coordinator), Willard C. Klunder, Craig L. Torbenson

Assistant Professors: Helen Hundleby, Judith R. Johnson, Ariel Lottus, Benson Tong

Master of Arts
and Areas of Specialization

The history department offers courses of study leading to the Master of Arts (MA) degree with specialization in U.S. history, European history, and public history.

Admission Requirements

Admission to the MA program in history requires completion of an undergraduate major in history, or the equivalent: a grade point average of 2.750 or better, including all undergraduate hours, and a 3.000 grade point average in history. Under unusual circumstances applicants with less than a 3.000 average in history may be granted a probationary or conditional admission. International students are required to have a minimum TOEFL of 600.

Degree Requirements

One of three plans may be followed for a graduate degree in history. Plan 1 is a thesis program in American or European history. Plan 2 is a nonthesis program in American or European history. Plan 3 is a thesis program in public history.

Plan 1, Thesis Program. In Plan 1 students must complete a minimum of 31 hours, including Hist. 725, which must be taken during the first year of enrollment. Thesis students must take 19 semester hours numbered 700 or above.

Students following the American history emphasis must take the following:

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<tr>
<td>Hist. 725, Advanced Historical Method</td>
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<td>Hist. 727, Readings in History</td>
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<tr>
<td>Hist. 725-730, American history seminars</td>
</tr>
<tr>
<td>Hist. 733-734, European history seminars (includes ancient, medieval, and modern European history)</td>
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<tr>
<td>Hist. 801, Thesis Research</td>
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<td>Hist. 802, Thesis</td>
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</table>

A majority, but not all, of the remaining hours must be taken in American history courses for a total of 31 credit hours. Students also must satisfy the foreign language requirement, pass a written examination in one comprehensive field, and pass an oral examination in defense of the thesis. A written examination must precede the oral examination.

Students following the European history emphasis must take the following:

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</tbody>
</table>

A majority, but not all, of the remaining hours must be taken in American history courses for a total of 31 credit hours. Students also must satisfy the foreign language requirement, pass a written examination in one comprehensive field, and pass an oral examination in defense of the thesis. A written examination must precede the oral examination.

Plan 2, Nonthesis Program. In Plan 2 students must complete a minimum of 36 hours, including Hist. 725, which must be taken during the first year of enrollment. Nonthesis students must take 21 semester hours numbered 700 or above.

Students following the American history emphasis must take the following:

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<tr>
<td>Hist. 801, Thesis Research</td>
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<td>Hist. 802, Thesis</td>
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</table>

A majority, but not all, of the remaining hours must be taken in American history courses for a total of 36 credit hours. Students also must satisfy the foreign language requirement and pass written examinations in three comprehensive fields. One of these fields must be in American history.

Plan 3, Thesis Program in Public History.

In Plan 3 students must complete a minimum of 35 hours, including Hist. 701 and 704. History 725 should be taken during the first year of enrollment. Students following the public history emphasis must take the following:

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<tr>
<td>Hist. 701, Introduction to Public History</td>
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<tr>
<td>Hist. 725, Advanced Historical Method</td>
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<tr>
<td>Hist. 727, Readings in History</td>
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<tr>
<td>Hist. 725-730, American history seminars</td>
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<tr>
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<tr>
<td>Hist. 802, Thesis</td>
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<tr>
<td>Hist. 803, Internship in Public History</td>
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<tr>
<td>Hist. 781, Cooperative Education in History</td>
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* A European history option is available.

** Hist. 781 may be substituted for Hist. 803 with consent of the Director of the public history program.

The remaining nine hours must be taken in history courses numbered 500 or above.

Students are encouraged to take at least three hours in an outside discipline such as anthropology, geography, business, performing arts, or creative writing.

Students must satisfy the foreign language requirement and pass an oral exam in defense of the thesis. A written examination must precede the oral examination.

Comprehensive Fields. Fields of study included in the comprehensive examinations for the MA are:

- Ancient Greece and Rome
- Early and late Middle Ages
- Early Modern Europe to 1815
- Modern Europe since 1789
- American Colonial
- and Revolutionary Period
- United States to 1865
- United States since 1865

Courses for Graduate/Undergraduate Credit

>501, The American Colonies. (3). General education further studies course. Colonization of the New World emphasizing the British colonists and their development.
>528. History of Wichita. (3). General education further studies course. A history of Wichita, Kansas, from 1855 to the present with emphasis on the lessons of local history for future planning and its importance to an individual citizen's sense of place.

>529. Indians of Kansas. (3). General education further studies course. History of Indian occupation of the Kansas region from initial white contact to the present. Emphasizes Indian-white relations in the 19th century, forced removal of the emigrant tribes, and tribal relations and consequences legal and cultural problems.

>530. The American Woman in History. (3). General education further studies course. Examination of the status and changing role of women in American society.

>531. American Environmental History. (3). General education further studies course. Examination of the historical, physical, economic, scientific, technological, and industrial interactions of the peoples of America with their environment. Particular emphasis placed on the period from 1800 to the present.

>533. The American City: from Village to Metropolis. (3). General education further studies course. 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 suburban, political and ecological adjustments and the influence of new technology and forms of business organization.

>534. History of the Old South. (3). General education further studies course. An examination of Southern civilization prior to the American Civil War.

>535Q. History of Kansas. (3). General education further studies course. History of the Kansas region from Spanish exploration to the present, emphasizing the period after 1854.

>537. The Trans-Mississippi West. (3). General education further studies course. Spanish, French and Anglo-American penetration and settlement west of the Mississippi River from the 16th century to about 1900.

>538. The American West in the Twentieth Century. (3). General education further studies course. Explores the growth of the trans-Mississippi West in the 20th century, with particular attention to political development, economic growth, cultural manifestations, the role of minority groups and the impact of science and technology.

>539. Indian-White Relations. (3).

>541. Modern France. (3). General education further studies course. History of the major trends in French history from Napoleon to DeGaulle emphasizing French attempts to adjust politically, socially, economically and culturally to the changing conditions of modern industrial society.

>545Q. Neither War Nor Peace: The World Since 1945. (3). General education further studies course.

>553. History of Mexico. (3). General education further studies course. 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.

>558. The Ancient Near East. (3). General education further studies course. Political and cultural history of ancient Mesopotamia, Iran, Egypt, Palestine, Syria and Asia Minor to the death of Alexander the Great.

>560. Greek History. (3 & 3). General education further studies courses. 560Q: The Hellenic world from prehistoric times to the end of the Peloponnesian War 560: the 4th century and the Hellenistic period.

>562 & >553. Roman History. (3 & 3). General education further studies courses. 562: The Roman Republic. 563: The Roman Empire.

>566 & >567. Medieval History. (3 & 3). General education further studies courses. 566: The history of Europe from the fall of the Roman Empire through the Crusades, 560 to 1200. 567: History of Europe, 1200 to 1500.

>568. Social, Economic and Intellectual History of the Middle Ages. (3). Examines the fundamental themes in the development of the social, economic, and intellectual history of the Middle Ages, emphasizing the rise of cities, universities, scholarship, thought, diverse patterns of daily life, and economic activities of the Middle Ages.


>574. History of Christianity. (3).

>575Q. The Italian Renaissance. (3). General education further studies course. Italian history from the 14th through the 16th centuries emphasizing cultural achievements.

>576. The Reformation. (3). General education further studies course. Cross-listed as REL 767. The great religious changes in the 16th century in the political, social and intellectual contexts.

>581. Europe, 1815-1870. (3). General education further studies course.

>582. Europe, 1870-1945. (3). General education further studies course. Surveys European history from 1870 to 1945.

>583. Europe, 1945-Present. (3). General education further studies course. A survey of European history from 1945-present.

>588. History of Early Russia. (3). Covers the social, political, and cultural history of Kievian and Muscovite Russia.

>591. History of Imperial Russia. (3). A survey of the political, social, and cultural history of Imperial Russia.

>592. History of the Soviet Union. (3). General education further studies course. A survey of Soviet history from the Bolshevik Revolution to the present.

>593. Former Soviet Union. (3). General education further studies course. An examination
of contemporary life in the former USSR: historical background, Marxist/Lenist ideology, industrial and agricultural economies, roles played by women, national minorities and dissidents in Soviet society: the press, literature and art, health care, and prospects for the country’s future.

595. History of Eastern Europe. (3).

613. European Diplomatic History. (3). General education further studies course. European international politics and diplomatic practices, emphasizing the actions of the great powers and their statesmen. Versailles settlement, totalitarian aggression, appeasement, World War II, the cold war and decolonization of Southeast Asia and the Middle East as prelude to major power involvement.

614. Economic History of Europe. (3). Cross-listed as Econ. 625. An analysis of the development of economic institutions; the rise of capitalism and its influence on overseas expansion, technology, precious metals, politics and war; changes in economic ideologies; and cultural effects of economic change. Prerequisites: Econ. 2012 and junior standing.

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 divided Germany of the present and the role of each in world affairs, 1914 to the present.


620. Media Courses in History. (2-3). Courses created or coordinated by the Department of History, offered through various media radio, television and newspaper. Areas of historical emphasis vary. Repeatable with instructor’s approval; however, three hours maximum credit will apply towards MA degree in history.

698. Historiography. (3). Review of the major schools of historical thought, philosophies of history and eminent historians from the ancient world to the present. Required of history majors.

701. Introduction to Public History. (3). Introduces the various areas of public history including historic preservation, archival administration, museum studies, litigation support and corporate history. Students learn the philosophies, techniques and practices that comprise the field and ways these areas interact with their academic training. Prerequisite: graduate standing or instructor’s consent.

702. Historic Preservation. (3). Advanced survey of the multi-disciplinary field of historic preservation. Presents a broad and sophisticated view of the many arms of preservation in the U.S., as well as the numerous opportunities available to trained professionals in the field. Prerequisite: Hist. 701 or instructor’s consent.

703. Museum Administration. (3). Addresses the many facets of museum administration from a specialist’s point of view. Covers collecting, management, law and ethics, and resource development. Gives a close view of the operations of American museums. Prerequisite: Hist. 701 or instructor’s consent.

704. Interpreting History to the Public: Explaining the Past. (3). Looks at ways history can be communicated to audiences, including scholarly texts, popular written histories, movies, videos, guidebooks, museums and other similar media. Explores the differences between various forms of historical communication and assesses the way they reach audiences. Students learn to discern various components of historical texts to use in the design of interpretation materials on their own. Prerequisite: Hist. 701 or instructor’s consent.

705. Introduction to Archives. (3). Introduce the basic knowledge, theory and related skills of archival administration, including the nature of information, records and historical documentation; the role of archives in modern society; and issues and relationships that affect archival functions. Learn the theory and skills necessary to understand and apply archival functions. Prerequisite: Graduate standing and/or instructor’s consent.

725. Advanced Historical Method. (3). Reviews basic historical research methods, the general character of fluid bibliographies and recent interpretations and the techniques of professional narrative development. Required of graduate degree students during their first year of enrollment. Prerequisite: departmental consent.

727. Readings in History. (3). Readings in ancient, medieval, modern, European and American field bibliographies. Repeatable for credit. Prerequisite: departmental consent.

729. Seminar in American History. (3). Repeatable for credit. Prerequisite: departmental consent.

730. Seminar in American History. (3). Repeatable for credit. Prerequisite: departmental consent.

739. Seminar in European History. (3). Repeatable for credit. Prerequisite: departmental consent.

734. Seminar in European History. (3). Repeatable for credit. Prerequisite: departmental consent.

750. Workshop in History. (1-3). Repeatable for credit but does not satisfy requirements for history majors.

781. Cooperative Education in History. (0-2). Graduate history students participate in internship experiences funded through the Cooperative Education programs. Prerequisite: Hist. 803. Prerequisite: instructor’s consent.

Courses for Graduate Students Only


802. Thesis. (2).

803. Internship in Public History. (1-2). Public History students practice their skills in summer or semester internships. Type and level of responsibility vary depending on student’s interests and work setting. Internship should be in area related to student’s MA thesis. Prerequisites: Hist. 701 and consent of public history faculty.

810. Special Topics in History. (1-3). Open only to graduate students. Repeatable for credit to a maximum of six hours.

856. State and Local Government Finance. (3). Cross-listed as Econ. 865 and P. Adm. 865. An analysis of state and local government expenditure and revenue systems. With an introduction to state and local financial administration. Prerequisites: Econ. 765 or instructor’s consent.

Hugo Wall School of Urban and Public Affairs

See Urban and Public Affairs, Hugo Wall School of.

Liberal Studies

Graduate Coordinator: Stuart Lasine

Supervisory Committee: Collette Burke (geology), John Gries (geology), Judith Johnson (history), James Snyder (psychology), Michael Vincent (modern languages).

The Master of Arts in Liberal Studies (MALS) program is designed for people 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 a program of study to answer their particular needs and interests in a focused, coherent manner.

Admission Requirements

Applicants must have a bachelor’s degree from an accredited institution. Barring special circumstances, applicants must also have a grade point average of 3.00 or better for the last 60 hours of course work. No more than six hours of graduate credit from another institution will be considered for transfer into the liberal studies program.

When submitting an application to the Wichita State Graduate School, students must contact the MALS office for an initial interview with the graduate coordinator. In addition, students must complete a brief essay describing their motivation for selecting the liberal studies program, outlining their proposed areas of study and showing how the program will contribute to their educational and career goals. Deadlines for application are April 1 for the fall semester and October 1 for the following spring semester.

The Liberal Studies Supervisory Committee may request that the applicant submit Graduate Record Examination scores (verbal and quantitative).
Three graduate faculty representing at least two of the departments in which the student’s work will be concentrated should be secured as program advisors. One of these advisors, who must be a graduate faculty member of Fairmount College of Liberal Arts and Sciences, will serve as the student’s primary advisor and chair the student’s committee.

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 inform the graduate coordinator.
2. With the assistance of this committee, prepare a Plan of Study to be approved by the graduate coordinator and the Graduate School.
3. Complete LAS 800, Research Goals and Strategies, for 3 credit hours.

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.
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 22 of the 36 total hours in courses numbered 700 or above.
5. Three of the 36 hours must be taken in LAS 800, Research Goals and Strategies.
6. A master’s thesis for 6 hours’ credit or a terminal project the 3-6 hours’ credit. The terminal project may involve field work, a practicum or an internship research report. The specific nature of the thesis or project must be described in the Plan of Study.

Courses for Graduate Students Only

800. Research Goals and Strategies. (3). Introduces the methodology and practice of interdisciplinary research. Emphasizes the integration of methods native to the humanities, social sciences, and natural sciences. Develops the skills required for the writing of research papers and theses. Required of all students in the Master of Arts in Liberal Studies program. To be taken during the first 12 hours of course work.

875. Thesis. (1-6). For students who are finishing the Master of Arts in Liberal Studies (MALS). The student writing a thesis is 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.

885. Terminal Project. (2-6). 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, practice, 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 a project must be enrolled in this course until the project is completed and all project requirements have been satisfied.

Linguistics

Graduate Faculty

Professor: Lawrence M. Davis
Associate 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

667. Linguistics. English Syntax. (3). Cross-listed as Engl. 147 and Anth. 667. Studies the basic principles of English syntax, covering the major topics of English sentence structure and relating them to linguistic theory. Prerequisite: Ling. 315 or equivalent or departmental consent.

672. Linguistics. Studies in Language Variety. (3). Cross-listed as Engl. 672. Introduces the study of language variety, emphasizing regional and social dialect in America and methods of studying it. May be repeated for credit when content varies. Prerequisite: Ling. 315 or departmental consent.


682. Linguistics. Structure of a Selected Non-Indo-European Language. (3). Language offered depends on student demand and availability of staff. Course may be conducted as a field methods course and is repeatable for credit when different languages are offered. Prerequisite: Ling. 315.

Group B—Linguistic Study of Specific Languages or Language Groups

Courses for Graduate/Undergraduate Credit


505. Russian. Russian Phonology. (2). Cross-listed as Russ. 50.


610. English. Old English. (3). Cross-listed as Engl. 610. Studies the Old English language in enough detail to enable the reading of some prose and poetry, including parts of Beowulf in the original. Some literature, including all of Beowulf, is read in translation, with attention to important literary and cultural features of the period.

635. French and Spanish. Introduction to Romance Linguistics. (3). Cross-listed as Frn. 635 and Span. 635.

Group C—Areas of Contact Between Linguistics and Other Disciplines

Courses for Graduate/Undergraduate Credit


727. Teaching English as a Second Language. (2-3). Cross-listed as Engl. 727. Discusses current methods of teaching English to non-native speakers. Students learn to analyze interlanguage patterns and to design appropriate teaching units for class and language laboratory use.

748. Graduate Studies in Linguistics. (3). Cross-listed as Engl. 748. Selected topics in theories of language and methods of linguistic study. With departmental consent the course is repeatable for credit.

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.


Mathematics and Statistics

Graduate Faculty

Professors: Andrew Acker, Dharam V. Chopra, Alan R. Elcrat, Buma L. Friedman (chairperson), John J. Hutchinson, Victor Isakov, Peter Kuchment, Kenneth G. Miller (graduate coordinator), Harish Mukerjee, Ziqi Sun


Assistant Professors: Xiaomin Hu
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 degree in mathematics, have a grade point average of at least 3.000 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 33 hours must include the completion of three two-semester sequences in mathematics and/or statistics numbered 700 or above.

Students who plan to enter the PhD program in applied mathematics should include Real Analysis I and II and Numerical Linear Algebra in their MS program of study.

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. 885 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.

**Doctor of Philosophy**

The primary emphases 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 3.000 overall grade point average and a 3.250 grade point average in mathematics and statistics.

**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 84 hours of graduate credit is required.

- Partial Differential Equations for Engineers (757) and Complex and Vector Analysis for Engineers (758) 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 Linear Algebra are required of all students. In addition a student must complete one of the following two sets of requirements:
  
  

**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 passing an examination that consists of the translation, with the use of a dictionary, of one or more passages of mathematics text from the foreign language into English.

**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 six-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 Real Analysis I and II and Numerical Linear Algebra.

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 both the preliminary and final exams.

**Preliminary Exam:** The preliminary exam covers specific topics relevant to the student's research area as determined by his or her PhD committee. The student will meet at the discretion of the student's committee. A maximum of 36 hours may be transferred from another university at the discretion of the student's committee.

**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 in mathematics.

501. Elementary Mathematics. (3). 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 with a grade of C or better or departmental consent.

511. Linear Algebra. (3). An elementary study of linear algebra, including an examination of linear transformations and matrices over finite dimensional spaces. Prerequisite: Math. 243 with grade of C or better.

513. Fundamental Concepts of Algebra. (3). Defines group, ring and field and studies their properties. Prerequisites: Math. 415 and 511 with grade of C or better.

520. 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 grade of C or better.

531. Introduction to the History of Mathematics. (3). General education issues and perspectives course. Studies the development of mathematics from antiquity to modern times. Solves problems using the methods of the historical period in which they arose. Requires mathematical skills. Prerequisites: Math. 511 and two additional courses at the 500 level or above, with C or better in each.

545. Integration Techniques and Applications. (3). A study of the basic integration techniques used in applied mathematics. Includes the standard vector calculus treatment of line and surface integrals, Green's Theorem, Stokes' Theorem and the Divergence Theorem. Also includes the study of improper integrals with application to special functions. Prerequisite: Math. 344 with grade of C or better.

547. Advanced Calculus I. (3). Covers the calculus of Euclidean space including the standard results concerning functions, sequences and limits. Prerequisites: Math. 344 and 415 with grade of C or better in each.

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 computer use. Prerequisites: Math 344 with a grade of C or better and a knowledge of FORTRAN, or departmental consent.

553. Mathematical Models. (3). Covers case studies from the fields of engineering technology and the natural and social sciences. Emphasizes the mathematics involved. Each student completes a term project which is the solution of a particular problem approved by the instructor. Prerequisite: Math. 344 with C or better or departmental consent.

555. Ordinary Differential Equations with Linear Algebra. (4). Includes separation of variables, integrating factors, variation of parameters, undetermined coefficients, Laplace transforms, power series substitution, linear algebra, eigenvalue problems, and linear systems. Credit not allowed in both Math. 550 and 555. Prerequisite: Math. 243 with grade of C or better or departmental consent.

580. Selected Topics in Mathematics. (3). Topic chosen from topics not otherwise represented in the curriculum. May be repeated to a maximum of six hours credit with departmental consent. Prerequisite: departmental consent.

615. Elementary Number Theory. (3). Studies properties of the integers by elementary means. Prerequisite: Math. 344 with C or better or departmental consent.

621. Elementary Geometry. (3). Studies Euclidean geometry from an advanced point of view. Prerequisite: Math. 344 with C or better or departmental consent.

640. Advanced Calculus II. (3). A continuation of Math. 547. Prerequisites: Math. 511 and 547 with grade of C or better in each.

657. Optimization Theory. (3). Introduces selected topics in linear and nonlinear optimization. Develops the revised simplex method along with a careful treatment of duality. Then extends the theory to solve parametric, integer and mixed integer linear programs. Prerequisite: Math. 511 with C or better.

699. Introduction to Mathematical Logic. (3). An axiomatic development of elementary mathematical logic through first-order logic culminating in theorems on completeness and consistency. Investigates connections with Boolean algebra, formal languages and computer logic. Prerequisite: Math. 415 or 511 with C or better or departmental consent.

713. Abstract Algebra I. (3). Treats the standard basic topics of abstract algebra. Prerequisite: Math. 513 with C or better or departmental consent.

714. Applied Mathematics. (3). Cross-listed as Phys. 714. A study of mathematical techniques applicable to physics and other sciences. Instructor selects topics such as power series, infinite products, asymptotic expansions, WKBJ method, contour integration and residue methods, integral transforms, Hilbert spaces, special functions, and integral equations. Prerequisite: Math. 550 or instructor's consent.

720. Modern Geometry. (3). Examines the fundamental concepts of geometry. Prerequisite: Math. 513 with C or better or departmental consent.

725. Topology I. (3). Studies the results of point set and algebraic topology. Prerequisite: Math. 547 with C or better or departmental consent.

743. Real Analysis I. (3). Studies the foundations of analysis and the fundamental results of the subject. Prerequisite: Math. 640 with C or better or departmental consent.

745. Complex Analysis I. (3). Studies the theory of analytic functions. Prerequisite: Math. 640 with C or better or departmental consent.

816. 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.

851. Numerical Linear Algebra. (3). Includes analysis of direct and iterative methods for the solution of linear systems, linear least squares problems, eigenvalue problems, error analysis and reduction by orthogonal transformations. Prerequisite: Math. 511. 547 and 551 with C or better in each or departmental consent.

853. Ordinary Differential Equations. (3). Covers existence, uniqueness, stability and other qualitative theories of ordinary differential equations. Prerequisite: Math. 545 or 547 with C or better or departmental consent.

855. Partial Differential Equations I. (3). Studies the existence and uniqueness theory for boundary value problems of partial differential equations of all types. Prerequisite: Math. 547 with C or better or departmental consent.

875. Partial Differential Equations for Engineers. (3). Includes Fourier series, the Fourier integral, boundary value problems for the partial differential equations of mathematical physics. Bessel and Legendre functions and linear systems of ordinary differential equations. Prerequisite: Math. 550 or 555 with C or better.

878. Complex and Vector Analysis for Engineers. (3). A survey of some of the mathematical techniques needed in engineering including an introduction to vector analysis, line and surface integrals and complex analysis, contour integrals and the method of residues. No credit for this course toward a graduate degree in mathematics. Prerequisite: Math. 550 or 555 with grade of C or better.

Courses for Graduate Students Only

813. Abstract Algebra II. (3). A continuation of Math. 713. Prerequisite: Math. 713 or equivalent.

818. Selected Topics in Number Theory. (2-3) Repeatable with departmental consent. Prerequisite: departmental consent.

825. Topology II. (3). A continuation of Math 725. Prerequisite: Math. 725 or equivalent.

826. Selected Topics in Topology. (2-3) Repeatable with departmental consent. Prerequisite: departmental consent.

829. Selected Topics in Geometry. (2-3) Repeatable with departmental consent. Prerequisite: departmental consent.

839. Selected Topics in Foundations of Mathematics. (2-3). Repeatable with departmental consent. Prerequisite: departmental consent.
843. Real Analysis II. (3). A continuation of Math. 743. Prerequisite: Math. 743 or equivalent.

845. Complex Analysis II. (3). A continuation of Math. 745. Prerequisite: Math. 745 or equivalent.

848. Calculus of Variations. (3). Includes Euler-Lagrange equations, variational methods and applications to extremal problems in continuum mechanics. Prerequisite: Math. 547 or 757.

849. Selected Topics in Analysis. (2-3). Repeatable with departmental consent. Prerequisite: departmental consent.


854. Tensor Analysis with Applications. (3). After introducing tensor analysis, considers applications to continuum mechanics, structural analysis and numerical grid generation. Prerequisite: Math. 545 or 757.


857-858. Selected Topics in Engineering Mathematics I and II. (3-3). Advanced topics in mathematics of interest to engineering students, including tensor analysis, calculus of variations and partial differential equations. Not applicable toward the MS in mathematics.

859. Selected Topics in Applied Mathematics. (2-3). Repeatable with departmental consent.

860. Proseminar. (1). Oral presentation of research in areas of interest to the students. Prerequisite: major standing.

861. Individual Reading. (1-3). Prerequisite: departmental consent. Repeatable up to a maximum of six hours with departmental consent.

885. Thesis. (1-4). May be repeated to a maximum of six hours credit. Prerequisite: departmental consent.


957. Advanced Topics in Numerical Analysis. (3). Advanced topics of current research interest in numerical analysis. Topics chosen at instructor's discretion. Possible areas of concentration are numerical methods in ordinary differential equations, partial differential equations and linear algebra. Prerequisites: Math. 751, 851 and instructor's consent.

958 & 959. Selected Advanced Topics in Applied Mathematics. (3 & 3). Topics of current research interest in applied mathematics. Repeatable with departmental consent. Prerequisite: instructor's consent.

981. Advanced Independent Study in Applied Mathematics. (1-3). Arranged individually with instructor's discretion. Possibility of areas of concentration include: applied mathematics, statistics, numerical analysis and pattern recognition. Prerequisite: departmental consent.

985. PhD Dissertation. (1-9). Repeatable to a maximum of 24 hours. Prerequisite: must have passed the PhD qualifying exam and instructor's consent.

Statistics

Courses for Graduate/Undergraduate Credit
Credit in courses numbered below 600 is not applicable toward the MS in mathematics.

570. Special Topics in Statistics. (3). Covers topics of interest not otherwise available. Prerequisite: departmental consent.

571-572. Statistical Methods I and II. (3-3). General education further studies courses. Includes probability models, point and interval estimates, statistical tests of hypotheses, correlation and regression analysis, introduction to nonparametric statistical techniques, least squares analysis of variance and topics in design of experiments. Prerequisite: Math. 243 with C or better or departmental consent.

574. Elementary Survey Sampling. (3). Reviews basic statistical concepts. Covers simple, random, stratified, cluster and systematic sampling, along with selection of sample size, ratio, estimation and costs. Applications studied include problems from the social and natural sciences, business and other disciplines. Prerequisite: any elementary course in statistics, such as Stat. 370, Soc. 501 or Psy. 431 with a C or better.

576. Applied Nonparametric Statistical Methods. (3). Studies assumptions and needs for nonparametric tests, rank tests and other nonparametric inferential techniques. Applications involve problems from the social and natural sciences, business and other disciplines. Prerequisite: any elementary statistics course such as Stat. 370, Soc. 501 or Psy. 431 with a C or better.

761. Probability. (3). A study of axioms of probability, discrete and continuous random variables, expectation, examples of distribution functions, moment generating functions and sequences of random variables. Prerequisite: Math. 344 with a grade of C or better.

762. Applied Stochastic Processes. (3). Studies random variables, expectation, limit theorems, Markov chains and stochastic processes. Prerequisite: Stat. 791 or 771 with C or better or departmental consent.

763. Applied Regression Analysis. (3). Studies linear, polynomial and multiple regression. Includes applications to business and economics, behavioral and biological sciences and engineering. Uses computer packages for doing problems. Prerequisites: Stat. 571 and Math. 344 and 511 with C or better in each or departmental consent.

764. Analysis of Variance. (3). An introduction to experimental design and analysis of data under linear statistical models. Studies single-factor designs, factorial experiments with more than one factor, analysis of covariance, randomized block designs, nested designs and Latin square designs. Uses computer packages for doing problems. Prerequisites: Stat. 571 and Math. 344 and 511 with C or better in each or departmental consent.


777. Applied Functional Analysis I and II. (3). An examination of stochastic dependence distributions of functions of random variables limiting distributions, order statistics, theory of statistical inference, nonparametric tests and analysis of variance and covariance. Prerequisite: Math. 545 or 547 with grade of C or better or departmental consent.

778. Statistical Computing I. (3). Trains students to use modern statistical software for statistical modeling and writing of technical reports. Examines many of the advanced features of most commercial statistical packages. Students perform complete statistical analyses of real data sets. Prerequisites: Stat. 763 and 764 or departmental consent.

775. Applied Statistical Methods I. (3). Covers selected topics from time series analysis including autocorrelation, stationarity, special analysis, linear filtering, ARIMA models, Box-Jenkins forecasting and model identification classification and pattern recognition. Prerequisite: Stat. 763 with a grade of C or better, or departmental consent.

776. Applied Statistical Methods II. (3). Covers selected topics from multivariate analysis including statistical theory associated with the multivariate normal, Wishart and other related distributions, partial and multiple correlation, principal component analysis, factor analysis, classification and discriminant analysis, cluster analysis, James-Stein estimates, multivariate probability inequalities, majorization and Schur functions. Prerequisite: Stat. 764 with a grade of C or better, or departmental consent.

Courses for Graduate Students Only

861. Theory of Probability. (3). The axiomatic foundations of probability theory emphasize the coverage of probability measures, distribution functions, characteristic functions, random variables, modes of convergence, the law of large numbers and central limit theorem, and conditioning and the Markov property. Prerequisites: Math. 743 and Stat. 761 or 771.


875. Design of Experiments. (3). A study of basic concepts of experimental design which includes completely randomized design, randomized block design, theory of estimation and tests, main square design, factorial experiments, confounding, split plot designs, incomplete block designs and intra- and inter-block information. Prerequisite: Stat. 772.


878. Special Topics. (2-3). Repeatable with departmental consent. Prerequisite: departmental consent.

879. Individual Reading. (1-5). Prerequisite: departmental consent.

884. Statistical Computing II. (3). Teaches special graphics and numerical methods needed in the analysis of statistical data. Includes advanced simulation techniques, numerical methods for linear and nonlinear problems, analysis of missing data, smoothing and density estimation, projection-pursuit methods and graphic techniques. Prerequisites: Math. 751 and Stat. 772 with C or better or departmental consent.

971 & 972. Selected Advanced Topics in Probability and Statistics. (0-0). Topic of current research interest in probability and statistics. Repeatable for credit with departmental consent. Prerequisite instructor's consent.

978. Advanced Independent Study in Probability and Statistics. (1-3). Arranged individually directed study in an area of probability or statistics. Repeatable to a maximum of 6 hours. Prerequisites: must have passed the PhD qualifying exam and instructor's consent.

986. PhD Dissertation. (1-9). Repeatable to a maximum of 24 hours. Prerequisite: must have passed the PhD preliminary exam.

Minority Studies
See Urban and Public Affairs, Hugo Wall School of.

Modern and Classical Languages and Literatures
Graduate Faculty
Professors: Ginette Adamson, Pedro Bravo-Elizondo, Dieter Saalmann (chairperson), Michael Vincent (Dean, Graduate School)
Associate Professors: Wilson Baldridge, Judy Berry-Brago John Koppenuker, Funice Myers (graduate coordinator), Brigitte Roussel, Gary Toops
Assistant Professors: Carl Adamson, Patrick E. Kehoe, Maria Rey-Lopez

French
Although a complete graduate program is not available currently 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. Fren. 309 is a prerequisite for all upper-division literature and civilization courses, unless otherwise indicated. All literature courses, including Fren. 223 and 306, 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 and improvisation, (g) problems in teaching French, (h) civilization, (i) translation, (k) conversation and (m) phonetics. Repeatable for credit. Prerequisite: departmental consent.

525. Advanced Conversation. (3). Designed to increase proficiency in spoken French. Assignments include oral reports, dialogues, and work in the language laboratory. Prerequisite: Fren. 227 and either 220 or 223, or departmental consent.

326. Advanced Composition and Grammar. (3). Emphasizes theme writing, original compositions and detailed study of modern French grammar. Prerequisite: Fren. 220 or departmental consent.

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.

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. 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.

551. French Civilization: The Middle Ages to the Restoration. (3). Emphasizes the major events, themes, ideas, trends and movements in French civilization since the Revolution. Course is interdisciplinary in nature and is designed to complement studies in French literature and literature courses. Class work and readings are in French. Prerequisite/co-requisite: Fren. 300.

623. Seminar in French. (3). Seminar in French literature, language or civilization. Prerequisite: Fren. 300. Repeatable for credit.


631. 17th Century French Literature. (3). Prerequisite: Fren. 300.

632. 18th Century French Literature. (3). Prerequisite: Fren. 300.


634. Contemporary French Literature. (3). Prerequisite: Fren. 300.

655. Introduction to Romance Language Linguistics. (3). Cross-listed as Span. 653 and Ling. 635. An introduction to the historical phonology and morphology of the romance languages emphasizing French and Spanish. Prerequisite: departmental consent.

663. 20th Century French Literature. Reading and discussion of major works of French fiction, poetry and drama from 1900 to 1960. Prerequisite: Fren. 300.

726. Composition and Stylistics. (3). Offers background in rhetoric and stylistics as an approach to literary models with a view to developing the creative use of style together with grammatical accuracy in writing. Practice in revision forms the basis of this course. Prerequisite: Fren. 526 or departmental consent.
750. Workshop in Latin. (2-4). Repeatable for credit.

Course for Graduate Students Only

815. Special Studies in Latin. (3). Prerequisite: departmental consent. Repeatable for credit.

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 Department of Modern and Classical Languages and Literatures, and the dean of the Graduate School.

Courses for Graduate/Undergraduate Credit

524. Advanced Conversation and Composition. (4). Prerequisite: German 523 or instructor's consent.

650. 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) a survey of German literature from the Middle Ages to the present. Emphasizes the social, political, historical, and intellectual evolution of the German-speaking countries. Special attention paid to the founding of the German Reich in 1871. World War I, the Weimar Republic, National Socialism and the Holocaust, the creation of the Federal Republic and the German Democratic Republic in 1949, and the unification process initiated in 1989. Prerequisite: German 410Q or departmental consent.

750. Workshop in German. (2-4). Repeatable for credit.

751. German Civilization since the Middle Ages. (3). Survey of German civilization from the Middle Ages to the present. Emphasizes the social, political, historical, and intellectual evolution of the German-speaking countries. Special attention paid to the founding of the German Reich in 1871. World War I, the Weimar Republic, National Socialism and the Holocaust, the creation of the Federal Republic and the German Democratic Republic in 1949, and the unification process initiated in 1989. Prerequisite: German 410Q or departmental consent.

526. Advanced Stylistics. (3). Offers advanced background in rhetoric and stylistics as an approach to literary studies, with a view to developing the creative use of style together with grammatical accuracy in writing. Practice in revision forms the basis of this course. Prerequisite: German 524 or departmental consent.

541. Roman Lyric Poetry. (3). The lyric poems of Catullus and Horace emphasizing imagery, symbolism, structure, diction and meter.


543. Roman Drama. (3). A study of Roman comedy and tragedy, their Greek background and their influence on European literature. Includes selected plays by Plautus, Terence and Seneca, some in the original and some in translation.

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. Gives consideration to the development of the novel from its Greek beginnings up to the time of Apuleius and beyond.

546. Advanced Latin. (3). Directed reading of Latin. Reading may be combined with Latin prose composition at the option of the student. Repeatable for credit when content varies.


652. Cicero. (3). The orations, letters and essays of Cicero. Concentrates on Cicero as the master of Latin prose and as one of the most important political figures of the time of the Roman Republic.

653. Lucretius and Epicureanism. (3). Reading of Lucretius' *De Rerum Natura* and study of Epicureanism, the atomic theory and Democritean materialism. Gives consideration to the place of Lucretius in Latin poetry.

750. Workshop in Latin. (2-4). Repeatable for credit.

Russian

Although a complete graduate program is not available currently in Russian, the following courses may apply toward a master's degree.

Courses for Graduate/Undergraduate Credit

505. Russian Phonology. (2). Cross-listed as Linguistics 555. Corrective pronunciation and auditory perception for non-native speakers of Russian. Includes articulatory phonetics, phonetics, and morphophonemics, as well as the study and production of intonation contours. Prerequisite: any 200-level course or instructor's consent.

515. Special Studies. (1-4). Advanced reading and translation in Russian social sciences, literature, and civilization. Repeatable for credit. Prerequisite: departmental consent.

540Q. Russian Literature in English. (3). Consideration of the works of one or two major authors, a literary movement, trend, or specific genre. No knowledge of Russian is necessary, although some is desirable. Repeatable once for credit. Prerequisite: departmental consent.

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, 8 hours of which were on the junior-senior level, and a 3.000 GPA in Spanish.

Degree Requirements

The MA degree in Spanish requires the completion of 32 semester hours beyond the BA degree, including at least two seminars—Spanish 623, 831, or 832—that require research papers. Of these hours, 20 must be in courses numbered 700 or above.
Each program must include nine hours of related fields and 23 hours of Spanish, including Span. 526 and three of the following survey courses—531, 532, 620, 621—if their equivalents were not taken as undergraduate courses.

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 or 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

Upper-division courses are given on a rotating basis. Span. 300 is a prerequisite for all upper-division literature and civilization courses, unless otherwise indicated. All literature courses, including Span. 223 and 398, may fulfill the general education literature requirement.

505. Spanish Phonetics. (2). Cross-listed as Ling. 305. Prerequisite: any 200-level course or departmental consent.

515. Major Topics. (1-4). Special studies in (a) language, (b) literary topics, (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.

525. Spanish Conversation III. (2). Offered fall semester only. Prerequisite: Span. 325 or departmental consent.

526. Advanced Grammar and Composition. (3). Offered spring semester only. Prerequisite: Span. 220 or departmental consent.

531. Survey of Spanish Literature. (3). Main currents of Spanish literature from 1700 to the present. Prerequisite: Span. 300 or departmental consent.

532. Survey of Spanish Literature. (3). Spanish literature from the beginning to 1700. Prerequisite: Span. 300 or departmental consent.

534. Contemporary Spanish Theater. (3). Prerequisite: Span. 300 or departmental consent.

536. Contemporary Spanish Novel. (3). Prerequisite: Span. 300 or departmental consent.

540Q. Contemporary Spanish Literature in English Translation. (3). Consent may vary from semester to semester, including Spanish and/or Latin American literature. No knowledge of a foreign language is necessary. May be used to satisfy the general education literature requirement and may count toward a Spanish major or minor if readings and papers are done in Spanish. Prerequisite: Span. 300 is met. Repeatable for credit.

552. Business Spanish. (3). Provides the opportunity to learn and practice commercial correspondence, business vocabulary, translation and interpretation of business texts. Prerequisite: Span. 526.

557. Literary and Technical Translating. (3). Extensive translation of literary works and technical and legal documents from Spanish to English and English to Spanish. Prerequisite: Span. 329 or departmental consent.

560. Survey of Latin-American Literature. (3). Main currents of Latin-American literature from 1500 to 1800. Prerequisite: Span. 300 or departmental consent.

561. Survey of Latin-American Literature. (3). Main currents of Latin-American literature from 1800 to present. Prerequisite: Span. 300 or departmental consent.

562. Special Studies. (1-4). Topic for study chosen with aid of instructor. Repeatable for credit. Prerequisite: instructor’s consent.

563. Seminar in Spanish. (1-5). Special studies in (a) language, (b) Spanish and Latin American literature, (c) Spanish and Latin American culture and civilization, and (d) methods of teaching Spanish in the elementary and secondary schools. Repeatable for credit. Prerequisite: departmental consent.

565. Introduction to Romance Linguistics. (3). Cross-listed as Fren. 635 and Ling. 635. An introduction primarily to the historical phonology and morphology of the romance languages emphasizing French and Spanish. Prerequisite: departmental consent.

640. Mexico: Its People and Culture. (3). Study of the cultural development of Mexico, exploring the legacy of ancient cultures and the Spanish encounter in areas such as literature, the arts, music and film industry. Prerequisite: Span. 300 or departmental consent.

650. South America: Its People and Cultures. (3). Study of the cultural development of South America exploring the legacy of Indian cultures and the Spanish encounter in areas such as literature, the arts, music and film industry. Prerequisite: Span. 300 or departmental consent.

750. Workshop in Spanish. (2-4). Repeatable for credit.

Courses for Graduate Students Only


826. Grammar and Stylistics. (3). Intensive study of advanced grammar and stylistic usage.

827. Latin American Civilization and Culture. (3). Introduction to historical and cultural development in Latin America, exploring the legacy of the Spanish encounter. Emphasis is on Spanish colonization. Prerequisite: graduate standing.

831. Seminar in Spanish Literature. (3). (a) Middle Ages, (b) Renaissance, (c) Golden Age, (d) Cervantes, (e) modern novel, (f) Generation of ’98, (g) romanticism, (h) 20th century poetry, (i) criticism, (j) literature, (k) 20th century theatre, and (l) contemporary Spanish novel.

832. Seminar in Latin-American Literature. (3). (a) colonial period, (b) contemporary novel, (c) short story, (d) poetry, (e) modernism, (f) essay, (g) theater. (h) Latin-American literature.

Philosophy

Graduate Faculty

Professor: Gerald H. Paske
Associate Professors: Robert Feleppa, A.J. Mandt, Ben F. Rogers, David Soles (chairperson), Deborah H. Soles
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

545. Philosophy of the Social Sciences. (3). Studies such topics as the relations of social science with natural science and philosophy, methodological problems peculiar to social science, the nature of social explanation concepts and constructs and the roles of mathematics and formal theories in social science.

550. Metaphysics. (3). An exploration of some basic topics in the theory of reality. Includes such notions as space-time, substance, causality, particulars, universals, appearance, essence, and being. Prerequisite: one course in philosophy.

555. Philosophy of the Social Sciences. (3). Studies such topics as the relations of social science with natural science and philosophy, methodological problems peculiar to social science, the nature of social explanation concepts and constructs and the roles of mathematics and formal theories in social science.

557. Contemporary European Philosophy. (3). An exploration of a theme, issue, philosopher or movement in contemporary European philosophy. Includes such philosophers as Husserl, Heidegger, Jaspers, Gadamer, Habermas, Marcuse, Adorno, Bergson, Sartre, Merleau-Ponty, Bachelard, Lacan, Derrida, Foucault and Ricoeur. Examines philosophical movements such as phenomenology, idealism, existentialism, structuralism, process philosophy, hermeneutics and Marxism.

558. 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.

559. Special Studies. (3). Topic for study announced by instructor. Repeatable for credit. Prerequisite: instructor's consent.

674. Artificial Intelligence and Philosophy. (3). Cross-listed as CS 674. Transfer of ideas between artificial intelligence and philosophy 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," is contrasted with "there are mental features not accessible to computation." Discusses the relevance of the concept of artifical intelligence and of other results in the domain of computability in the context. Prerequisites: at least one 300 level course in computer science or philosophy, Math. 243 and five hours toward the major in one of the physical or biological sciences with grades of C or better or departmental consent.

699. Directed Reading. (2-3). For the student interested in doing independent study and research in a special area of interest. Repeatable for credit. Prerequisite: departmental consent.

Courses for Graduate Students Only

550. Metaphysics. (3). An exploration of some basic topics in the theory of reality. Includes such notions as space-time, substance, causality, particulars, universals, appearance, essence, and being. Prerequisite: one course in philosophy.

555. Philosophy of the Social Sciences. (3). Studies such topics as the relations of social science with natural science and philosophy, methodological problems peculiar to social science, the nature of social explanation concepts and constructs and the roles of mathematics and formal theories in social science.

558. 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.

559. Special Studies. (3). Topic for study announced by instructor. Repeatable for credit. Prerequisite: instructor's consent.

674. Artificial Intelligence and Philosophy. (3). Cross-listed as CS 674. Transfer of ideas between artificial intelligence and philosophy 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," is contrasted with "there are mental features not accessible to computation." Discusses the relevance of artificial intelligence and of other results in the domain of computability in the context. Prerequisites: at least one 300 level course in computer science or philosophy, Math. 243 and five hours toward the major in one of the physical or biological sciences with grades of C or better or departmental consent.

699. Directed Reading. (2-3). For the student interested in doing independent study and research in a special area of interest. Repeatable for credit. Prerequisite: departmental consent.

Physics

Graduate Faculty

Professors: David R. Alexander, James C. Ho, Pawan K. Kahel

Associate Professors: Elizabeth C. Behrman (graduate coordinator), Hussein Hamdeh (chairperson), Syed M. Taher

Master of Science

Through its master of science (MS) degree program, the Department of Physics helps students prepare for doctoral work in physics or for jobs in research and industry.

The MS degree program is flexible so students can design their studies to meet their educational or career goals. Students may combine the study of physics with a chemical physics option or with interests in such fields as astronomy, engineering, geology, computer science, biological sciences, and education.

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 Plan of Study approved by the student's advisor and the department chairperson. Two options are available: a 36-hour nonthesis program and a 30-hour program which includes a research project written as a thesis.

Students in either option must take at least 12 hours in courses numbered 800 or above. The department recommends that each Plan of Study include Phys. 821, Classical Mechanics; Phys. 871, Statistical Mechanics; and Phys. 811, Quantum Mechanics. Up to 9 hours of course work may be taken outside the department under the thesis option, and up to 12 hours under the nonthesis option.

Other Program Options

Students entering the MS degree program with a chemical physics option must include within the above requirements 6 hours from Chem. 711, 725, 741, 745, 746 or other approved chemistry courses. Students also should take Phys. 642 unless taken 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. An oral defense of the thesis is required.

Courses for Graduate/Undergraduate Credit

500. Special Studies in Physics for Educators. (1-3). 3L. A series of courses covering basic physical concepts which provide physical science background for teachers. Repeatable for a maximum of 5 hours. Prerequisite: in-service or pre-service teacher.

516. Advanced Physics Laboratory. (2). 4L. Experiments in classical and modern physics to stress scientific methods and experimental techniques. The experiments are open ended projects requiring individual study. Repeatable up to a maximum of 8 credit hours. Corequisite: Phys. 551.
517. Electronics Laboratory. (2) IR; 3L. Applications of electronics in scientific research. Experiments cover the uses of vacuum tubes, transistors, IC, and digital circuits. Prerequisite: Phys. 314Q.

551. Topics in Modern Physics. (3). An introduction to selected areas of modern physics emphasizing the features of atomic nuclear and solid state physics that require modifications of classical physics for their explanation. Prerequisite: Phys. 214Q or 314Q or departmental consent. Corequisite: Math. 344.

555. Modern Optics. (3), Geometrical and physical optics, coherence theory, and Fourier optics. Additional topics may include radiation, scattering, optical properties of solids, and optical data processing. Prerequisites: Phys. 214Q or 314Q and Math. 344.

600. Individual Readings in Physics. (1-3). Repeatable but total credit may not exceed 6 hours for physics majors. Prerequisite: departmental consent.

601. Individual Readings in Astrophysics. (1-3). Studies several topics in astronomy and astrophysics in depth. Lectures, independent readings, and student projects may be assigned. May be repeated up to 6 hours. Prerequisite: instructor's consent.

616. Computational Physics Laboratory. (3). IR; 2L. Provides a working knowledge of computational techniques with applications in both theoretical and experimental physics, including a brief introduction to the FORTRAN language. Prerequisites: Math. 551 and Math. 555.

621. Elementary Mechanics. (3). Motion of a particle in one and several dimensions, central forces, the harmonic oscillator, and the Lagrangean formulation of mechanics. Prerequisites: Phys. 214Q or 314Q and Math. 344 with grades of C or better.

631. Electricity and Magnetism. (3). Direct and alternating currents; electric and magnetic field theory, including an introduction to Maxwell's electromagnetic wave theory. Prerequisites: Phys. 214Q or 314Q and Math. 344 with grades of C or better.

641. Thermodynamics. (3). The laws of thermodynamics, distribution functions, Boltzmann equation, transport phenomena, fluctuations, and an introduction to statistical mechanics. Prerequisites: Phys. 214Q or 314Q and Math. 344.

651. Quantum Mechanics. (3). Introduction to quantum mechanics, the Schrödinger equation, elementary perturbation theory, and the hydrogen atom. Prerequisite: Phys. 551.

651. Solid State Physics. (3). A one-semester introduction to solid-state physics, which explores and explains—in terms of the microscopic processes that produce them—the thermal, mechanical, and electronic properties of solids. Discusses practical applications and interdisciplinary material. Prerequisite: Phys. 551.

741. Theoretical Physics. (3). A study of mathematical techniques applicable to physics and other sciences. Instructor selects topics, such as power series, infinite products, asymptotic expansions, WKBJ method, contour integration and residue methods, integral transforms, Hilbert spaces, special functions, and integral equations. Prerequisite: Math. 555 or instructor's consent. *Course may not be counted for credit toward a graduate physics major.

**Courses for Graduate Students Only**

800. Individual Readings. (1-3). Repeatable for credit up to 3 hours. Prerequisites: 30 hours of physics and departmental consent.

801. Selected Topics in Physics. (2-3). Repeatable for credit up to 6 hours. Prerequisite: departmental consent.

807. Seminar. (1). Review of current periodicals; reports on student and faculty research. Repeatable for credit up to 2 hours. Prerequisite: 20 hours of physics.

809. Research. (0-3). Repeatable for credit up to 6 hours.

811. Quantum Mechanics. (3). The Schrödinger and Heisenberg formulations of quantum mechanics. Applications include rectangular potentials, central forces, and the harmonic oscillator. Also includes spin, time independent, and time dependent perturbation theory. Prerequisites: Phys. 621 and 651 or departmental consent and Math. 555.


831. Classical Electricity and Magnetism. (3). Maxwell's equations with application to static electricity and magnetism. Also may include electromagnetic fields, vector potentials, Green's functions, relativity, optics, and magnetohydrodynamics. Prerequisites: Math. 553 and Math. 555.

871. Statistical Mechanics. (3). An introduction to the basic concepts and methods of statistical mechanics with applications to simple physical systems. Prerequisites: Math. 555 and Phys. 621.

881. Solid State Physics. (3). A second course in solid state physics for students who have had an introduction to the subject. Transport, dielectric, and optical properties, magnetic properties, superconductivity, and applications to semiconductors. Prerequisites: Math. 555, Phys. 611 and 651, or departmental consent.

**Political Science**

Graduate Faculty
Professor: Melvin A. Kahn
Associate Professors: Kenneth Ciboski, David Ericson (graduate coordinator), James W. Mckenney, J chin E. Stanga Jr., James F. Sheffield, Jr. (chairperson)

**Master of Arts**

**And Areas of Specialization**

The political science department offers the Master of Arts (MA) degree with areas of concentration in American politics/policy and in comparative politics/international relations.

**Admission Requirements**

All applicants are expected to meet Graduate School standards for admission. In addition, the department requires students to have completed at least 15 credit hours of study in political science, including an introductory American politics course (Pol. S. 121Q or equivalent), with a minimum of a B average in those courses. Students must also have completed an elementary statistics class with a grade of C or better. The department requires all candidates to take the Graduate Record Examination (GRE) and to submit their scores on the verbal, analytic, and quantitative portions of the test prior to admission into the program.

**Degree Requirements**

The MA degree in political science requires 30 or 33 credit hours, depending upon the completion option selected. All students must satisfactorily complete Pol. S. 701 and 703 and at least three of the following four courses, depending on the area of concentration: Pol. S. 580, 810, 835, and 856. Up to 9 hours of credit in courses outside of political science may be applied toward the degree with the advisor's approval, and up to 9 hours of graduate credit earned at other universities may be transferred into the program with the approval of the departmental Graduate Studies Committee. All students must satisfactorily complete at least 60 percent of their course work at the 700 level or above and complete a minimum of 12 hours at the 800 level.

**Areas of Concentration**

**American Politics/Policy Concentration.** Students in this concentration pursue advanced study in American politics and public policy. They must complete Pol. S. 581, 701, 703, 856, and either 810 or 835. They must also complete at least 9 credit hours chosen from Pol. S. 540, 551, 552, 560, 700, 760, 821, 841, 851, and 855, or graduate courses in other departments with their advisor's consent.

**Comparative/International Politics Concentration.** Students in this concentration pursue advanced study in comparative politics and international relations. They must complete Pol. S. 701, 703, 810, 835, and either 580 or 856. They must also
complete at least 9 credit hours chosen from Pol. S. 523, 524, 533, 534, and 706; or graduate courses in other departments with their advisor’s consent.

Completion Options
Students may complete their degree programs using any one of the following three 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. S. 875-876). Candidates must pass an oral defense of a thesis prospectus and the thesis.
2. Seminar Paper Option. This option requires the student to write, extend, and orally defend a seminar paper. The student has written in his/her area of concentration under the direction of an advisor with expertise in that area. Students must enroll in Pol. S. 873 when completing this option and satisfactorily complete 33 credit hours of graduate work.
3. Internship Option. This option is for students seeking an intensive, applied learning experience. The MA degree requires 33 hours up to 6 of which may be earned in the process of completing an internship (Pol. S. 974). Students must write and orally defend an intern 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). Shows how governments in the United States make decisions in the health field, describes the political forces shaping governmental policy in health and analyzes the arguments for and against an increased governmental role in health.

523Q. Government and Politics of Latin America. (3). General education further studies course. An examination of the political institutions and processes that currently exist in the Latin American republics. Emphasizes the social, economic and psychocultural factors affecting these institutions and processes.

524. Politics of Modern China. (3). General education further studies course. Emphasizes the study of China’s political system since 1949 in terms of non-Western goals and ideas of social organization. Uses themes of political integration and political development to minimize distortion or cultural bias. Encompasses the roots of the political system, the system as it is now and the goals China is striving to realize. Some assessment of the future development of communism in China. Includes Chinese communism and the ideological heritage; political culture; political leadership; leadership succession; political participation; 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 the Proletarian Cultural Revolution.


534. Problems in Foreign Policy. (3). General education further studies course. Examines domestic and international problems associated with U.S. foreign policy.

547. Contemporary Political Theory. (3). General education further studies course. Introduces the radically new ideas that emerged in the 20th century, especially the work of Darwin and the theory of evolution. The doctrine of historical materialism and the development of modern science and its impact upon political thought. Although the multiplicity of philosophies makes generalization difficult, most of them draw strength from common sources. Studies philosophers such as Hans Kelsen, William Barrett, Friedrich Nietzsche and John Dewey. Gives attention to the importance of these new philosophies upon political structures and issues.

551. Public Law. (3). General education further studies course. An analysis of the role of appellate courts (especially the U.S. Supreme Court) in the American political system. This course emphasizes the role of judicial review of state and federal legislation, the separation of powers, federalism, the judiciary’s role and the commerce clause.

552Q. Civil Liberties. (3). General education further studies course. An analysis of the role of the appellate courts (especially the U.S. Supreme Court) in the American political system. Emphasizes the guarantee of the Bill of Rights and the 14th Amendment.

560. The Planning Process. (3). Cross-listed as P. Adm. 560. For students desiring to work in an urban planning agency or who will be involved in planning issues as an administrator at the city, county, state or federal level. Also for students seeking an understanding of the complex process of urban-related life. Examines the role of planning in solving human and environmental problems. Emphasizes the relationship between specialists, citizens and elected officials as participants in the planning process.

564. Comparative Public Administration. (3). Cross-listed as P. Adm. 564. Studies the administrative system of selected developed and developing countries emphasizing the various methods and approaches of comparative analysis and the relationships between administrative institutions and their environmental settings.


700. Advanced Directed Readings. (3). Repeatable for credit. Prerequisite: departmental consent.

701. Method and Scope of Political Science. (3). Emphasizes philosophy of science and methodology (as distinguished from method and technique) and exposes students to recent works of methodological import in the various subfields within the discipline. Prerequisite: departmental consent.

703. Professional Seminar in Political Science. (3). Introduces entering graduate students to the various subfields of the discipline. Should be taken the first or second semester of graduate study.

710. Public Sector Organizational Theory and Behavior. (3). Cross-listed as P. Adm. 710. Emphasizes the comparative study of selected aspects of public organizations and the administrative processes and problems in local government, including the role of the public sector’s chief executive. Examines problems from the following: labor-management relations, program evaluation, county government reform, governmental decentralization, citizen participation, grant-in-aid programs, interlocal cooperation, affirmative action requirements and service contracting. Prerequisite: Pol. S. 317.

725. Public Management of Human Resources. (3). Cross-listed as P. Adm. 725. Surveys the major areas of management of human resources in the public sector. Includes hiring, training, evaluation and pay promotion policies. Special emphasis on the law governing public personnel management and on the unique merit, equal employment opportunity, productivity, unionization and collective bargaining problems found in the public sector.

750. Workshop. (2-4). Prerequisite: instructor’s consent.

Courses for Graduate Students Only
810. Seminar in Comparative Government. (3). The comparative study of selected aspects of the politics and institutions of foreign governments. Prerequisite: departmental consent.

835. Seminar in International Relations. (3). Analysis of selected problems in, and approaches to, the study of international relations. Prerequisite: departmental consent.

841. Seminar in Urban Politics. (3). An intensive analysis of urban politics emphasizing individual research projects. Prerequisite: departmental consent.

842. Administration in Local Government. (3). Cross-listed as P. Adm. 842. Examination of administrative processes and problems in local government, including the role of the professional chief executive. Examines problems from the following: labor-management relations, program evaluation, county government reform, governmental decentralization, citizen participation, grant-in-aid programs, interlocal cooperation, affirmative action requirements and service contracting. Prerequisite: Pol. S. 317.

845. Seminar in Political Theory. (3). Detailed study of the relevant works of a major political theorist.
philosopher and his/her contributions to contemporary thought. Prerequisite: departmental consent.

851. Seminar in Public Law and Judicial Behavior. (3). Analysis of special problems in and approaches to the study of legal systems. Emphasizes developing awareness of research in the field. Prerequisite: departmental consent.

856. Seminar in American Politics and Institutions. (3). Analytical study of selected topics in American political behavior emphasizing individual research. Repeatable for credit when content differs substantially. Prerequisite: departmental consent.

865. State and Local Government Finance. (3). Cross-listed as Econ. 865 and P. Adm. 865. An analysis of state and local government expenditure and revenue systems with an introduction to state and local financial administration. Prerequisites: P. Adm. 765 or instructor's consent.

867. State and Local Government Budgeting. (3). Cross-listed as P. Adm. 867. Analysis of the development and utilization of the budgetary process in government administration emphasizing the budget in relation to its role in policy formulation and management. Prerequisite: P. Adm. 865 or instructor's consent.

868. Seminar in Public Finance Systems. (3) Cross-listed as P. Adm. 868. An analytical study of selected topics in the politics and administration of revenue, expenditure and borrowing policies of governmental organizations. Prerequisite: departmental consent.

873. Seminar Paper Option. (3). Requires students to extensively revise a seminar paper they wrote within their area of emphasis. Papers are written under the direction of a faculty member and orally defended before a committee of three or more faculty, including a chairperson. Prerequisite: departmental consent.

874. Internship. (3-6). S/U 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.

875. Research Design. (3). S/U grade only. Requires the development of a research design for the thesis. The design must be submitted to a departmental committee for evaluation and approval. Prerequisite: departmental consent.

876. Thesis. (1-3).

Psychology
Graduate Faculty
Professors: Charles A. Burdshal, Jr. (chairperson), Peter A. Cohen (Dean, College of Health Professions), Darwin Dorf, Gary Greenberg (graduate coordinator), Charles Halcomb, Gregory J. Meissen, Eske R. Shoe, James J. Snyder

Associate Professors: Louis J. Medvene, Donald W. Nance, Marilyn L. Turner, Robert D. Zettel
Assistant Professors: Paul D. Ackerman, Alex Chaparro, M. James Klingsporn, Rhonda K. Lewis

Degrees Offered
The psychology department offers courses of study leading to the Doctor of Philosophy in human factors psychology and in community/clinical psychology.

Students in the doctoral program are awarded the master's degree in general experimental psychology upon completion of their second year project.

Admission Requirements
For all students: Appropriate applications for admission should be filed with the dean of the Graduate School and the psychology department by February 1 (community/clinical) or March 1 (human factors) for enrollment the following fall. In addition to the usual application information, the following are required: (i) four letters of reference from people acquainted with the applicant's academic background and potential; (ii) a brief autobiographical statement describing particular interests, experiences, and goals related to academic and professional work in psychology; and (iii) scores on the Graduate Record Exam (GRE: verbal and quantitative).

Applicants are evaluated with respect to (1) undergraduate grade point average; (2) amount, type, and scope of undergraduate preparation; (3) reference letters; and (4) GRE scores. Applicants are informed of admission or rejection by approximately April 1.

Applications received after February 1 and March 1 are acted on periodically until full 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 systems/theories or history of psychology. Additional program requirements are:

Human Factors: Applicants for this program are expected to have interdisciplinary strengths in the sciences, mathematics, computer technology, and related fields.

Community/Clinical: Applicants for this program are expected to have interdisciplinary strengths in the social sciences, health, and related fields.

Important: For both the community/clinical and human factors programs, interested students who are not psychology majors or who lack specific prerequisites may be provisionally accepted with an opportunity to make up deficiencies.

Degree Requirements
Students should be aware of the Graduate School's nine year time limit for completing doctoral degree programs. The psychology department expects all degree-bound students to make satisfactory progress toward the completion of their degree programs.

Students in both doctoral programs must complete the following foundations courses: Biological and Philosophical Foundations of Psychology, Cognitive/ Learning Foundations of Behavior, Personality and Individual Differences, Social/ Developmental Foundations of Behavior, Advanced Research Methods I and II.

Students in both programs must complete a predoctoral research program before admission to doctoral candidacy. Students will take a qualifying examination upon completing all required courses. On passing this examination, students can be admitted to doctoral candidacy and begin work on a dissertation. All doctoral degree students are required to complete a dissertation within enrollments in Psy. 910. The dissertation will ordinarily be a major research project which must be preceded by approval of a formal written proposal by the student's dissertation committee. In addition to regular course examinations, all students must pass an oral examination based on their dissertation.

Additional program requirements:
Human Factors: Students must complete the following: Seminar in Human Factors Psychology, Seminar in Perception, Psychological Principles of Human Factors, and Seminar in Software Psychology. Each student must take 24 hours of elective courses, 12 of which will be outside of the human factors program, selected in consultation with his or her advisor. Among the elective courses, at least one must be from among the following: Seminar in Motor and Sensory Processes, Aerospace Psychology, Measurement of Human Performance, Seminar in the Psychology of Learning, Seminar in Environ-
mental Psychology. Students must complete a Research Internship of 3 hours per semester over a period of two semesters for a total of 6 hours and must enroll in Graduate Research each semester for a total of 16–18 credit hours.

Community/ Clinical: Within the 90-hour community/clinical program there are two tracks, a community track and a clinical track. All community/clinical students take the program wide required courses listed above as well as Seminar in Community/ Clinical Psychology. Community track students are required to take three community courses: Applied Research Methods, in Community Settings, Seminar in Prevention, and Seminar in Community and Organizational Intervention. Community track students are also required to take two of three clinical courses: Seminar in Cognitive-Behavioral Assessment, Advanced Psychopathology, and Seminar in Cognitive-Behavioral Therapy. Clinical track students are required to take all three of the clinical courses and two of the three community courses. Community track students take a minimum of 12 hours of practicum with at least 3 hours of clinical practicum. Clinical track students take a minimum of 12 hours of practicum with at least 3 hours of community practicum. One calendar year internship is required for all clinical track students. The remainder of the required 90 graduate hours are electives.

Courses for Graduate/Undergraduate Credit

503Q. Comparative Psychology. (3). Develops a unified theoretical perspective about the origins of behavior of all animals. Focuses on the evolution and development of behavior. Field trips supplement lectures. Prerequisite: one course from Group One.

508. Psychology Tutorial. (3). Selected topics in psychology. Repeatable for a maximum of 6 hours. Instructor's consent may be required. Check Schedule of Courses. Prerequisite: Psy. 111Q.

512. Primatology. (3). General education further studies course. A survey of the primates (including humans) and their behavior. Includes principles of evolution and taxonomy, the evolution of the primates to Homo sapiens, the emergence of language, cognitive functioning, and culture. Prerequisite: Psy. 111Q.

514. Psychology of Health and Illness. (3). A survey of the relationships between psychology/behavior and physical health and illness. Includes stress and coping, health habits, symptom perception, health care provider-client relationships, hospitalization and prevention. May include a self-study of life style and behavior in relation to health and illness. Prerequisite: Psy. 113Q.

510. Drugs and Human Behavior. (3). General education further studies course. A survey of the actions and effects of use of legal and illegal, psychoactive drugs, and of the use of prescription drugs in the treatment of psychological disorders. Details social-cultural, personal and situational determinants and consequences of drug use and abuse. Prerequisite: Psy. 111Q.

522. Biological Psychology. (3). General education further studies course. A review of the biological foundations of behavior. Includes 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: Psy. 111Q.

524. Advanced Psychology of Personality. (3). More intensive treatment of the topics of psychological personality emphasizing contemporary theories, research, and application of the psychological study of personality. Prerequisite: Psy. 334Q.

526. Psychological Testing and Measurement. (3). A critical analysis of the psychological foundations of tests and the interpretation of test findings. Surveys several tests representing the areas of intelligence, personality, normal and abnormal psychology, interests, special abilities and aptitudes to illustrate general principles of testing. Prerequisite: Psy. 401.

532. Psycholinguistics. (3). General education further studies course. Cross-listed as Ling. 545. Survey of psychological, linguistic, and international analyses of language. Includes the performance-competence distinction, child development of speech, animal communication systems and the relation of language to thought. Prerequisite: Psy. 111Q.

534. Psychology of Women. (3). General education issues and perspectives course. Cross-listed as Wom. S. 534. Psychological assumptions, research and theories of the roles, behavior, and potential of women in contemporary society. Prerequisite: Psy. 111Q.

536. Behavior Modification. (3). A study of the basic assumptions, principles and issues of behavioral approach to helping persons with psychological problems. Includes demonstration and individualized practice in general helping skills as well as individual projects in applying these skills. Prerequisite: Psy. 111Q and instructor's consent.


564. Practicum in Applied Behavior Analysis and Social Learning. (3). 1R; 4L. 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: Psy. 536 and instructor's consent.

556. Introduction to Clinical Psychology. (3). A survey of current ethical, conceptual and research issues involved in the assessment and treatment of psychopathology. Reviews contemporary psychotherapies emphasizing the relative efficacy of each and the theoretical mechanisms through which they initiate behavioral change. Prerequisite: Psy. 324Q.

558. Computer Applications to the Behavioral Sciences. (3). 2R; 2L. Introduces computer applications to the behavioral sciences including 1) techniques of analyzing experimental data, 2) statistical applications, 3) interactive computing, 4) "canned" statistical programs, 5) word processing, and 6) other current computer applications. Prerequisites: 9 hours in the social sciences.

561. Systems and Theories in Psychology. (3). Includes behaviorism, Gestalt psychology, structuralism and others. Attempts to develop the logical relations of these theories to each other as well as to common historical themes and current issues. Prerequisite: 15 hours of psychology including Psy. 311.

608. Special Investigation. (1-3). Upon consultation with instructor, advanced students with adequate preparation may undertake original research or directed readings in psychological problems. Repeatable for a maximum of 6 credit hours. Requires consultation with and approval by appropriate advisor prior to registration. Prerequisites: 9 hours in psychology and instructor's consent.

622. History of Psychology. (3). Traces the development of philosophical and empirical concepts of psychology from the ancient Greeks through the 19th century. Examines the origins and various views of the body-mind relationship. Emphasizes the influence of naturalistic assumptions and research methods on 20th century psychology. Prerequisites: 9 hours of psychology or instructor's consent.

720. Aerospace Psychology. (3). Exploration of the many roles of scientific psychology in aviation and aerospace science. Surveys the research and literature in areas such as psychophysiological aspects of flight, environmental effects on human performance in aviation, aircrew skill requirements and training, pilot workload, cockpit control and display systems and aviation safety. Prerequisites: 15 hours of psychology or instructor's consent.

750. Psychology Workshop. (1-3). Specialized instruction, using various formats in selected topics and areas of psychology. Graded S/U.

Courses for Graduate Students Only

818. Advanced Research Methods I. (4). 3R; 3L. Part one of a two-course sequence aimed at advanced treatment of statistical and research design issues. Statistical methods included are analysis of variance, analysis of covariance, multiple comparisons and multiple regression. Design issues include research planning.
problems through review of current literature and theory. Content changes as new problems attain prominence internationally but a typical sample might be human factors in the aging population; human factors in airport security and baggage marking; and human factors in third-world industrialization. Prerequisites: completion of Psychology doctoral courses; for doctoral students from other disciplines, instructor's consent after an interview.

830. Seminar in Community-Clinical Psychology I. (3). Introduces basic historical, conceptual, research, methodological, and ethical issues in community-clinical psychology. Examines the responsibilities and roles of psychologists in the promotion of human functioning. Reviews models and determinants of human behavior from individual, developmental and ecological/contextual perspectives. Details the reciprocal relationship between research and practical applications of psychological knowledge and the application of that knowledge to human psychosocial problems. Prerequisite: instructor's consent.

831. Seminar in Community-Clinical Psychology II. (3). Introduces methods of assessment and intervention used to promote human functioning in the context of primary and secondary prevention and clinical treatment of human psychosocial problems. Describes and integrates theories and methods relevant to the assessment of persons, environments, agencies and communities. Details theories and methods of intervention, including psychotherapy, consultation, social action and organizational development. Students apply these theories and methods to selected psychosocial problems. Prerequisite: Psy. 830.

840. Seminar in Environmental Psychology. (3). Explores historical, theoretical, and empirical bases of environmental psychology. Presents contemporary models of environmental psychology including the ecological, social, community, and human factors perspectives along with a historical review of the field. Could include behavior-environment congruence, person-environment fit, social impact assessment, social policy, and the prevention of psychosocial problems through environmental intervention. Prerequisite: Psy. 815.

841. Seminar in Motivation and Emotion. (3) Intensive study of theory and research in motivational and emotional processes. Prerequisite: instructor's consent.

842. Seminar in Psychology of Learning. (3) Intensive study of theory and research in learning processes. Includes 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: Psy. 302 and instructor's consent.

843. Seminar in Psychotherapy. (3) Provides an in-depth description and critical analysis of various theories and methods of psychotherapy, an examination of 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: Psy. 1110Q and instructor's consent.

910. Doctoral Dissertation. (1-3). Graded S/U only. Repeatable for credit. Prerequisite: admission to candidacy and instructor's consent.

911. Graduate Research. (1-3). Individual research. Prerequisites: advisor's consent and graduate standing.

912. Internship in Human Factors Psychology. (1-3). Repeatable up to 6 hours. A planned placement experience in an off-campus setting giving the doctoral human factors psychology student an opportunity to apply the principles of human factors psychology. Prerequisite: advisor's consent.

921. Psychological Principles of Human Factors. (3). Focuses on the interaction of people with machines and technology in a variety of environments. Provides depth to the topics surveyed in Psy. 386 and serves as a means of integrating cognitive, biological, and perceptual psychology in applied settings. Prerequisite: completion of undergraduate course in cognitive psychology or Psy. 813; and instructor's consent after interview for doctoral students from other disciplines.

922. Seminar in Software Psychology. (3). Intensive study of principles and methods of engineering psychology. Human factors applies to the design and evaluation of computer software. Topics include research methods, programming as human performance, programming style, software quality evaluation, organizing the programming team, interactive interface issues, and the design of interactive computer systems. Prerequisite: instructor's consent.

938. Advanced Psychopathology. (3). An overview of major categories at psychopathology consistent with the most recent edition of the Diagnostic and Statistical Manual of Mental Disorders. Reviews descriptive features of each diagnostic category and information on the clinical course and etiology. Examines differing definitions of psychopathology and paradigmatic approaches to the study of psychopathology. Prerequisite: instructor's consent.

939. Applied Research Methods in Community Settings. (3). An examination of research methods which are used in community settings to develop and evaluate programs. Regarding program development, there is discussion of different data collection strategies used to assess community needs. Examines a variety of topics related to program evaluation including research design issues, evaluating criteria of merit, and the politicization of program evaluation. Prerequisite: instructor's consent.
their clinical work with individual clients seen through the department clinic and/or other appropriate sites. Graded S/U only. Prerequisite: instructor’s consent.

934. Practicum in Community Psychology. (1-3). Provides supervised practice working in community-based organizations on such tasks as needs assessment, program development, and program evaluation. Organizational settings may be in the areas of mental health, education, and social service. May be prevention-oriented. Repeatable for credit. Graded S/U only. Prerequisite: Instructor’s consent.

935. Seminar in Cognitive-Behavioral Assessment. (4). Surveys issues of reliability and validity, provides description, critical analysis, and practice in clinical use of such psychological assessment methods as interviewing, observation, self-report, and standardized intelligence and personality tests. Focuses upon comprehensive clinical assessment, including integration and reporting of assessment data for treatment planning. Prerequisite: Instructor’s consent.

936. Seminar in Cognitive-Behavior Therapy. (4). SR; 3L. Reviews the theoretical and empirical evidence for specific behavior therapy practices. Approaches may include systematic desensitization, flooding, contingency management; techniques and aversive therapies. Also discusses the interface between behavioral assessment and clinical practice. Prerequisite: Instructor’s consent.

937. Seminar in Community and Organizational Intervention. (4). SR; 3L. Focuses on the development and/or change of community-based programs and organizations and the implementation and funding of community-based programs. Explores theoretical and conceptual bases of these interventions, drawing on the material from community psychology, clinical psychology, public health, health psychology, and applied social psychology. Helps prepare students to become involved as professionals in community-based health or mental health settings. In the course of developing and/or implementing intervention programs, students may be assigned duties as program developers, proposal writers, program implementers, and program managers. Prerequisite: Instructor’s consent.

938. Seminar in Prevention. (3). Reviews the historical, theoretical, and empirical bases of prevention psychology. Presents contemporary models of preventive psychology including the ecological, social, and community mental health perspectives. Could include primary prevention, empowerment, community-based prevention, self-help, social policy, and the prevention of psychosocial problems through environmental intervention. Prerequisite: Instructor’s consent.

940. Development of Abnormal Behavior. (3). Considers the descriptive characteristics of abnormal behavior and the developmental perspective. Considers the ecological, social-environmental, personal, and genetic-biological contexts and causes of such behavior. Discusses implications for preventative and clinical interventions. Prerequisite: Instructor’s consent.

941. Measurement of Human Performance. (3). The logic of fundamental measurement is developed and applied to human performance from detection to decision. Signal Detection Theory (SDT) is developed and compared with threshold theory. Demonstrates procedures for assessing both detection and discrimination under both SDT and threshold theory. Information measurement and utility theory is developed and applied to the transmission and coding of information and to decision making respectively. Examines measures of work reliability and well-being. Prerequisite: Instructor’s consent.

942. Seminar in Behavioral Development. (3). A critical analysis of the concept of development and of theories of behavioral development. Begins with a review of the concept of integrative levels and proceeds to a discussion of modern evolutionary theory. Examines the concept of development from psychological, biological, and anthropological perspectives. Prerequisite: Instructor’s consent.

943. Seminar in Comparative Psychology. (3). Discusses general principles of behavioral origins and development. Oriented toward the evolution and development of behavior. Includes a review of the concept of developmental issues in psychology. Prerequisites: Psyc 502Q and Instructor’s consent.

944. Seminar in Consultation. (3). Examines theories and techniques of psychological consultation as applied to individuals, organizations, and systems. Prerequisite: Instructor’s consent.

945. Seminar in Current Developments. (3). Intensive study of current issues, techniques, research, and application. Repeatable for different topics for a maximum of 6 hours. Prerequisite: Instructor’s consent.

946. Seminar in Motor and Sensory Processes. (3). Focuses on the interface between human sensory and motor systems. Covers the sensory, motor, cognitive, and affective processes related to human factors psychology. After a review of the anatomy and physiology of sensory-motor processes, emphasizes contemporary research and literature regarding the interplay of sensory-motor processes. Prerequisite: Instructor’s consent.

947. Seminar in Perception. (3). Intensive study in theory and research in perceptual processes. Prerequisites: Psyc 332 or equivalent, and Instructor’s consent.

Public Administration
See Urban and Public Affairs, Hugo Wall School of.

Religion
Graduate Faculty
Associate Professor: Stuart Lasine

Although there is no graduate program in religion, the following courses may be taken for graduate credit.

Courses for Graduate/Undergraduate Credit

750. Workshop in Religion (2-4),
Directed Research, is needed to fulfill Student selecting the thesis program in structure and role changes and their impact on Advanced Statistical Techniques; Soc. 312, Math. III or 331Q or equivalent. skills needed to conduct quantitative sociological problems. Includes measures of central tendency, dispersion and association, simple linear regression, hypothesis testing and analysis of variance. Prerequisites: Soc. 11IQ, Soc. 312, Math. 111 or 331Q equivalent.

Examinations

Students electing the thesis program in sociology must pass an oral defense of the thesis.

Courses for Graduate/Undergraduate Credit

501. Sociological Statistics. (3). Generally offered fall semester only. Applications of descriptive and inferential statistics to sociological problems. Includes measures of central tendency, dispersion and association, simple linear regression, hypothesis testing and analysis of variance. Prerequisites: Soc. 11IQ, Soc. 312, Math. 111 or 331Q equivalent.

512. Measurement and Analysis. (3). Generally offered in the spring only. An applied study of the conceptual tools and methodological skills needed to conduct quantitative sociological research. Prerequisites: Soc. 11IQ. Soc. 312, Math. 111 or 331Q equivalent.

520. Family and Aging. (3). Cross-listed as Geron. 520. Analyzes the families and family systems of older people. Emphasizes demographic and historical changes, care giving, and intergenerational exchanges and relationships. Prerequisite: Geron. 105 or jr. standing.

523. Sociology of Law. (3). General education further studies course. Considers the impact of law on society, the role of law in effecting social change, various methods of dispute resolution and recent research on judicial, legislative, and administrative processes, with the aim of comparing and evaluating strengths and weaknesses of legal systems, with partial but not exclusive emphasis on those societies utilizing the common law. Prerequisite: Soc. 11IQ.

527. Violence and Social Change. (3). General education further studies course. Analyzes the causal processes and functions of extreme and violent political behavior, i.e., revolutionary, insurrectionary, and protest movements. Includes an analysis of sequences for social change. Prerequisite: Soc. 11IQ.

534. Urban Sociology. (3). General education further studies course. Studies the process of urbanization and its influence on the development of local and social structures throughout the world. Also discusses social problems associated with urbanization. Prerequisite: Soc. 11IQ.

537. The Social Consequences of Disability. (3). General education further studies course. Cross-listed as Geron. 537. An edictive survey of the social aspects of disability showing the impact of social values, institutions, and policies upon adults with disabilities. Appropriate for both students of sociology and the service professions. Prerequisite: Soc. 11IQ.

538. Medical Sociology. (3). General education further studies course. Analyzes social and cultural factors related to physical and mental illness. Also includes the dynamics of communication and role relationships among patients and medical personnel and social research and theory relevant to the health professions. Prerequisite: Soc. 11IQ.

539. Juvenile Delinquency. (3). General education further studies course. The factors related to juvenile delinquency and the measures of treatment and prevention. Prerequisite: Soc. 11IQ.

540. Criminology. (3). General education further studies course. The extent and nature of criminal behavior and societal reactions to it. Prerequisite: Soc. 11IQ.

541. Contemporary Corrections. (3). Historical and contemporary programs for the treatment of offenders viewed as societal reactions to criminal behavior. Prerequisite: Soc. 539 or 540.

543. Sociological Theory. (3). Generally offered fall semester only. A comprehensive survey of sociological theory, spanning both classical and contemporary theorists relevant to the development of sociology. Prerequisites: 9 hours of sociology.

598. Internship. (1-6). Supervises persons involved in internships or placements in the community, where credit can be earned. Prerequisite: departmental consent.

600. Selected Topics in Sociology. (3). Study in a specialized area of sociology emphasizing student research projects. Includes riveting behavior, political sociology, the family and others. Repeatable for a maximum of 8 hours credit. Prerequisites: Soc. 11IQ, instructor's consent, and substantive area course.

651. Directed Research. (3). Gives the student further research skills in an area of special interest. All students are under the direction of a member of the graduate faculty who guides them in developing research skills. Prerequisites: Soc. 512 or equivalent and instructor's consent.

670. Independent Reading. (1-3). For the advanced student capable of doing independent work in an area of special interest. Prerequisites: 15 hours of sociology and instructor's consent.

750. Sociology Workshop. (1-3). Provides specialized instruction using a variable format, in a sociologically relevant subject.

781. Cooperative Education in Sociology. (1-4). Provides practical experience, under academic supervision, that complements the student's academic program. Consultation with and approval by an appropriate faculty advisor is necessary. Graded CR/NC only.

Prerequisite may be waived with departmental consent.

Courses for Graduate Students Only

801. Application of Advanced Statistical Techniques. (3). Usually offered in the fall only. Seminars demonstrate the application of statistical packages via mainframe and personal computers to analyze data and interpret the output. Examine statistical tests from univariate to multivariate. Prerequisite: Soc. 501 or departmental consent.

815. Seminar on the Family. (3). Review of recent research on the family and the theoretical implications thereof. Prerequisite: Soc. 515 or departmental consent.

820. Seminar in Social Movements. (3). Analyzes the elements in social movements as factors in social and cultural change. Prerequisite: departmental consent.

822. Seminar in Deviant Behavior. (3). In-depth examination of recent theory, methods, and research in the area of deviance. Includes implications of future theory development. Prerequisite: departmental consent.

825. Seminar in Organizational Analysis. (3). Explores selected problems in organizational theory based on major theoretical and empirical approaches, both classical and contemporary. Prerequisite: departmental consent.

830. Seminar in Stratification and Power Structure. (3). Examines different theoretical
orig inal is one of the nation's oldest criminal justice graduate programs. Ron al d G. Iaco ve tta, Paul Cromwell (director, Hugo Wall School of Urban and Public Affairs, and Public Policy Analysis and Program Evaluation). Emphasizes the application of statistics and experimental design to policy formulation and policy analysis. Includes case study analysis and research design. Prerequisite: Graduate Faculty consent.

591. Directed Research. (1-3). For the graduate student who wants to achieve research competence in a specific area. Each student is directed by a member of the graduate faculty in the school. Prerequisites: Graduate Faculty consent.

592. Research Methods in Urban and Public Affairs. (3). Studies research methods including questionnaire construction, survey methods, experimental design, and report preparation. Emphasizes completion of an applied research project. Prerequisites: A tutorship of a member of the graduate faculty. Repeatable for credit not to exceed 6 hours. Prerequisite: departmental consent.

597. Applied Research Methods in Urban and Public Affairs. (3). Studies research methods including questionnaire construction, survey methods, experimental design, and report preparation. Emphasizes completion of an applied research project. Prerequisites: An introductory class and one or more advanced classes in one of the disciplines within the Hugo Wall School, and SUPA 301 or 307.

601. Environmental Law. (3). An in-depth analysis of emerging federal, state, and local legislation; judicial decisions, and administrative policy in environmental protection. Explores the roles of a variety of governmental agencies and nongovernmental organizations as related to prevention and enforcement procedures. Includes issues in the development and implementation of environmental policy. Prerequisite: An approved methods class.

625. Computer Applications for Public Policy. (3). Familiarizes students with major types of software applications for IBM compatible microcomputers and their use in public policy analysis. Prerequisite: Sponsorship by the local government.

651. Dispute Resolution. (3). Topics include dispute causation, typologies, communications, mediation, arbitration, and other dispute resolution techniques. Includes criminal and civil mediation, both inter-group and inter-organization relations and dispute resolution techniques, and analysis of case studies.

702. Research Methods in Urban and Public Affairs. (3). Acquaints students with applied public policy research methods. Emphasizes locating, collecting, appraising, and utilizing both primary and secondary sources of data of the type used in policy, planning, and administrative research. Students must complete several short research projects. Prerequisite: instructor's consent.

750. Workshop in Urban and Public Affairs. (1-3). Specialized instruction using variable format in urban and public affairs relevant subject. Repeatable for credit.

797. Public Policy Analysis and Program Evaluation. (3). An overview of approaches to public policy analysis and program evaluation. Examines the roles of participants in public policy development, implementation, and evaluation. Explores policy and program functions and their intended and unintended impacts. Focuses on methodologies for collection of data and their use in the assessment of programs and program impacts. Prerequisite: An approved statistics class and an approved methods class.

Courses for Graduate Students Only

802. Quantitative Methods for Public Sector Professionals. (3). Uses standard microcomputer statistical software and analysis to introduce statistics and quantitative analysis for organizational and policy decision making. Emphasizes the application of statistics and writing with quantitative evidence to real public sector policy questions. Assumes little or no background in statistics and software applications. Prerequisite: P. Adm. 702 or instructor's consent.

897. Advanced Research Methods in Urban and Public Affairs. (3). Advanced research course; studies the selection and formulation of research problems, research design, hypothesis generation, scale construction, sampling procedures, and data analysis and interpretation. Prerequisite: CJ 597 or equivalent.

898. Applied Research Paper. (3). Original research project under a faculty member's direction. Project requires conceptualization, execution, preparation of a written report, and defense of that report before a faculty committee. Intended to be a major project or capstone activity completed at the end of a student's program of study. Must be an individual effort, not a group project. Prerequisites: graduate-level research methods class.

Criminal Justice

Graduate Faculty

Professors: Paul Cromwell (director, Hugo Wall School of Urban and Public Affairs), Quint Thurman (program coordinator)

Associate Professors: Ronald G. Iacovetta, Delores Craig-Moreland, Michael Palmiotto (graduate coordinator)

Assistant Professors: Ardra Katz, Lee Parker

Master of Arts in Criminal Justice

Admission Requirements

The Master of Arts in Criminal Justice (MACJ) at Wichita State University is housed in the Hugo Wall School of Urban and Public Affairs. It is one of the nation's oldest criminal justice graduate degree
programs. Intended to advance learning beyond the more general undergraduate educational curriculum, the MAC expands the knowledge base of both graduating seniors and the administrative capacity of working professionals to optimally perform in their chosen careers in criminal justice.

Following admission by the Graduate School, applicants for the MAC are required for full standing to have achieved a grade point average of at least 3.00 based upon the last 60 hours of course work. For probationary standing, a grade point average of 2.750 based upon the last 60 hours of course work is required.

Students may be admitted to nondegree standing Category B if they have a grade point average of 2.250 based upon the last 60 hours of course work.

Applicants must have completed a minimum of 15 hours of work in criminal justice or approved equivalent. Limitations on the number of students admitted to the MAC degree program each academic year may be established because of constraints imposed by the department's graduate teaching/advising capacity.

Degree Requirements

The MAC degree requires a minimum of 36 hours, including 21 hours taken in courses numbered 800 or above. All students are required to take CJ 892, 893, 894, and an approved graduate-level research methods course. MAC candidates during their final semester may choose to complete an applied research paper for 3 hours of credit, complete a thesis for 6 hours of credit, or pass an oral or written comprehensive examination.

It is recommended that MAC students complete the core requirements prior to enrollment in elective classes. Each core requirement course will be offered once each academic year. Elective courses will be selected in consultation with the student's graduate advisor. Note the restrictions on the following elective hours: there is a maximum of 9 hours total in CJ 781, 782, 783, 881, and 882; there is a maximum of 6 hours total in CJ 781, 881, and 882; and there is a maximum of 6 hours total in CJ 782 and 783.

Examinations

Thesis 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.

Courses for Graduate/Undergraduate Credit

591. Crime Causation and Criminal Justice Policy (3). Introduction to theoretical issues in criminal justice. Primary emphasis is the etiology of criminal and delinquent activity and the response of the criminal justice system to such behavior. Discusses the significant contributions of outstanding criminologists, as well as elaborating the application of these perspectives to criminal justice agencies. Prerequisites: CJ 191Q and SUPA 307.

592. Workshop in Criminal Justice. (1-10). Prerequisite: instructor's consent.

593. Advanced Special Topics in Criminal Justice. (1-3). Detailed study of topics in criminal justice with particular emphasis established according to the expertise of the various instructors. Prerequisite: instructor's consent.

Courses for Graduate Students Only


541. Forensic Psychiatry (3). Analysis of the role of psychiatry in the criminal justice process. Introduces the student to concepts and procedures of forensic psychiatry. Prerequisites: CJ 191Q and SUPA 307, or instructor's consent.

560. Forensic Anthropology (3). Cross-listed as Anhr. 690. Encompasses the area of criminal anthropology, which are studies involving biological evidence: blood, hair, fingerprint, dentition and skeletal system. Covers procedures of collection, preservation, marking, transportation, referral, laboratory analysis, classification and identification emphasizing anthropological interpretation. Prerequisites: CJ 191Q, SUPA 307, and Anhr. 557 or instructor's consent.

561. Correctional Counseling (3). Analysis of the role of a correctional counselor. Emphasis is placed on current practices in community-based and institutional correctional counseling. Discusses application of theories of counseling which are widely used in correctional settings. Rehabilitation programs, and special needs of offenders. Prerequisites: CJ 191Q, SUPA 307, or instructor's consent.

562. Juvenile Justice and Social Policy (3). Analysis of decision-making processes in juvenile justice. Content of juvenile law and Supreme Court decisions affecting juvenile justice, as well as selected problems in juvenile justice. Reviews the juvenile justice reform movement. Covers delinquency prevention and control, as well as ethical issues associated with juvenile justice.

592. Community Policing (3). Reviews the various models and strategies of community policing. Examines key concepts, such as problem-oriented policing, crime prevention, community relations, and empowering the community, and the integration of these concepts into community policing. Prerequisites: CJ 191Q, 292, and 353 or 651, SUPA 307, or instructor's consent.

791. Seminar in the Judicial Process. (3). Reviews and analyzes the functional and legal theories impacting the administration and operation of the judicial system. Examines actual practice as well as statutory and case law. Prerequisites: CJ 191Q, 292, and 353 or 651, SUPA 307, or instructor's consent.

893. Seminar in the Application of Criminological Theory. (3). An in-depth analysis of the major theories of criminality and of their importance to the criminal justice process. Emphasizes the student's development of a consistent and valid frame of reference.
The program is designed for students with minimal previous training in gerontology, among them professionals in such areas as communicative disorders, recreation, physical or occupational therapy, allied health, business, ministry, counseling, social work, adult education, mental health, and any field where older people make up a significant and increasing proportion of the client population and where professionals with gerontological training are presently scarce.

Since employment in the area of aging often demands a knowledge of gerontology combined with knowledge and skills found in a particular discipline, students may use elective courses to pursue an emphasis in such areas as administration, health, long-term care, programs and services, research, and policy.

### Admission Requirements
In addition to the Graduate School admission requirements, applicants must have a grade point average of 3.000 (on a 4.000 scale) and must submit names of three references. Students without an undergraduate statistics course are required to take a graduate-level statistics course approved by their advisor. International students must have a score higher than 575 on the TOEFL exam.

### Degree Requirements
Students must take certain required core courses with a minimum total of 39 hours including a terminal research project.

#### Core Curriculum

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>Geron. 518Q</td>
<td>Biology of Aging or Nurs. 789, Chronic Illness and Aging</td>
<td>3</td>
</tr>
<tr>
<td>Geron. 663</td>
<td>Economic Insecurity, SUPA 702, Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>Geron. 715</td>
<td>Adult Development and Aging</td>
<td>3</td>
</tr>
<tr>
<td>Geron. 798</td>
<td>Multidisciplinary Perspectives on Aging</td>
<td>3</td>
</tr>
<tr>
<td>Geron. 802</td>
<td>Aging Programs and Policies</td>
<td>3</td>
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#### Electives

- Geron. 819, Advanced Gerontology Internship* 3
- Geron. 850, Selected Topics in Gerontology 3

#### Terminal Research Project**

- one of the following: 3
- SUPA 989, Applied Research Paper or Geron. 899, Thesis 3

Total 39

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*Geron. 819. Internship, may be waived for those with extensive approved practical experience.

**With the approval of their advisor, students may use their elective hours and terminal research project to pursue an emphasis.

### Relevant courses in other departments or programs which students may consider include

- P. Adm. 702, 710, 725, 753, 775, 802, 865; Nurs. 789, SUPA 797; Acc. 800; Mkt. 800; HS 804, 812, 818, 822, 826, 834, 858; and Psy. 813. With the consent of their graduate program advisor and program approval, students may take other courses not listed as elective hours.

Students should consult the Gerontology Program Handbook for additional guidance on the program.

### Graduate Minor in Gerontology

The minor is a 12-15 hour concentration in gerontology taken as part of a graduate degree program in another department. Students who wish to pursue the gerontology emphasis must fulfill the requirements in both departments.

### Courses for Graduate/Undergraduate Credit

501. Field Experience. (3-6). A supervised field experience in an agency or organization planning or providing services to older people, individually designed to enhance each student's skills and knowledge of the aging service network. Repeatable for six hours credit. Prerequisite: 12 hours of gerontology credit and instructor's consent.

512. Issues in Minority Aging. (3). Cross-listed as Min. S. 512. Addresses the needs and interests of students who are interested in providing services to the minority elderly, exploring the issues of concern to minority elderly, becoming familiar with the rights of older/minority Americans, learning the legal procedures for resolving specific problems of minority elderly, and offering tried and tested solutions to problems of minority elderly. Prerequisite: Min. S. 100Q, Geron. 100Q, Soc. 111Q or instructor's consent.

513. Sociology of Aging. (3). Cross-listed as Soc. 513. Analysis of the social dimensions of old age, including changing demographic structure and role changes and their impact on society. Prerequisite: Soc. 111Q.


515. Women and Aging. (3). Introduces students to issues in aging that are unique to women, to women's diverse developmental patterns, and to research methods appropriate for studying aging women and their life experiences. Topics include physical change, role transitions, and adaptation from a lifespan perspective.

518Q. Biology of Aging. (3) Cross-listed as Biol 518Q. An introduction to the phenomenon of aging, including a survey of age-
related processes and mechanisms of senescence emphasizing humans. Students earning graduate credit produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisite: a basic course in biology that satisfies the general education requirements.

529. Family and Aging. (3). Cross-listed as Soc. 520. An analysis of the families and family systems of older people. Special emphasis is placed upon demographic and historical changes, widowhood, caregiving and intergenerational relationships as they relate to the family life of older people. Prerequisite: Geront 100 or junior standing.

537. The Social Consequences of Disability. (3). Cross-listed as Soc. 537. An ecological survey of the social aspects of disability, showing the impact of social values, institutions and policies upon adults with disabilities. Appropriate for both students of sociology and the service professions. Prerequisite: Soc. 111Q.

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. Emphasizing 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.

610. The Aging Network. (3). An overview of federal, state, and local programs concerned with planning, managing, or direct delivery of services to the older population. Prerequisite: 9 hours of gerontology credit or instructor's consent.

663. Economic Insecurity. (3). Cross-listed as Econ. 663. Personal economic insecurity, such as unemployment, old age, health care, obsolescence, and erratic economic fluctuations. Includes costs and benefits of government action to aid in meeting such insecurities. Prerequisite: Econ. 202Q or instructor's consent and junior standing.

700. Grant Proposal Preparation. (3). Concerned with the process of research and proposal development, including response to published guidelines, proposal planning and proposal development and submission. Examines grant funding, including types of funding sources and their purposes and methods and processes of proposal evaluation. Students write and evaluate proposals.

715. Adult Development and Aging. (3). Explores theory and research related to the development of adults and to the aging process. Utilizing an interactive, interdisciplinary perspective, the course examines the process of change, transition, growth and development across the adult lifespan. Prerequisite: Geront 798 or six hours of gerontology.

729. Independent Readings in Gerontology. (1-3). Directed study in a specialized topic in gerontology. Repeatable up to six hours. Prerequisite: 12 hours of gerontology credit and departmental consent.

750. Workshop in Gerontology. (1-3). Provides specialized instruction, using a variable format in a gerontologically relevant subject. Repeatable for credit.

781. Cooperative Education. (3-6). Provides practical field experience, under academic supervision, that is suitable for graduate credit and may be used as a part of the student's academic program. Repeatable up to six hours. Prerequisites: 12 hours of gerontology and instructor's consent.

798. Multidisciplinary Perspectives on Aging. (3). An expanded study of the processes of aging from a multidisciplinary point of view. Not open to students with an undergraduate major or minor in gerontology. Prerequisite: admission to graduate school.

Courses for Graduate Students Only

801. Field Research in Gerontology. (3). An examination of the methods of methods, observation, and interview; and approaches to understanding aging and the aged. Students gain practical experience in these methods through individual fieldwork projects. Prerequisite: Geront 798, 12 hours of gerontology credit or instructor's consent.

802. Aging Programs and Policies. (3). Analyzes and evaluates policies and programs related to aging and old age. Emphasizes the importance of social values and historical context for understanding current policies, programs, and practices. Prerequisite: Geront 798, 12 hours of gerontology or instructor's consent.

803. Program Planning and Evaluation in Aging Services. (3). Examines the processes of developing services programs in response to a defined community need in aging services. Includes assessment of needs, identification and development of community resources, and evaluation of program goals, objectives, and methods of implementation. Prerequisite: 12 hours of gerontology or instructor's consent.

810. Advanced Gerontology Internship. (3-6). Integrates academic gerontology and practical experience through supervised placement of students in an agency or organization engaging in planning, administering, or providing direct services to older people. Internship requires 200 contact hours for each 3 hours of credit. An internship paper also is required. Prerequisites: 12 hours of gerontology credit and instructor's consent prior to registration.

850. Selected Topics in Gerontology. (1-6). Advanced study in a specialized area of gerontology focusing upon professional programs and current issues in the field of aging. Emphasizes 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.

899. Thesis. (1-3). Repeatable, but total credit hours counted toward degree shall not exceed four hours.

Minority Studies

Graduate Faculty
Associate Professor: Daisy Kabagarama (graduate coordinator)

Assistant Professor: Anna M. Chandler
Instructors: Martha Sanchez, Jerry Shaw

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 program. See requirements for that program in the Fairmount School of Liberal Arts and Sciences, Elliott School of Communications section of the Graduate Bulletin.

Courses for Graduate/Undergraduate Credit

512. Issues in Minority Aging. (3). Cross-listed as Geront. 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 older minority Americans; (4) learning the legal procedures for resolving minority cases and (5) offering and tested solutions to the problems encountered by minority elderly. Prerequisites: Min. 5. 100Q, Geront. 100, Soc. 111Q or instructor's consent.

540. Advanced Cross-Cultural Communications. (3). An advanced study in special topics in human relations. Prerequisite: Min. 3. 041 or concurrent enrollment.

545. Cross-Cultural Communications Theory (3). An examination of current cross-cultural communication theory and its impact on contemporary cross-cultural issues.

560. Individual Projects. (3). Student conducts independent research related to a specific minority group. Prerequisite: 50 hours of Wichita State credit or program consent. Repeatable for a total of 6 hours.

725. Concepts of Cross-Cultural Communications. (3). A critical survey of the concepts of cross-cultural communications. An in-depth examination of the rationale used to evaluate different ethnic groups, language and behavior. Course provides a conceptual understanding of spatial implications and necessary adaptions to communications to between and among diverse ethnic groups in our society.

750. Workshop. (1-4). Focuses on the nature and scope of minority studies. Emphasizes the unique nature of the experiences of minority groups in this country.

Public Administration

Graduate Faculty

Associate Professor: Samuel J. Yeager

Assistant Professors: Mark A. Glazer, Nancy McCarthy Snyder, John D. Wong

Assistant Professor: Lee Parker
Master of Public Administration

The Master of Public Administration (MPA) degree at Wichita State University is designed to prepare students for professional careers in public and nonprofit 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 program, students have the opportunity for exposure to the methods and perspectives of the social and behavioral sciences and the humanities. The link between these disciplines and the problems of public management are emphasized through methods which include use 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 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 should be familiar with basic microcomputer applications such as word processing and spreadsheets.

International students must attain a minimum score of 600 on the Test of English as a Foreign Language (TOEFL).

Degree Requirements

The Master of Public Administration degree consists of 39 graduate hours, taken over at least three semesters of study.

Core Curriculum. All degree candidates are required to complete the eight core courses:

- SUPA 702, Research Methods in Public Administration
- P. Adm. 710, Public Sector Organizational Theory and Behavior
- P. Adm. 725, Public Management of Human Resources
- P. Adm. 745, The Environment of Public Administration
- P. Adm. 765, Public Sector Economics
- SUPA 802, Applied Statistics for Public Sector Professionals
- P. Adm. 865, State and Local Government Finance
- P. Adm. 895, Public Decision Making

Areas of Specialization. In addition to the core, students develop an area of specialization approved by an advisor. Students may select areas that fit their career interests. Common areas of specialization are state and local government management, financial management, and policy analysis.

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) carries 3 hours of credit and includes attendance at periodic seminars. Intern positions are remunerative and are awarded on a competitive basis. Although placement cannot be guaranteed, the public administration program has an excellent placement record.

Courses for Graduate/Undergraduate Credit

560. The Planning Process. (3). Cross-listed as Pol. S. 560. For students desiring to work in an urban planning agency or who will be involved in planning issues as an administrator at the city, county, state, or federal level. Also for students seeking an understanding of the complex process of urban related life. Examines the role of planning in solving human and environmental problems. Emphasizes the relationship between specialists, citizens and elective officials as participants in the planning process.

564. Comparative Public Administration. (3). Cross-listed as Pol. S. 564. Studies the administrative systems of selected developed and developing countries emphasizing the various methods and approaches of comparative analysis and the relationships between administrative institutions and their environmental settings.


688. Urban Economics. (3). Cross-listed as Econ. 688. A survey of the economic structure and problems of urban areas on both the microeconomic and macroeconomic levels. Stresses the application of regional economic analysis in the study of urban areas as economic regions. Prerequisites: Econ. 201Q and 202Q, or Econ. 803, and junior standing.

700. Urban Affairs. (3). A study of the policy issues faced by local government in an urban setting from a multidisciplinary point of view.

710. Public Sector Organizational Theory and Behavior. (3). Cross-listed as Pol. S. 710. Reviews the scope of the field of public administration including a survey of key concepts and schools of thought underlying the field, and examines issues shaping the future development of the field.

725. Public Management of Human Resources. (3). Cross-listed as Pol. S. 725. Surveys the major areas of management of human resources in the public sector. Includes hiring, training, evaluation, and pay promotion policies. Special emphasis on the laws governing public personnel management and on the unique merits, equal employment opportunity, productivity, unionization, and collective bargaining problems found in the public sector.

745. The Environment of Public Administration. (3). Surveys the political and governmental institutions that underlie the practice of public administration. Includes political systems, constitutional authority, legislative processes, intergovernmental relations, and government regulations.

755. Special Topics in Urban and Public Administration. (3). Cross-listed as Pol. S. 755. The environment of public administration is that interdisciplinary approach at the city, county, state, or federal level. Also for students seeking an understanding of the complex process of urban related life. Examines the role of planning in solving human and environmental problems. Emphasizes the relationship between specialists, citizens and elective officials as participants in the planning process.

765. Public Sector Economics. (3). Cross-listed as Econ. 765. 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. Prerequisites: Econ. 201Q and 202Q or instructor's consent.

775. State and Local Government Law. (3). Cross-listed as Pol. S. 775. Surveys the major areas of management of human resources in the public sector. Includes hiring, training, evaluation, and pay promotion policies. Special emphasis on the laws governing public personnel management and on the unique merits, equal employment opportunity, productivity, unionization, and collective bargaining problems found in the public sector.

780. Master of Public Administration.

785. Introduction to Public Administration. (3). Introduces students to the basic concepts and theories of public administration. Prerequisites: junior standing.

790. Research Methods in Public Administration. (3). Cross-listed as Pol. S. 790. Reviews the scope of the field of public administration including a survey of key concepts and schools of thought underlying the field, and examines issues shaping the future development of the field.

798. Independent Study. (1-3). For graduate students to pursue research in areas not normally covered in course work. Repeatable for credit with departmental consent. Prerequisite: departmental consent.

Courses for Graduate Students Only

825. State and Local Government Administration. (3). Examines administrative leadership...
in state and local government through case study and field experience. Draws on the experience of professional public managers. Designed for students nearing completion of the Master of Public Administration degree and planning careers in public management. Prerequisite: instructor's consent.

842. Administration in Local Government. (3). Cross-listed as Pol. S. 842. Examination of administrative processes and problems in local government, including the role of the professional chief executive. Examines problems from the following: labor-management relations, program evaluation, county-government reform, governmental decentralization, citizen participation, grant-in-aid programs, interlocal cooperation, affirmative action requirements and service contracting. Prerequisite: Pol. S. 317

845. Public Policy Analysis and Program Evaluation. (9). An overview of approaches to public policy analysis and program evaluation. Examines the roles of participants in public policy development, implementation, and evaluation. Explores policy and program functions and their intended and unintended impacts. Also focuses on methodologies for collection of data and their use in the assessment of programs and program impacts. Prerequisite: P. Adm. 752 and 745.

865. State and Local Government Finance. (3). Cross-listed as Pol. S. 865 and Econ 865. An analysis of state and local government expenditure and revenue systems with an introduction to state and local financial administration. Prerequisites: P. Adm. 752 or instructor's consent.

866. State and Local Financial Systems. (3). Deals with selected aspects of state and local government financial management. Introduces fund accounting, costing of government services, capital budgeting, and asset management. Prerequisite: P. Adm. 865 or instructor's consent.

867. State and Local Government Budgeting. (3). Cross-listed as Pol. S. 867. Analyzes the development and utilization of the budgetary process in government administration emphasizing the budget in relation to its role in policy formulation and management. Prerequisite: P. Adm. 865 or instructor's consent.


890. Internship. (3). Integrates academic pursuits and practical experience. Students admitted to the internship are assigned to work in an approved government, community, or private organization for a minimum of nine months. Prerequisites: completion of all P. Adm. core courses and 6 hours of additional graduate credit courses.

895. Public Decision Making. (3). Focuses on decision making by public managers through case study method. Reviews models of public decision making. Explores public management from the perspective of public purposes, political organizational results, and ethics. Prerequisite: successful completion of all other core courses in the MPA or instructor's consent.

Social Work
Graduate Faculty
Assistant Professors: Elwin M. Barrett, Linneara Flynn Glen-Maye, Timothy W. Lause, Cathleen A. Lewandowski (program director)

Master of Social Work
The Master of Social Work (MSW) program at Wichita State University has an emphasis in advanced generalist practice and is designed for people who are interested in entering the social work profession at an advanced generalist professional level. The advanced generalist social worker is adept at direct service delivery with individuals, families, groups, and communities, and has indirect practice capabilities in the areas of supervision, administration, program development, and evaluation.

Accreditation Status
Wichita State University will accept its first MSW class in the fall of 1999. The Social Work Program's seeking eligibility for candidacy for accreditation through the Council on Social Work Education. Interested individuals are encouraged to contact the Social Work Program office, (316) 978-7250, for current information on accreditation status.

Admission Requirements
Admission to the MSW program requires that the applicant:
1. Have a baccalaureate degree from an accredited four-year institution acceptable to the Graduate School.
2. Have evidence of a strong liberal arts background, as evidenced on the transcript by courses in the arts, humanities, and behavioral and social sciences. Applicants should be knowledgeable about diverse cultures; social problems; social conditions; and the social, psychological, and biological determinants of human behavior.
3. Have a cumulative undergraduate grade point average of 3.00 or better, or be able to demonstrate an ability to do graduate work.
To be reviewed for admission, applicants should do the following:
1. Request an application packet from the Social Work Program.
2. Submit to the Graduate School the designated Application for Admission and supporting transcripts.
3. Submit to the Social Work Program by the published deadline a completed MSW application, including a personal statement, three letters of reference, and documentation of academic and professional training.

As described in the application materials, applicants should submit their reference letters in sealed envelopes along with their completed MSW application to the Social Work Program. Applicants should be aware that their records can only be reviewed when all materials have been submitted and they have met eligibility requirements. Applicants will be notified of their admission status by the Graduate School.

Full- and Part-Time Enrollment Options
Applicants choose to apply for either the full-time or the part-time track. Applicants admitted into the full-time program enroll in four full-time semesters, consisting of 12-16 hours a semester, not counting summer semester. Applicants admitted into the part-time program must enroll in 6-9 credit hours a semester, with the exception of summer semester, and complete the degree within four years. Courses are sequential and are generally offered once a year. Applicants should contact the Social Work Program for further information on the part-time curriculum plan.

Field Practicum Requirements
In addition to classroom work, students enroll in four semesters of field practicum. The foundation year practicum consists of 450 close hours over the course of two semesters. The advanced year practicum consists of 600 clock hours over the course of two semesters, for a total of 1,080 clock hours. The program's Field Practicum Director makes arrangements for field practicum placements.

Course Waivers for Applicants with a BSW Degree
Wichita State University's Social Work Program will not offer an advanced standing program for the 1999-2000 school term. However, applicants who have completed undergraduate course work in a CSWE-accredited social work program are eligible for course waivers on a course by course basis. As a general rule, course waivers will be granted only on a condition, first-year courses. Receipt of a course waiver is dependent on the applicant's performance and the comparability of the course content. A letter grade of A or B in the undergraduate course is required in order to waive the
course. Comparability of the undergraduate course to the foundation graduation course will be determined by the Wichita State social work faculty.

Transfer of Academic Credit
Transfer of credits from another MSW program will be considered on a case by case basis. As a general rule, only courses taken in a Council on Social Work Education accredited Master of Social Work program will be eligible for transfer of credits. The applicants must have received a B or better in the course(s) being considered for transfer. In most instances, transfer of credits will only be granted for first-year foundation courses or electives if applicable to Wichita State University's advanced generalist social work program. Students may transfer up to 6 elective hours from other graduate programs in related fields, if applicable to the advanced generalist specialization and/or content is comparable to WSU's elective courses outside the Social Work Program. Transfer of elective credit hours must be approved by the assigned advisor and the director of the MSW program at the time of admission to the MSW program.

Life Experience
In accordance with accreditation requirements, academic credit will not be given for life experience or work experience in course work or field practicum.

Nondegree Students
Students wishing to enroll in graduate social work courses for continuing education may do so on a space available basis. Nondegree students who then decide to pursue an MSW degree at Wichita State University must go through the normal admitting procedures. A maximum of 6 credit hours taken prior to admission to the MSW program can be applied toward the MSW program. Nondegree seeking students who do not have a BSE degree from a CSWE accredited program may not enroll in social work practice classes. Only students admitted into the MSW program may enroll in field practicum courses.

Degree Requirements
The anticipated curriculum for the full MSW program consists of 56 credit hours, 42 credits of classroom work and 14 credits of supervised practicum. Students must maintain a 3.000 grade point average; a grade of C is the minimum passing grade.

See Sc. Wk. 700, 710, 715, and 720 for descriptions of the first semester courses. Interested individuals should contact the Social Work Program for descriptions of subsequent courses.

Courses for Undergraduate/Graduate Credit

500. Social Welfare Policy: Analysis and Evaluation. (3). Develops systematic frameworks for examining factors shaping social policy and programs, evaluating program social welfare programs and alternative designs, and engagement of complex community resources in an urban environment. Prerequisites: Pol. S. 121Q or Hist. 132Q; Sc. Wk. 218C.

502. Social Work Practice: Strategies and Techniques. (4). Introduces the study and practice of interpersonal professional interaction skills within the framework of a social work helping process. Focuses on developing skills in professional observation communication, interviewing, recording, and reporting. Course is didactic as well as interactive and includes an integrated laboratory component which focuses on experiential learning. Required for social work majors. Prerequisite: program admission.

514. Women, Children, and Poverty. (3). Cross-listed as Wom. S. 541. Addresses the problem of poverty among women in the U.S. today and examines existing and proposed public policies designed to alleviate the problem. Explores theoretical models of poverty policy analysis and the role of values in their formulation and implementation. Discusses issues of age, race and family, special attention to poverty among women in Kansas. Prerequisites: 6 hours of social science preferably in women's studies, including Wom. S. 388Q, or instructor's consent.

551. Independent Studies. (1-3). Individual projects 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.

560. Personal Human Interaction within Society. (3). Provides a beginning theoretical framework within which the integration of prior knowledge can be made regarding physical, mental and social development of the human being. Focuses on American culture and sub-cultural variations and their effect on human adaptability in the social environment, and the relationship of these entities to beginning professional social work practice. Prerequisites: 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 advisor.

570. Internships in Social Work. (3-6). Provides 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. Also meets experiential 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.

600. Social Welfare Development. (3). Develops social work knowledge and skills to foster innovation and change within human service organizations, in program networks, community dynamics, and in arenas of public policy. Social work models are developed to lessen the magnitude of social problems and advance social justice in urban environments with diverse populations and dynamic resource systems. Prerequisites: Sc. Wk. 298, Pol. S. 121Q or Hist. 132Q.

601. Advanced Social Work Practice. (3). Advanced practice theory emphasizing becoming both knowledgeable and skillful in applying theory to practice. Focuses 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. To be taken concurrently with Sc. Wk. 602 except by program consent. Prerequisites: Sc. Wk. 502 and program consent.

602. Practicum I (4). Placement in community social welfare agencies for supervised periods of observation and direct service assignments emphasizing performance of basic practice skills and understanding of the social welfare agency and its role in the community service network. To be taken concurrently with Sc. Wk. 601 except by program consent. Prerequisites: a grade of B or better in Sc. Wk. 502, Sc. Wk. 560 and program consent.


605. Practicum II (5). Placement in community social welfare agencies for supervised direct service assignments emphasizing formulation of appropriate goals. Includes the selection of various social work roles and in-depth development of techniques and skills common to practice in the social welfare field. Prerequisites: Sc. Wk. 602.

610. Topics in Social Work. (1-3). Selected topics in practice, policy, research, and human behavior in the social environment within a selected field of social welfare. This course covers specific topics identified by the program in consultation with majors, groups of community practitioners, and agency service institutions. Repeatable. Prerequisite: instructor or program consent.

700. Foundations of Generalist Practice I. (3). Provides foundation content in the knowledge and skills for empowerment-based generalist social work practice with individuals, families, groups, organizations, and communities. Includes professional role development, communication and interviewing theories, skills development in social work assessment, intervention, and evaluation methods. Prerequisites: Sc. Wk. 720.

718. Micro Human Behavior and the Social Environment. (3). Provides theories and knowledge of human behavior in a social environment and functioning of individuals and
families, and of the interaction between individuals and families and their environment. Presents theoretical perspectives on development over the life span and family functioning. Explores areas of universality and differences across gender, race, ethnicity, class, physical and mental ability, and sexual orientation.

715. Social Welfare Policy and Analysis. (3) Surveys social welfare institutions, emphasizing the strengths and weaknesses of programs within the context of the social problems they address. The course emphasizes the use of frameworks for analyzing social policies and evaluates programs in light of the missions of the social work profession: the principles of social and economic justice; the historical, economic, and political factors which impinge on policy. Emphasis is placed on the effects of policy and social work practice includes the use of professional roles in shaping the processes of policy formulation to agency and governmental arenas.

720. Field Practicum I. (3) Placement in community social welfare agencies for supervised periods of observation and direct service assignments emphasizing development of basic practice knowledge and skills. Includes developing understanding of the social welfare agency and its role in the community service network. Corequisites: Sc. Wk. 790.

750. Social Work Workshops. (1-5) Specialized instruction using a variable format in a social welfare-relevant subject. Course may be offered together with Sc. Wk. 150. Prerequisite: instructor's consent.

Women's Studies

Graduate Faculty

Professor: Carol Koenig
Associate Professors: Gayle Davis, Deborah Gordon, Ramona Lerner-Schwichtenberg, Dorothy C. Miller (director)

Students may earn a master's degree in four areas with an emphasis in women's studies. These include curriculum and instruction, counseling, educational, 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 (described in the Fairmont College of Liberal Arts and Sciences, Liberal Studies section of the Graduate Bulletin). In other areas, such as the community/cultural 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

511. Women in Early America, 1600-1830. (3) General education further studies course. Traces women's contributions and experiences in building the U.S., from 1600 to the 1830s. Includes both conventional and newly developed methodologies in women's history research.

512. Women and Reform in America, 1830-present. (3) General education further studies course. Examines the history of women in the U.S. from 1830 to the present. Focuses especially on women's involvement in women's social, political, and economic activities, efforts which eventually led to work toward equal rights and improved conditions for women.

516. Sociology of Sex Roles. (3) Cross-listed as Soc. 516.

521. Women's Traditional Arts. (3) Surveys various art forms which are usually identified as the creative work of women. Students focus on the aesthetics of these traditional forms, as well as on their historical and cultural value to the culture.

522. Contemporary Women's Art. (3) Examines art by women in the contemporary world. Special attention is given to the impact of the women's movement on the creative energies and on the career directions and opportunities of these women in the arts.

523. Feminist Film Criticism. (3) Applies critical methods of analysis to the field of feminist film studies (such as psychoanalysis, ideological critique, close textual analysis, narrative and genre criticism, and the representation of women in film). Emphasizes historical development of feminist film theory and criticism as it relates to classical Hollywood narrative, film genres, and avant-garde film. Prerequisite: 3 hours at upper level humanities or 3 hours of upper-level women's studies.

530. The American Woman in History. (3) Cross-listed as Hist. 530.

531. Women and the Law. (3) Introduces 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. Also considers women in the field of law, such as lawyers and legislators.

532. Psychology of Women. (3) Cross-listed as Psy. 531.

533. Women and the Law. (3) Cross-listed as Nurs. 543. Examines the historical development of the women's health movement, focuses on current issues relevant to women and health care and explores the role of women in the health care system and as consumers of health care. Examines self-care practices of women and studies ways to promote positive health practices. Open to non-nursing majors.

534. Literary Images of Women: Diverse Voices. (3) Cross-listed as Eng. 534. Explores literature written in English by women of diverse ethnic, racial, class, and other backgrounds as well as of varying sexual orientations, ages, and degrees of physical ability. Analyzes materials as literary works and as expressions of women's experiences from one another. Works are selected based on their specific attention to the question of gender as it intersects with other elements of culture. Prerequisite: Eng. 101, 102, and one course in literature.

536Q. Writing by Women. (3) Cross-listed as Eng. 536. Explores various themes in critical approaches to literature composed by women writers, especially those whose works have been underrepresented in the literary canon. Genres and time periods covered, critical theories explored and specific authors studied vary in different semesters.

537. Contemporary Women's Drama. (3) Cross-listed as Eng. 557. Examines contemporary plays by and about women to discover and explore the insights of the various playwrights into the lives and roles of women. Considered in reading and analyzing plays, students write plays of their own. Prerequisites: Eng. 101 and 102 and 3 hours of English literature.

541. Women, Children, and Poverty. (3) General education issues and perspectives course. Cross-listed as Soc. Wk. 541. Examines the problem of poverty among women in the U.S. today and examines existing and proposed public policies designed to alleviate the problem. Includes theoretical models of poverty policy analysis and the role of values in their formulation and implementation. Discusses issues of age, race and family; special attention to poverty among Kansas families. Prerequisites: 6 hours of social science preferably in women's studies, including Wom. S. 201Q.

542. Women in Other Cultures. (3) Cross-listed as Anth. 542.

543. Women and Health. (3) Cross-listed as Nurs. 543. Examines the historical development of the women's health movement, focuses on current issues relevant to women and health care and explores the role of women in the health care system and as consumers of health care. Examines self-care practices of women and studies ways to promote positive health practices. Open to non-nursing majors.

570. Directed Readings. (1-3) For students who wish to pursue special reading or research projects not covered in course work. Prerequisite: instructor's consent.

580. Special Topics. (1-3) Focuses on advanced topics of interest to women's studies.

586. Gender, Race, and Knowledge. (3) General education issues and perspectives course. Examines the impact of gender and race on knowledge (understanding of objects, people, events, and activities). Assumes that gender, race, and knowledge are socially constructed categories. Concerned with the relationship between the making of masculinity and femininity and science. How are gender and race women into science and social science and with what results? Do the presence of white women and people of color into the sciences and humanities change how they are practiced? Do they produce significantly different understanding about the world? Central premise is that all knowledge emerges from some type of interaction, and this type of interaction produces knowers, knowing, and the known.

587. Theories of Feminism. (3) Because feminism is not a single ideological stance or per-
spective, course examines a variety of ideas underlying feminist cultural critiques and visions for social change. Discusses the contribution of women's studies to various academic disciplines. Prerequisites: Wom. S. 387Q and 388G, or 6 hours of women's studies courses, or instructor's consent.

635 Leadership Techniques for Women. (3). Cross-listed as Comm. 635. Provides the woman student experience in decision making and improves skills in leadership through role playing and exercise in group dynamics.

Courses for Graduate Students Only

870. Directed Readings. (2-3). For graduate students to pursue research in areas not normally covered in course work. Repeatable for credit with departmental consent. Prerequisite: instructor's consent.

880. Seminar in Women's Studies. (3). Intensive study of selected women's studies topics. Seminar discussion, reports and research project. Previous topics include Advanced Theories of Feminism and Contemporary Women's Fiction. Repeatable for credit with departmental consent. Prerequisite: instructor's consent.

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.
Graduate Faculty 1998-99

Full Membership

Date or dates following title refer to time of initial and successive appointments. Faculty listed have academic rank.

Acker, Andrew E., Professor, Mathematics and Statistics (1987). BS, Union College, 1965; PhD, Boston University, 1972.


Alagic, Suad, Professor, Computer Science (1993). BS, University of Sarajevo, 1970; MS, University of Massachusetts, 1972; PhD, 1974.

Alexander, David R., Professor, Physics, and Executive Director, Lake Afton Public Observatory (1971). BS, Kansas State University, 1967; AM, Indiana University, 1968, PhD, 1971.

Alley, Robert D., Professor, Curriculum and Instruction (1967). BS, Iowa State University, 1957; ME, University of Montana, 1960; EdD, Arizona State University, 1967.

Anderson, Peggy J., Assistant Professor, Curriculum and Instruction (1993). BS, Emporia State University, 1967; MA, University of Kansas, 1979; PhD, Wichita State University, 1993.

Armstrong, Richard N., Assistant Professor, Elliott School of Communication (1987). BA, Southern Utah State College, 1972; MA, Brigham Young University, 1974; PhD, Bowling Green State University, 1978.

Bagai, Rajiv, Associate Professor and Graduate Coordinator, Computer Science (1990). BS, Birla Institute of Technology and Science. 1983; MS, University of Victoria, 1987; PhD, 1990.


Bajaj, Prem N., Associate Professor, Mathematics and Statistics (1985). BA, Punjab University, 1951; MA, 1954; MS, Case Western Reserve University, 1967; PhD, 1968.

Bakken, Linda, Associate Professor, Administration, Counseling, Educational, and School Psychology (1985). BA, Northern Michigan University, 1960; MS, Utah State University, 1979; EdD, Boston University, 1983.


Ballenger, Marcus T., Professor, Curriculum and Instruction and Associate Dean, Education (1970). BSE, North Texas State University, 1959; MED, Texas Tech University, 1963; EdD, 1970.

Baughman, Margaret, Assistant Professor, English (1993). BA, University of Virginia, 1979; MS, Northwestern University, Evanston, 1980; MFA, City University of New York, Brooklyn College, 1989.


Beggs, Donald L., President and Professor of Education (1999). BSE, Southern Illinois University, 1963; MED, 1964; PhD, University of Iowa, 1966.


Belt, John A., Associate Professor, Management (1971). BA, University of Southern California, 1966; PhD, Texas Tech University, 1971.


Bereman, Nancy, Associate Professor, Management, and Associate Dean, W. Frank Barton School of Business (1980). BA, Wichita State University, 1969; MBA, 1974; PhD, University of Minnesota, 1983.


Billings Dorothy K., Associate Professor, Anthropology (1968). BA, University of Wisconsin, 1955; PhD, University of Sydney, 1972.

Bischoff, William, Associate Professor, Geology, and Associate Dean, Fairmount College of Liberal Arts and Sciences (1984). BA, DePauw University, 1979; MS, Northwestern University, 1982; PhD, 1985.

Blakeslee, Donald J., Professor, Anthropology (1976). BA, University of Nebraska, 1969; MA, 1971; PhD, University of Wisconsin-Milwaukee, 1975.

Blocher, Larry R., Associate Professor, School of Music (1995). BME, Morehead State University, 1975; MME, 1977; PhD, Florida State University, 1986.

Born, John D., Jr., Associate Professor, History (1965). BA, University of Texas, 1952; MA, University of Houston, 1958; PhD, University of New Mexico, 1963.

Boughton, Harrison C., Professor, School of Music (1961). BA, University of Northern Iowa, 1956; MA, University of Denver, 1959; DMA, University of Missouri at Kansas City, 1975.

Bousfield, George R., Associate Professor, Biological Sciences (1991). BS, Saginaw Valley State University, 1974; MA, Indiana University, 1976, PhD, 1981.


Brady, Stephen W., Associate Professor, Mathematics and Statistics, and College Algebra Program Director (1967). AB, Indiana University, 1963; AM, 1965; PhD, 1968.

Bravo-Elizondo, Pedro, Professor, Modern and Classical Languages and Literatures (1975). Universidad Tecnica del Estado, Chile, 1957; MA, Education, Catholic University, Valparaiso, Chile, 1964; MA, University of Iowa, 1971; PhD, 1974.

Britton, Clark V., Jr., Professor, School of Art and Design (1957). BAA, Auburn University, 1952; MAA, 1955.

Brooks, Christopher K., Associate Professor, English (1989). BA, Indiana University, 1977; MA, Indiana University, 1979; PhD, Purdue University, 1987.

Brown, Karen Lee, Associate Professor, Biological Sciences (1982). BA, Miami...
Associa te Pro­
Facul ty A.,
Professor, School of 
DeSilva, Dharma, Professor, Interna­
Dau gherty, Sarah, Professor and Grad­
Cons iglio, Catherine 
Combs, Josep h 
Cro mwell, Paul, Professor and Direc­
D'Souza, Francis, Assist a nt Pro fesso r,
Craig-Moreland, Delores E., Associat e 
Crum, Doro thy E., Professor, School of 
York University, 1985.
ua te Coordin ato r, En gli s h (1982). BA, 
ua te Coordinator, Engli s h (1982). BA, 
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York University, 1985.
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Dings, Fred, Assistant Professor, English (1997). BS, Millersville University; MA, University of Delaware; MFA, University of Iowa; PhD, University of Utah, 1991.

Doggett, M. Steven, Assistant Professor, Biological Sciences (1998). BS, Southwest Missouri State University, 1987; MS, 1989; PhD, University of Georgia, 1995.


Dreifort, John E., Professor, History (1970). BS, Bowling Green State University, 1965; MA, 1966; PhD, Kent State University, 1970.

Duell, Orpha K., Professor and Chairperson, Administration, Counseling, Educational, and School Psychology (1967). BS, Kansas State University, 1963; MS, University of Illinois, 1965; PhD, 1967.

Duram, James C., Professor, History (1968). BA, Western Michigan University 1961; MA, 1963; PhD, Wayne State University, 1968.


Egbert, Robert L., Professor, Electrical and Computer Engineering and Director, WSU Center for Energy Studies (1983). BSEE, University of Missouri at Rolla, 1972; MSE, 1973; PhD, 1976; Licensed Professional Engineer-Missouri, Kansas.

Eichorn, David, Assistant Professor, Chemistry (1996). Harvard University, Cambridge, 1986; PhD, University of California, Berkeley, 1982.


Fernandez, Jeffrey E., Professor, Industrial and Manufacturing Engineering, and NIAR Fellow (1986). BEng, NED University of Engineering and Technology, Pakistan, 1982; MSIE, Texas Tech University, 1983; PhD, 1986.

Fillion, Bryant P., Professor, Curriculum and Instruction (1990). BA, University of Michigan, 1960; MS, C.W. Post College of Long Island University, 1965; PhD, Florida State University, 1969.


Foran, Michael F., Professor, School of Accountancy (1983). BA, University of Arizona, 1967; MAS, University of Illinois, 1968; PhD, University of Washington, 1972; CMA; CPA-Texas, Oklahoma.

Foran, Nancy J., Associate Professor, School of Accountancy (1979). BS, University of California at Los Angeles, 1965; MS, Wichita State University, 1967; PhD, Oklahoma State University 1985, CPA-Kansas.

Foster, Mary Sue, Associate Professor, School of Art and Design (1966). BSE, University of Kansas, 1951; MSE, 1963; MFA, 1971.


Furstwengler, Carol, Associate Professor, Administration, Counseling, Educational, and School Psychology (1990). BS, Bowie State University, 1972; MA, George Mason University, 1976; PhD, Vanderbilt University, 1980.


Gaunt, Philip, Professor and Director, Elliott School of Communication (1990). BA, Reading University, U.K., 1959; MA, Indiana University, 1988; PhD, 1989.

Gibson, Ian, Associate Professor, Administration, Counseling, Educational, and School Psychology (1998). BA, University of Nebraska-Lincoln, 1977; MEd, Wichita State University, 1980; PhD, University of Kansas, 1986.

Gibson, Kay, Assistant Professor, Curriculum and Instruction (1998). BA, Wichita State University, 1970; MS, 1984; PhD, University of New England, 1996.

Glaser, Mark A., Associate Professor and Director, Institute for Crime Prevention, Hugo Wall School of Public and Urban Affairs (1994). BBA, Wichita State University, 1970; MUA, 1974; PhD, University of Texas-Arlington, 1981.


Glenn-Lewin, David, Professor and Dean, Liberal Arts and Sciences (1994). AB, Knox College, 1963; PhD, Cornell University, 1972.


Graham, A. Richard, Professor, Mechanical Engineering, and Director, Center for Technology Application (1965). BSME, Kansas State University, 1957; MS, 1960; PhD, University of Iowa, 1966.


Greywall, Mahesh S., Professor, Mechanical Engineering (1969). BSc, University of Allahabad, India, 1953; BS, University of California at Berkeley, 1957; MS, 1959; PhD, 1962; Licensed Professional Engineer-Kansas.
Gries, John C., Associate Professor, Geography (1971). BS, University of Wyoming. 1962; MS, 1965; PhD, University of Texas, 1970.


Gundersen, James N., Professor, Geology (1970). BS, University of Wisconsin, 1949; MA, University of California at Los Angeles, 1953; PhD, University of Minnesota, 1958.


Gythiel, Anthony P., Professor, History (1971). Diplome d’Humanites, St. Stanislas Poperinge, Belgium, 1958; BPh, Maison de Philosophe, Belgium, 1953; MA in Theology, Maison de Theologie, Universite de Louvain, Belgium, 1957; MA, University of Detroit, 1966; PhD, 1971.

Halcomb, Charles G., Professor, Psychology (1990). BA, Oklahoma Baptist University, 1958; PhD, Baylor University, 1964.

Hantuch, Hussein, Associate Professor and Chairperson, Physics (1989). BS, Lebanon University, 1978; MS, Northeastern University, 1983; PhD, 1986.


Hawkins, Katherine W., Associate Professor and Associate Director, Elliott School of Communication (1994). BA, University of Virginia, 1958; MA, University of Texas-Austin, 1982; PhD, 1986.

Hawley, Donna J., Professor, School of Nursing and Director, Graduate Nursing Education (1981). BSN, University of Iowa 1968; MA, University of Missouri at Kansas City, 1971; MN, University of Kansas, 1986; EdD, 1980.


Headley, Dean, Associate Professor, Marketing and Entrepreneurship (1988). BSB, Emporia State University, 1970; MPH, University of Oklahoma, 1974; MBA, Wichita State University 1982; PhD, Oklahoma State University, 1989.

Hendry, William J. III, Associate Professor, Biological Sciences (1993). BS, Clarkson University, 1974; MA, 1978; PhD, Clark University, 1982.

Hersch, Philip L., Professor, Economics, and Barton Fellow (1983). BA, Queens College, 1974; MA, Ohio State University, 1978; PhD, 1982.


Ho, James C., Distinguished Trustees Professor, Physics, and Senior Staff Scientist, National Institute for Aviation Research (1971). BS, National Taiwan University, 1959; MS, University of California at Berkeley, 1963; PhD, 1966.

Ho, Lop-Hing, Associate Professor, Mathematics and Statistics (1989). BA, Chinese University of Hong Kong, 1979; MA, Princeton University, 1982; PhD, 1984.


Hoffman, Klaus A., Associate Professor, Aerospace Engineering (1990). BS, University of Texas at Austin, 1972; MS, 1973; PhD, 1983.

Hoop, Steven J., Associate Professor, Aerospace Engineering (1987). BS, Iowa State University, 1973; MS, Wichita State University, 1978; PhD, Iowa State University, 1983.

Horn, Walter J., Associate Professor and Chairperson, Aerospace Engineering (1984). BS, University of Alabama, 1967; MS, University of Texas, 1966; PhD, 1972. Licensed Professional Engineer-Texas.


Hui, Xiaom, Assistant Professor, Mathematics and Statistics (1994). BS, Jiangxi Polytechnic University, China, 1982; PhD, University of Missouri-Columbia, 1993.

Huber, Tony, Associate Professor, Curriculum and Instruction (1990). BS, Pennsylvania State University, 1982; MEd, 1985; PhD, 1990.

Huckstadt, Alicia A., Associate Professor, School of Nursing (1975). BSN, Wichita State University, 1975; MN, 1978; PhD Kansas State University, 1981; PhD, University of Colorado, 1990.


Huntley, Diane F., Associate Professor, Dental Hygiene (1976). BA, University of Bridgeport, 1968; MA, State University of New York at Buffalo, 1971; PhD, Kansas State University, 1985.


Ilor, Sharon H., Associate Professor and Associate Dean, Fairmont College of Liberal Arts and Sciences (1990). BA, University of Oklahoma, 1965; MS, Oklahoma State University, 1984; PhD, 1991.


Jarragin, Bill D., Professor and Allen,


Jewell, Ward T., Associate Professor, Electrical and Computer Engineering (1987). BSEE, Oklahoma State University, 1979; MSEE, Michigan State University, 1983; PhD, Oklahoma State University, 1986.


Johnson, Everett L., Professor and Chairperson, Electrical and Computer Engineering (1971). BSEE, University of Kansas, 1962; MSEE, University of New Mexico, 1964; PhD, University of Kansas 1969. Licensed Professional Engineer-Kansas.


Johnson, Richard T., Professor and Chairperson, Mechanical Engineering (1989). BSME, University of Missouri School of Mines and Metallurgy, 1962; MSME, University of Missouri at Rolla, 1964; PhD, University of Iowa, 1968. Licensed Professional Engineer-Missouri.

Jones, W. James, Professor, School of Music (1969). BM and BSE, Ohio State University, 1960; MA, 1962; PhD, University of Iowa, 1970.

Jong, Mark M. T., Professor, Electrical and Computer Engineering, and Associate Dean, Engineering (1967). BSEE, National Taiwan University, 1965; MSEE, South Dakota School of Mines and Technology, 1965; PhD, University of Missouri, 1967. Licensed Professional Engineer-Kansas.

Kabagama, Daisy, Associate Professor and Director, Hugo Wall School of Public and Urban Affairs. Minority Studies Program (1994). BA, Makerere University, Uganda, 1975; MA, Iowa State University, 1983; PhD, 1988.

Kabol, Pawan, Professor, Physics (1988). BS, Panjab University, India, 1973; MS, 1974; PhD, 1979.

Kaiser, Mark, Assistant Professor, Industrial and Manufacturing Engineering (1996). BS, Purdue University, 1965; MS, 1968; PhD, 1971.


Keen, Dennis J., Professor and Chairperson, Curriculum and Instruction (1978). BSE, Emporia State University, 1970; MSEE, 1975; PhD, Arizona State University, 1978.


Kelley, James W., Associate Professor and Dean, University Academic Programs (1982). BS, Oregon State University, 1964; MA, University of Denver, 1966; PhD, 1970.

Kiralyfalvi, Bela, Professor, School of Performing Arts (1973). BA, Phillips University, 1963; MA, University of Kansas, 1965; PhD, 1972.

Klingsporn, M. James, Assistant Professor, Psychology (1965). AB, University of Nebraska, 1957; MA, 1962; PhD, 1965.


Koert, David N., Assistant Professor, Mechanical Engineering (1991). BSME, Villanova University, 1980; MSME, Drexel University, 1984; PhD, 1993.

Konek, Carol W., Professor, Women's Studies (1969). BS, University of Kansas, 1961; MA, Wichita State University, 1968; PhD, University of Oklahoma, 1977.

Kovar, Susan K., Professor, Kinesiology and Sport Studies, and Associate Dean Graduate School (1991). BS, University of Nebraska, 1967; MS, University of Illinois, 1970; PhD, University of Minnesota, 1985.


Lancaster, Kirk E., Associate Professor, Mathematics and Statistics (1980). AB, Humboldt State University, 1975; PhD, Oregon State University, 1981.


Larsen, Pamela, Associate Professor and Director of Undergraduate Program, School of Nursing (1995). BS, Fort Hays State University, 1969; MS, University of Colorado-Denver, 1984; PhD, University of Northern Colorado, 1988.


Lengnick-Hall, Cynthia A., Professor and Barton Fellow, Management (1990). BA, University of California-Los Angeles, 1970; MBA, 1976; PhD, University of Texas at Austin, 1981.

Lengnick-Hall, Mark L., Associate Professor and Barion Fellow, Management (1990). BBA, University of Texas at Austin, 1975; MBA, 1983; PhD, Purdue University, 1988.

Loftus, Ariel, Assistant Professor, History (1997). BA, University of Michigan, 1979; PhD, Stanford University, 1981; MA, University of Michigan, 1982; PhD, 1992.


Loper, Gerald D., Jr. Associate Vice President for Research, Director of the Office for Research Administration, and Associate Professor, Physics (1964). BA, Wichita State University, 1959; MS, Oklahoma State University, 1962; PhD, 1964.


Lydy, Michael J., Assistant Professor, Biological Sciences (1994). BA, Wittenberg University, 1984; PhD, Ohio State University, 1990.


Mandt, A.J. (Jay), Associate Professor, Philosophy, and Director, Emory Lindquist Honors Program (1976). BA, Trinity College, 1972; MA, Vanderbilt University, 1974; PhD, 1978.


Martin, Charles L., Associate Professor and Barton Fellow, Marketing, and Entrepreneurship (1985). BBA, West Texas State University, 1981; MBA, 1982; PhD, Texas A&M University, 1986.


Mathis, Julie A., Associate Professor, Mechanical Engineering (1990). BSE, Northern Arizona University, 1979; MSF, University of New Orleans, 1984; PhD, Louisiana State University, 1989; licensed Professional Engineer-Louisiana and Kansas.

Mau, Joseph W.C., Associate Professor, Administration, Counseling, Educational, and School Psychology (1991). BA, Tamkang University, Taiwan, 1979; MA, University of Iowa, 1985; PhD, 1990.

May, Phillip T., Professor, School of Accountancy (1974). BA, Lawrence University, 1957; MBA, Indiana University, 1959; PhD, University of Wisconsin, 1967.


McCormick, B. Jack, Professor, Chemistry (1979). BS, West Texas State University, 1956; PhD, Oklahoma State University, 1962.

McDonald, J. David, Associate Professor, Biological Sciences (1992). BS, Kansas State University, 1983; PhD, 1988.

McHugh, Mary L., Associate Professor, School of Nursing (1993). BSN, Wichita State University, 1973; MS, University of Michigan, 1978; PhD, 1987.


Meessen, Gregory J., Professor, Psychology (1980). BA, Wichita State University, 1977; PhD, University of Tennessee, 1980.

Miller, Dorothy C., Associate Professor and Director, Women's Studies and Religion (1989). BA, University of Pennsylvania, 1967; MS, Columbia University, 1969; DSW, 1981.

Miller, Kenneth G., Associate Professor and Graduate Coordinator, Mathematics and Statistics (1981). BA, Macauley College, 1969; MS, University of Chicago, 1970; PhD, 1975.


Miller, Lori K., Professor and Chairperson, Kinesiology and Sport Studies (1996). BS, Emporia State University, 1984; MEd, Texas A&M University, 1986; MBA, University of Louisville, 1993; EdD, East Texas State University, 1989.


Murdock, Katherine, Associate Professor, School of Music (1985). BA, Humboldt State University, 1977; MA, 1977; MA, San Francisco State University, 1980; PhD, Eastman School of Music, University of Rochester, 1985.

Murphy, Dwight D., Professor, Finance, Real Estate, and Decision Sciences (1987). BSI, University of Denver, 1957; JD, 1959.


Myose, Roy Y., Associate Professor, Aero-space Engineering (1992). BS, University of Southern California, 1983; MS, California Institute of Technology, 1984; PhD, University of Southern California, 1991.

Nagati, M. Gawad, Associate Professor, Aerospace Engineering (1984). BS, Cairo University, Egypt, 1966; MS, Wichita State University, 1975; PhD, Iowa State University, 1984.

Nance, Donald W., Associate Professor and Director, Counseling Service (1968). BA, University of Redlands, 1964; MA, University of Iowa, 1967; PhD, 1968.


Palmiotto, Michael, Associate Profess-
University of New York, 1974; PhD, University of Pittsburgh, 1980.


Paske, Gerald H., Professor, Philosophy (1967). BS, University of Wisconsin, 1958; MS, 1962; PhD, 1964.


Perez, Kathleen O., Assistant Professor and Chairperson, Sociology (1983). BA, Clarke College 1979; MA, Miami University, 1980; PhD, Purdue University, 1984.


Pitetti, Kenneth H., Professor, Public Health Sciences (1987). BS, University of San Francisco 1968; MS, Ft. Hays State University, 1980; PhD, University of Texas Health Science Center-Dallas, 1986.

Popp, Harold A., Professor, School of Music (1993). BME, Ottawa University, 1959; MNE, Indiana University, 1960; MFA, University of Iowa, 1967; PhD, 1969; MHL, Ottawa University, 1979 (Honorary Degree).

Quantic, Diane D., Associate Professor, English, and Director, Writing Program (1973). BA, Kansas State University, 1962; MA, 1966; PhD, 1971.


Reed, Paul E., Associate Professor, School of Music (1966). BM, Drake University, 1956; MM, 1957.

Rhine, Amy Jo. Assistant Professor, School of Nursing (1993). Diploma in Nursing, Evangelical Deaconess Hospital, 1955; BS, Kansas Newman College, 1976; MN, Wichita State University, 1979; EdD, Oklahoma State University, 1987.


Riordan, Janice, Associate Professor, School of Nursing (1993). Diploma in Nursing, Evangelical Deaconess Hospital, 1955; BS, Kansas Newman College, 1976; MN, Wichita State University, 1979; EdD, Oklahoma State University, 1987.

Rohr, charles a., Associate Professor, Administration, Counseling, Educational, and School Psychology (1985). BA, University of Illinois, 1977; MA, Trinity Evangelical Divinity School, 1979; PhD, Purdue University, 1982.


Roush, Dean. Associate Professor, School of Music (1988). BFA, Ohio University, 1973; MM, Bowling Green State University, 1975; DMA, Ohio State University, 1985.

Roussel, Brigitte, Associate Professor and Coordinator of Undergraduate Teaching, Modern and Classical Languages and Literatures (1990). BA, University of La Sorbonne, 1976; MA, 1981; PhD, University of Kansas, 1991.

Saalmann, Dieter, Professor and Chairperson, Modern and Classical Languages and Literatures (1971). BA, Northwestern State University, 1963; MA, Johns Hopkins University, 1965; PhD, Washington University, 1970.

St. John, Richard W., Professor, School of Art and Design (1959). BFA, Kansas City Art Institute, 1967; MFA, Allured University, 1969.


Schmidt, John W., Assistant Professor, Biological Sciences (1993). BS, University of Massachusetts, 1981; PhD, University of Washington, 1987.

Schneider, Philip H., Professor, English (1967). BA, State University of New York College at Ononta, 1965; MFA, University of Iowa, 1967.


Scudder, Rosalind R., Professor, Communicative Disorders and Sciences (1972). BA, Wichita State University 1964; MA, 1972; PhD, 1978.

Sethi, Awanti P., Associate Professor, Finance, Real Estate, and Decision Sciences (1988). BS, Gauhati University, 1974; MS, Kanpur University, 1978; MSIA, Carnegie-Mellon University, 1982; PhD, 1983.

Shanahan, Kathleen E., Associate Professor, School of Art and Design (1983). BFA, University of Michigan, 1989; MFA, University of Arizona, 1974.

Sharp, Douglas, Associate Professor and Director, School of Accountancy
Wang, Han-Kurt, Associate Professor, Economics (1969). MBA, University of Oklahoma, 1961; PhD, Texas Christian University, 1969, CPA—Oklahoma.

Sheffield, James F., Associate Professor and Chairperson, Political Science (1974). BA, Mississippi State University, 1969; MS, Florida State University, 1970; PhD, 1973.


Smith, Bert L., Professor, Aerospace Engineering (1966). BSME, University of Missouri at Rolla, 1953; MSME, 1960; PhD, Kansas State University, 1966.

Smith, Nicholas E., Professor, School of Music, and Associate Dean, College of Fine Arts (1975). BA, Pittsburg State University, 1973; MM, Eastman School of Music, 1972; DMA 1980.

Smith, Patrick S., Associate Professor, School of Art and Design (1991). BA, University of Notre Dame, 1972; MA, University of North Carolina, 1975; PhD, Northwestern University, 1982.

Snyder, Jacqueline J., Associate Professor, American Studies, and Dean, Academic Outreach and Industrial Relations (1975). BA, College of St. Catherine, 1963; MA, Indiana University, 1966; DA, University of Oregon, 1971.


Sole, David E., Associate Professor and Chairperson, Philosophy (1974). BA, University of Pittsburgh, 1969; PhD, Johns Hopkins University, 1977.


Spilman, Richard S., Associate Professor and Director of Creative Writing, English (1992). BA, Illinois Wesleyan University, 1968; MA, San Francisco State University, 1972; PhD, University of New York-Binghamton, 1982.

Siek, James E., Associate Professor, Mechanical Engineering (1990). BS, University of Missouri at Rolla, 1980; MS, 1984; PhD, 1989.

Steinke, Elaine, Associate Professor, School of Nursing (1990). BSN, Wichita State University, 1979; MN, 1982; PhD, Kansas State University, 1987.


Sudermann, Frederick, Assistant Professor, Political Science, and Senior Advisor to the President (1964). BA, Wichita State University, 1958; MA, 1960.


Taher, Syed M., Associate Professor, Physics (1976). BS, Dacca University, 1964; MS, 1966; MA, California State University, Long Beach, 1970; PhD, Washington State University, 1974.

Talaty, Erach R., Professor, Chemistry (1969). BSc (honors), Nagpur University, India, 1948; PhD, 1954; PhD, Ohio State University, 1957.

Talia, Jorge E., Associate Professor, Mechanical Engineering (1985). BSc, Instituto Superior AB Filiztk, Argentina, 1969; MA, Case Western Reserve University, 1978; PhD, 1980.

Terrell, William T., Associate Professor, Economics (1967). BS, Oklahoma State University, 1958; MS, 1961; PhD, Vanderbilt University, 1970.

Teshome, Asrat, Associate Professor, Electrical and Computer Engineering (1988). BSc (EE), Addis Ababa University, 1965; BSc (Math), 1973; MS, Cornell University, 1976; PhD, 1980.


Tong, Benson, Assistant Professor, History (1998). BA, Science University, Malaysia, 1988; MA, University of Toledo, 1991; PhD, 1996.

Toops, Gary H., Associate Professor, Modern and Classical Languages and Literatures (1982). BA, McGill University, 1975; MA, University of British Columbia, 1979; MA, Yale University, 1980; MPhil, 1982; PhD, 1985.

Tran, Nicholas, Assistant Professor, Computer Science (1997). BS, University of Minnesota, 1987; PhD, University of California-Santa Barbara, 1992.


Vincent, Michael, Professor, Modern and Classical Languages and Literatures, and Dean, Graduate School (1986). BA, St. John's University, 1972; Diplôme de langue et de civilisation française, Université de Paris, 1973; MA, University of Wisconsin, 1974; PhD, 1979.


Webb, Samuel C., Professor, Economics (1966). BS, University of Missouri, 1957; MS, 1959; PhD, University of Kansas,
Westby, Carol E., Professor, Communicative Disorders and Sciences (1944). BA, Geneva College, 1963; MA, University of Iowa, 1968; PhD, 1971.


Williamson, L. Keith, Associate Professor, Elliott School of Communication and Director, Basic Oral Communication Program (1977). BA, Wichita State University, 1965; MTh, Southern Methodist University, 1968; PhD, Temple University, 1975.

Wimalasena, Kandagee, Associate Professor, Chemistry (1989). BS, University of Peradeniya, Sri Lanka, 1977; PhD, Georgia Institute of Technology, 1986.

Wong, John D., Associate Professor, Hugo Wall School of Urban and Public Affairs (1990). BBA, Wichita State University, 1982; MA, 1984; JD, Washburn University, 1986; PhD, Northeastern University, 1990.


Wright, David Wv, Assistant Professor, Sociology (1990). BA, Indiana University-Purdue University at Indianapolis, 1987; MA, Purdue University, 1989; PhD, 1992.


Yang, C. Charles, Assistant Professor, Mechanical Engineering (1997). BS, National Taiwan University, 1985; MS, 1987; PhD, Louisiana State University, 1993. Licensed Professional Engineer—Louisiana.


York, Paul K., Professor, Electrical and Computer Engineering (1989). BSEE, Texas A&M University, 1961; MSEE, University of New Mexico, 1965; PhD, Texas A&M University, 1967.

Zandler, Melvin F., Professor, Chemistry (1966). BA, Friends University, 1960; MS, Wichita State University, 1963; PhD, Arizona State University, 1965.


Zoller, Peter T., Associate Professor, English, and Associate Vice President, Academic Affairs (1973). BA, University of San Francisco, 1965; MA, Claremont Graduate School, 1966; PhD, 1970.

Associate Membership


Ackerman, Paul D., Assistant Professor and Assistant Chairperson, Psychology (1968). BA, University of Kansas, 1964; MA, 1966; PhD, 1968.


Babich, Judith, Associate Professor, School of Performing Arts (1984). BA, Edgefield College, 1974; MA, University of Cincinnati, 1975; PhD, University of California, 1981.

Bagdett, Barry T., Assistant Professor, School of Art and Design (1953). BFA, Virginia Commonwealth University-Richmond, 1985; MFA, Syracuse University, 1999.


Bees, Julie L., Associate Professor, School of Music (1966). BM, Peabody Conservatory, 1974; DMA, University of Colorado, Boulder, 1982.


Carpenter, John P., Assistant Professor, Anthropology (1998). BA, University of Arizona, 1979; MA, New Mexico State University, 1992; PhD, University of Arizona, 1996.

Cavarozzi, Joyce P., Associate Professor, School of Performing Arts (1963). BSE, Ohio University, 1953; MA, Ohio State University, 1963.


Chuang, Ta-Tao, Assistant Professor, Finance, Real Estate, and Decision Sciences (1998). BS, National Chung-Hsing University, Taiwan, 1982; MBA, National Chiao Tung University, Taiwan, 1988; MS, Georgia State University, 1993; PhD, Texas Tech University, 1998.

Cinoski, Kenneth N., Associate Professor, Political Science (1968). BA, University of Kansas, 1961; MA, 1963; PhD, University of Washington, 1971.

Close, Dan E., Assistant Professor, Elliott School of Communication (1990). BA, Wichita State University, 1981; MA, 1983.

Conrad, Mary Elaine, Associate Professor and Chairperson, Medical Technology (1980). BS, Kansas Newman College, 1957; MS, Kansas State University, 1974; PhD, 1991.

Deskins, James, Professor, School of Accountancy (1985). BBA, University of Oklahoma, 1960; MBA, 1961; PhD, University of Texas at Austin, 1965. CPA—Oklahoma and Texas.

Dietler, Donald A., Associate Professor, Biological Sciences (1963). BA, University of Louisville, 1952; MS, 1958; PhD, University of Kansas, 1966.

Eggers, Jill A., Assistant Professor, School of Art and Design (1993). BFA, Western Michigan University, 1983; MFA, Yale University School of Art, 1991.

Fowler, Thomas A., Assistant Professor, School of Music (1979). BME, Wichita State University, 1968; MME, 1979.

Fox, I. Raymond, Professor, Biological Sciences (1973). BA, University of California, Santa Barbara, 1963; PhD, 1967.

Gladhart, Stephen C., Assistant Professor, Public Health Sciences, and Assistant Dean, School of Health Sciences and College of Health Professions (1974). BA, Wichita State University, 1969; MA, 1972; EdD, University of Kansas, 1977.

Hackett, Donald W., Associate Professor, Marketing and Entrepreneurship, and Director, Center for Entrepreneurship (1973). BBA, University of Oklahoma, 1967; MBA, 1970; DBA, 1974.

Hamilton, Cheryl M., Assistant Professor, School of Art and Design (1993). BFA, University of Nebraska-Lincoln, 1979; MS, University of Tennessee-Knoxville, 1977.


Hogan, Linda, Assistant Professor, Medical Technology (1974). BA, Emporia State University, 1965; MT (ASCP), 1965; BB (ASCP), 1972; MEd, Wichita State University, 1977.


Im, Kyung So, Assistant Professor, Economics (1998). BA, Sung Kyun Kwan University, 1981; MA, Michigan State University, 1993; PhD, 1994.

Inks, Lawrence W., Assistant Professor, Management (1996). BA, Purdue University, 1983; MA, Ohio State University, 1985; PhD, 1992.


Koppenhaver, John H., Associate Professor, Modern and Classical Languages and Literatures, and Executive Director, International Education (1966, 1972). BA, Wichita State University, 1964; MA, University of Iowa, 1966; PhD, 1974.


Larson, Gary, Assistant Professor, Elliott School of Communication (1997). BA, University of Minnesota, 1976; MA, North Dakota State University, 1991; PhD, University of Minnesota, 1997.

Larry, Marvis, Assistant Professor and Chairperson, Physician Assistant (1987). PA, Wichita State University, 1975; BHS, 1979; MH, 1986; PhD, Kansas State University, 1991.

Lause, Timothy W., Assistant Professor, Hugo Wall School of Urban and Public Affairs, Social Work Program (1978). BS, Central Missouri State University, 1973; MA, 1974; PhD, St. Louis University, 1981.

Lewandoski, Cathleen A., Assistant Professor and Director, Hugo Wall School of Urban and Public Affairs, Social Work Program (1985). BA, Blackburn College, 1973; MSW, St. Louis University, 1981; PhD, University of Kansas, 1997.

Lewis, Rhonda, Assistant Professor, Psychology (1996). BA, Wichita State University, 1991; MA, University of Kansas, 1993; MPH, 1996; PhD, 1996.

Li, Qing, Assistant Professor, Economics (1995). BA, East China Normal University, 1990; MA, University of Houston, 1992; PhD, 1995.

Madhavan, Viswanathan, Assistant Professor, Industrial and Manufacturing Engineering (1996). BTech, Indian Institute of Technology, Madras, India, 1991; MS, Purdue University, 1993; PhD, 1996.


McCullam, Shirley, Assistant Professor, School of Art and Design (1975). BFA, University of Texas, 1968; MFA, North Texas State University, 1974.

Mckinney, James W., Associate Professor, Political Science (1966). BA, Willamette University, 1958; MA, University of Oregon, 1964; PhD, 1966.


Pendse, Ravindra, Assistant Professor, Electrical and Computer Engineering (1994). BSEE, Osmania University, India, 1962; MSEE, Wichita State University, 1985; PhD, 1994.


Richardson, William H., Associate Professor and Associate Chairperson, Mathematics and Statistics (1966). AB, California State University, Chico, 1959; MS, Iowa State University, 1961.

Rogers, Michael E., Assistant Professor, Kinesiology and Sport Studies (1998). BS, Mount Union College, 1991; PhD, Kent State University, 1996.

Rogers, Ben F., Associate Professor, Philosophy (1999). BA, University of Tennessee, 1958; MAT, Vanderbilt University, 1961; MA, Indiana University, 1966; PhD, 1970.


Scott, Lisa, Assistant Professor, Communicative Disorders and Sciences (1997). BS, University of Nebraska-Lincoln, 1987; MS, 1988; PhD, 1997.


Shawver, Martha M., Assistant Professor, Nursing, and Dean, Undergraduate Studies (1975). BSN, Eastern Mennonite College, 1965; MA in Nursing, University of Iowa, 1974; PhD, University of Kansas, 1985.

Sherman, Twyla G., Assistant Professor, Curriculum and Instruction (1965).
Shlaes, Carole, Assistant Professor, Industrial and Manufacturing Engineering (1995). BS, Iowa State University, 1980; JD, Hamline University School of Law, 1985; MS, Portland State University, 1992, PhD, Arizona State University, 1995.

Starkey, Linda, Assistant Professor, School of Music (1993). BM, University of Kansas, 1968; MM, Fort Hays State University, 1972; MA, Wichita State University, 1990.


Thompson, Johnnie, Assistant Professor, Curriculum and Instruction (1993). BS, University of Kansas, 1968; MS, Central Missouri State University, 1973; EdD, Kansas State University, 1992.

Torbenson, Craig L., Associate Professor, History (1989). BS, Brigham Young University, 1982; MA, 1985; PhD, University of Oklahoma, 1992.

Town, Robert L., Associate Professor, School of Music (1965). BM, Eastman School of Music, 1960; MM, Syracuse University, 1962.

Turk, Randall L., Assistant Professor, Administration, Counseling, Educational, and School Psychology (1994). BS, Butler University, 1965; MEd, Seattle University, 1988; PhD, Texas A&M University, 1991.

Vickery, W. Dean, Assistant Professor, Management (1971). BA, Wichita State University, 1954; MS, 1968.

Wells, Candace, Assistant Professor, Curriculum and Instruction (1980). BA, University of Chicago, 1971; MA, University of Missouri, 1973; EdD, Oklahoma State University, 1980.

Widener, Russell D., Assistant Professor, School of Music; and Coordinator, General Education Program (1981). BM, Baylor University, 1968; MM, Catholic University, 1972.


Wine, Thomas R., Associate Professor, School of Music (1995). BAME, Alderson-Broaddus College, 1980; MME, Duquesne University, 1982; PhD, Florida State University, 1994.


Yeolis, Catherine C., Assistant Professor, Curriculum and Instruction (1979). BS, Michigan State University, 1963; MS, Purdue University, 1973; PhD, 1978.

Youngman, Arthur L., Assistant Professor, Biological Sciences (1965). BA, Montana State University, 1959; MS, Case Western Reserve University, 1961; PhD, University of Texas, 1965.
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 usually are 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/clinical, with the hours of practicum/clinical per week given in front of the letter (6-8P means six to eight hours of practicum/clinical per week).

Abbreviations

The following abbreviations of academic departments and areas are used in references to courses offered by those departments.

Acct. Accounting
AE Aerospace engineering
Anthr. Anthropology
Art E. Art education
Art F. Art and design foundation
Art G. Graphic design
Art H. Art history
Art S. Studio arts
B. Law. Business law
Biol. Biological sciences
CDS Communication disorders and sciences
CESP Counseling, educational, and school psychology
Chem. Chemistry
CL Curriculum and instruction
CJ Criminal justice
Comm. Communication
CS Computer science
Dance. Dance
DH Dental hygiene
DS Decision sciences
EAS Educational administration and supervision
ECE Economics
EI Electrical and computer engineering
Engl. English language and literature
Engr. General engineering
Entre. Entrepreneurship
Fin. Finance
Fren. French
Geog. Geography
Geol. Geology
German. German
Geron. Gerontology
Hist. History
Hons. Honors Program
HS Health sciences
HRM Human Resource Management
IE Industrial engineering
KSS Kinesiology and sport studies
LAS-I Liberal arts interdisciplinary
Latin Latin
Legal Legal assistant
Ling. Linguistics
Math. Mathematics
ME Mechanical engineering
Med. T. Medical technology
Mfg. E. Manufacturing engineering
Mgmt. Management
Min. S. Minority studies
Mkt. Marketing
Mus. A. Applied music
Mus. C. Musicology-composition
Mus. E. Music education
Mus. P. Music performance
Nurs. Nursing
PA Physician assistant
P. Adm. Public administration
Phil. Philosophy
Phys. Physics
Pol. S. Political science
Psy. Psychology
PT Physical therapy
PTA Physical therapist assistant
RE Real estate
SUPA Hugo Wall School of Urban and Public Affairs
Thea. Theatre
Wom. S. Women's studies
Map Legend
Facilities are identified with a letter corresponding to their location on the map.

Buildings
- Abilene Library (D)
- Abilene Hall (C)
- Beech Wind Tunnel (D)
- Blake Hall (B)
- Brennan Hall I (C)
- Brennan Hall II (C)
- Brennan Hall III (C)
- CAC Theater (C)
- Central Energy Plant (D)
- Cessna Stadium (C)
- Child Development Center (A)
- Clinton Hall (C)
- Communications Building (B)
- Corbin Education Center (D)
- Credit Union (D)
- Devlin Hall (C)
- Duerksen Fine Arts Center (B)
- Eck Stadium (E)
- Edwin A. Ulrich Museum of Art (B)
- Elliott Hall (C)
- Engineering Building (D)
- Fairmount Towers Commons (A)
- Fairmount Towers North (A)
- Fairmount Towers South (A)
- Fiske Hall (B)
- Gaddis Physical Plant Complex (D, E)
- Gardner Plaza (C)
- Golf Course Maintenance Building (E)
- Golf Pro Shop (F)
- Grace Memorial Chapel (C)
- Grace Wilkie Hall (D)
- Greenhouse (D)
- Henrion Hall (C)
- Herrick Center (D)
- Heskett Center Storage (D)
- Housing Maintenance Shop (A)
- Hubbard Hall (C)
- Human Resources Center (C)
- Intensive English Language Center (A)
- Jabara Hall (C)
- Jardine Hall (C)
- Levitt Arena (B)
- Lindquist Hall (C)
- Lutheran Student Center (D)
- Marcus Center for Continuing Education (F)
- Math-Physics Building (C)
- McKinley Hall (B)
- McKnight Art Center (B)
- Media Resources Center (D)
- Memorial "70 (B)
- Metropolitan Complex (inset)
- Morrison Hall (C)
- National Institute for Aviation Research (E)
- Neff Hall (C)
- Newman Center (D)
- Original Pizza Hut (D)
- Plaza of Heroines (C)
- Police Department (D)
- President's Residence (B)
- Publications/Printing (D)
- Rhatigan Student Center (C)
- Sheldon Coleman Tennis Complex (C)
- Traditions Cafe (F)

Tyler Field (E)
Visual Communications (D)
Wallace Hall (D)
Warehouse (E)
Wheatshocker Apartments (E)
Wiedemann Hall (B)
Wilkinson Stadium (D)
Wilber Auditorium (B)
Woodman Alumni Center (F)

Fraternities
- Beta Theta Pi (A)
- Delta Upsilon (C)
- Kappa Sigma (D)
- Phi Delta Theta (E)
- Pi Kappa Alpha (C)
- Sigma Alpha Epsilon (B)
- Sigma Phi Epsilon (B)

Sororities
- Alpha Phi (D)
- Delta Delta Delta (B)
- Delta Gamma (D)
- Delta Gamma (D)
- Gamma Phi Beta (D)

Wichita State has an ongoing program to provide people with disabilities full access to all buildings; however, some barriers still exist. For information regarding any campus building's accessibility to the disabled, call the Resource Center for Independence, (316) 978-3309.

Visitors to the Wichita State campus should obtain temporary parking permits from the Police Department, open 24 hours a day.
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**Abbreviations of departments**

- Administration
- Counseling
- Educational
- School

**Abbreviations of departments**

- Ablah Library
- Academic officers
- Academic outreach
- Access to records
- Accounting
- Accident or injury
- Accreditation and associations
- University

**Administrations**

- Administration, Counseling, Educational, and School Psychology

**Administrative**

- Administration of Justice, See Criminal Justice
- Administrative Officers
- Administrative Withdrawal
- Admission to Graduate Study
- Conditional Status
- Degree Program Admission
- Full Standing
- International Applicants
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- Nondegree Admission Categories
- Nondegree, Category A
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- Graduate Credit for Seniors
- Advisors
- Aerospace Engineering
- Anthropology
- Application Instructions
- Application Requirements
- Applied Communication, Certificate in
- Art and Design, School of
- Art Education
- Art History
- Graphic Design
- Studio Art
- Art Museum, See Edwin A. Ulrich Museum of Art
- Assistantships
- Audit Enrollments
- Aviation Research, National Institute for

**Biology**

- Biological Sciences
- Board of Regents, Kansas
- Business, W. Frank Barton School of
  - Accounting
  - Business Economics
  - Business Law
  - Decision Sciences
  - Economics
  - Entrepreneurship

**Degrees**

- Degree Program Regulations
- Commencement
- Committee Structure
- Credits Required
- Degree Card Filing
- Examinations
- Extension, Workshop, and Correspondence Credit, and Credit by Examination
- Language or Tool Requirements
- Plan of Study
- Thesis or Research Credit
- Thesis Preparation
- Time Limits
- Transfer of Credit

**Economics**

- Economic Development and Business
  - Research, Center for
- Economics

**Education, College of**

- Administration, Counseling, Educational, and School Psychology
- Communication Disorders
- and Sciences
- Curriculum and Instruction
- Doctoral Degrees
- Educational Administration and Supervision
- Kinesiology and Sport Studies
- Specialist in Education
- Educational Administration and Supervision
- Doctor of Education
- Master of Education
- Educational Psychology
- Master of Education
- Specialist in Education
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- Engineering, College of
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