The Catalog of the University of Texas at Austin

The catalog of the University comprises four issues: General Information, the Undergraduate Catalog, the Graduate Catalog, and the Law School Catalog. The Undergraduate Catalog is published in August of even-numbered years; the Graduate Catalog is published in August of odd-numbered years; the Law School Catalog is published in January of even-numbered years. These issues contain regulations and degree requirements that apply to undergraduates, graduate students, and students in the School of Law. Regulations are valid only for the period given on the title page; for an explanation of the period for which degree requirements are valid, see “Graduation under a Particular Catalog” in each issue. The list of courses to be offered in the following sessions is preliminary and is superseded by the Course Schedule, published each semester and summer session.

General Information, published every August, contains current and historical information about the University and regulations that apply to all students during the academic year given on the title page. General Information is meant to be used along with each of the other issues; each student must be familiar with the regulations given there and with those given in the issue that covers his or her degree program.

The catalog of the University is the document of authority for all students. Any academic unit may issue additional or more specific information that is consistent with approved policy. The information in the catalog supersedes that issued by any other unit if there is a conflict between the two. The University reserves the right to change the requirements given in the catalog at any time.

Printed catalogs may be ordered by writing to The University of Texas at Austin, Office of the Registrar / Catalogs, P O Box 7216, Austin TX 78713-7216 or by calling (512) 475-7555. Catalogs are also published on the World Wide Web at http://www.utexas.edu/student/registrar/catalogs/.

Assistance in obtaining information about the University, including costs, refund policies, withdrawal, academic programs, the faculty, accreditation, and facilities and services for disabled persons, is available from Theodore E. Pfeifer, Registrar, at (512) 475-7510 and at The University of Texas at Austin, Office of the Registrar, P O Box 7216, Austin TX 78713-7216.

Cover: The Neural and Molecular Science Building, completed in spring 2005. The background photograph is of limestone, which is indigenous to the Austin area and has been used in the construction of many University buildings.
The benefits of education and of useful knowledge, generally diffused through a community, are essential to the preservation of a free government.

*Sam Houston*

Cultivated mind is the guardian genius of Democracy, and while guided and controlled by virtue, the noblest attribute of man. It is the only dictator that freemen acknowledge, and the only security which freemen desire.

*Mirabeau B. Lamar*

Where liberty has arisen, learning must be cherished—or liberty itself becomes a fragile thing.

*Lyndon B. Johnson*
Officers of Administration

The University of Texas at Austin

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1. Appointment effective September 12, 2005.
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Mary Ann Rankin, PhD, Dean, College of Natural Sciences
Dolores Sands, PhD, RN, Dean, School of Nursing
Steven W. Leslie, PhD, Dean, College of Pharmacy
Bobby R. Inman, Admiral USN (Ret), Interim Dean, Lyndon B. Johnson School of Public Affairs
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Francie A. Frederick, Counsel and Secretary

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Robert A. Estrada, Fort Worth
Woody L. Hunt, El Paso

Terms scheduled to expire February 1, 2007
Rita C. Clements, Dallas
Judith L. Craven, MD, Houston
Cyndi Taylor Krier, San Antonio

Terms scheduled to expire February 1, 2009
John W. Barnhill Jr., Brenham
H. Scott Caven Jr., Houston
James R. Huffines, Austin

Term scheduled to expire February 1, 2011
Robert B. Rowling, Dallas

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2. Each regent’s term expires when a successor has been appointed and qualified and has taken the oath of office.
The following list includes some University offices of general interest. A complete directory of offices on campus is published at http://directory.utexas.edu/.

**ACADEMIC CALENDAR**

The academic calendar is published in *General Information*, in the *Course Schedule*, and at http://www.utexas.edu/student/registrar/cals.html. Copies are also available from the Office of the Registrar, Main Building 1, (512) 475-7607. A recording of the calendar may be heard at (512) 475-7591.

**ADMISSION**

Graduate and International Admissions Center, 2608 Whitis Avenue, (512) 475-7390, fax (512) 475-7395
http://www.utexas.edu/student/giac/

**CATALOGS AND COURSE SCHEDULES**

Catalogs and *Course Schedules* are published at the registrar's Web site, http://www.utexas.edu/student/registrar/. Printed catalogs may be purchased at campus-area bookstores or by mail from the Office of the Registrar.

**FELLOWSHIPS, TEACHING ASSISTANTSHIPS, AND RESEARCH ASSISTANTSHIPS**

Information and application forms for University fellowships, teaching assistantships, and research assistantships are available from the graduate adviser in each graduate program. General information on University fellowships, and additional information on fellowships funded by sources external to the University, is available from the fellowship director in the Office of Graduate Studies, Main Building 101, (512) 232-3603.

**FINANCIAL ASSISTANCE**

Office of Student Financial Services, Student Services Building 3.214, (512) 475-6282
http://www.utexas.edu/student/finaid/
HOUSING

Information and application forms for University housing units are available at http://www.utexas.edu/student/housing/. A partial list of privately owned housing is also available through this site. Information is also available from the division at 200 West Dean Keeton Street (KIN), (512) 471-3136, fax (512) 471-9101

INTERNATIONAL STUDENTS

International Office, 600 West 24th Street (WOH), (512) 471-1211, fax (512) 471-8848
http://www.utexas.edu/international/

MEDICAL SERVICES

University Health Services, Student Services Building 2.212, (512) 471-4955
http://www.utexas.edu/student/health/

REGISTRATION INFORMATION

Registration Supervision, Main Building 16, (512) 475-7656, fax (512) 475-7515
http://www.utexas.edu/student/registrar/registration/

SERVICES FOR STUDENTS WITH DISABILITIES

Office of the Dean of Students, Student Services Building 4.104, (512) 471-6259, TYY (512) 471-4641, fax (512) 475-7730
http://deanofstudents.utexas.edu/ssd/

TRANSCRIPTS

Office of the Registrar, Main Building 1, (512) 475-7689, fax (512) 475-7515
http://www.utexas.edu/student/registrar/transcripts/

ADDING AND DROPPING COURSES, QUESTIONS ABOUT DEGREE PROGRAMS, INFORMATION, AND FORMS

Office of Graduate Studies, Main Building 101, (512) 471-4511
http://www.utexas.edu/ogs/
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1. Graduate Study

The University of Texas at Austin, established in 1883, is a major research institution. It is the largest member of The University of Texas System. The University has grown from one building, two departments, eight faculty members, and 221 students on a forty-acre tract to a campus of more than 350 acres, with more than 110 buildings. The enrollment is about fifty thousand.

The faculty includes Pulitzer Prize and Nobel Prize winners and members of the National Academy of Sciences, the National Academy of Engineering, and the American Academy of Arts and Sciences. The University awards one of the largest number of doctoral degrees in the United States and is one of three southwestern members of the Association of American Universities.

The Graduate School (which does not include the School of Law) was established in 1909. More than eleven thousand graduate students are enrolled, and about seven hundred doctoral degrees and twenty-eight hundred master's degrees are awarded each year.

The administration of the Graduate School is the responsibility of the vice provost and dean of graduate studies. Graduate degrees are available in about a hundred fields. Each academic area that offers a graduate degree has a Graduate Studies Committee, a group consisting of all the assistant, associate, and full professors who are active in that graduate degree program. The Graduate Studies Committee recommends students for admission to the program, sets program-specific requirements for the graduate degrees in that area, and recommends students for admission to candidacy for degrees. Graduate education is the responsibility of the members of Graduate Studies Committees. One member serves as the graduate adviser to register and advise all graduate students, to maintain records, and to represent the Graduate School in matters pertaining to graduate work in that area.

STATEMENT ON EQUAL EDUCATIONAL OPPORTUNITY

The University of Texas at Austin is committed to an educational and working environment that provides equal opportunity to all members of the University community. In accordance with federal and state law, the University prohibits unlawful discrimination on the basis of race, color, religion, national origin, gender, age, disability, citizenship, and veteran status. Discrimination on the basis of sexual orientation is also prohibited pursuant to University policy.

TITLE IX/ADA/504 COORDINATORS

Federal law prohibits discrimination on the basis of gender (Title IX of the Education Amendments of 1972) and disability (Section 504 of the Rehabilitation Act of 1973 and Title II of the Americans with Disabilities Act of 1990). The University has designated the following persons as Coordinators to monitor compliance with these statutes and to resolve complaints of discrimination based on gender or disability.
Disability (Section 504/ADA)

For students and employees: Linda Millstone, Deputy to the Vice President for Employee and Campus Services and Director of Equal Opportunity Services, NOA 4.302 (101 East 27th Street), (512) 471-1849

Gender (Title IX)

For students: Teresa Brett, Associate Vice President for Student Affairs and Dean of Students, SSB 4.104 (100-B West Dean Keeton Street), (512) 471-1201

For employees: Linda Millstone, Deputy to the Vice President for Employee and Campus Services and Director of Equal Opportunity Services, NOA 4.302 (101 East 27th Street), (512) 471-1849

ACCREDITATION

The University of Texas at Austin is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (1866 Southern Lane, Decatur, Georgia 30033-4033, telephone number (404) 679-4500) to award bachelor's, master's, and doctoral degrees.

THE MISSION OF THE UNIVERSITY

The mission of the University is to achieve excellence in the interrelated areas of undergraduate education, graduate education, research, and public service. The University provides superior and comprehensive educational opportunities at the baccalaureate through doctoral and special professional educational levels. The University contributes to the advancement of society through research, creative activity, scholarly inquiry, and the development of new knowledge. The University preserves and promotes the arts, benefits the state's economy, serves the citizens through public programs, and provides other public service.

THE NATURE AND PURPOSE OF GRADUATE WORK

Graduate work at the University is divided into disciplines. These are normally associated with departments; they may, however, be broader in scope, involving courses and research in several departments. The candidate for an advanced degree presents work done in a chosen major area, but usually he or she is also expected to have done supporting work on an advanced level (upper-division or graduate) in one or more relevant areas. There are three components of graduate study: coursework, independent study, and independent scholarly research leading to a report, thesis, recital, dissertation, or treatise. In some areas, internships, field studies, and other professional experiences may also be an integral part of the program. The proportion of each type of study varies according to the previous training of the student and the nature of the major area.

The objective of graduate study is to develop the intellectual breadth and to provide the specialized training necessary to a career in teaching, research, the arts, or the professions. Emphasis is placed on the knowledge, methods, and skills needed for scholarly teaching, original research and problem solving, intellectual leadership, creative expression, and other modes of achievement in the student's discipline.
GRADUATE DEGREES
The Graduate School offers the following degrees.
Master of Arts ................................................................. MA
Master of Architecture ...................................................... MArch
Master of Business Administration ...................................... MBA
Master of Education .......................................................... MEd
Master of Fine Arts .......................................................... MFA
Master of Landscape Architecture ....................................... MLA
Master of Music ............................................................... MMus
Master in Professional Accounting ...................................... MPA
Master of Public Affairs ..................................................... MPAff
Master of Science in Applied Physics .................................... MSApplPhy
Master of Science in Architectural Studies ............................. MSArchSt
Master of Science in Community and Regional Planning ............ MSCRP
Master of Science in Computational and Applied Mathematics ....... MSCAM
Master of Science in Computer Sciences ................................ MSCS
Master of Science in Economics .......................................... MSEcon
Master of Science in Engineering ......................................... MSE
Master of Science in Geological Sciences ................................ MSGeoSci
Master of Science in Historic Preservation ............................. MSHP
Master of Science in Information Studies ............................... MSInfoStds
Master of Science in Marine Science ..................................... MSMarineSci
Master of Science in Nursing ................................................ MSN
Master of Science in Pharmacy ............................................ MSPharm
Master of Science in Science and Technology Commercialization .... MSSTTC
Master of Science in Social Work ......................................... MSSW
Master of Science in Statistics ............................................. MSStat
Master of Science in Sustainable Design ................................. MSsSD
Master of Science in Textile and Apparel Technology ................. MSSTAT1
Master of Science in Urban Design ....................................... MSUD
Doctor of Audiology ........................................................... AuD1
Doctor of Education .......................................................... EdD
Doctor of Musical Arts ....................................................... DMA
Doctor of Philosophy .......................................................... PhD

FIELDS OF STUDY
Graduate degrees are offered in the following fields. A complete list of fields in which graduate courses are taught is given in the appendix.

School of Architecture
Architecture ................................................................. MArch, PhD
Architectural history ......................................................... MA
Architectural studies ......................................................... MSArchSt

Community and regional planning ....................................... MSCRIP, PhD
Historic preservation ....................................................... MSHP
Landscape architecture ..................................................... MLA

1. Final approval of this degree is pending.
Sustainable design .................. MSSD
Urban design ........................ MSUD

Red McCombs School of Business
Business administration ........ MBA
Accounting .......................... MPA, PhD
Finance ............................... PhD
Management .......................... PhD
Management science
and information systems ........... PhD
Radio-television-film ............... MA, MFA, PhD

College of Communication
Advertising ......................... MA, PhD
Communication sciences
and disorders ...................... MA, AuD\textsuperscript{2}, PhD
Communication studies .......... MA, PhD
Journalism ......................... MA, PhD
Radio-television-film ............ MA, MFA, PhD

College of Education
Curriculum and
instruction ......................... MA, MEd, EdD, PhD
Educational administration ..... MEd, EdD, PhD
Educational psychology ......... MA, MEd, PhD
Foreign language education .... MA, PhD
Health education .................. MA, MEd, EdD, PhD
Kinesiology ........................ MA, MEd, EdD, PhD
Mathematics education .......... MA, MEd, PhD
Science education ............... MA, MEd, EdD, PhD
Special education ................ MA, MEd, EdD, PhD

College of Engineering
Aerospace engineering .......... MSE, PhD
Architectural engineering ...... MSE
Biomedical engineering ........ MSE, PhD
Chemical engineering .......... MSE, PhD
Civil engineering ............... MSE, PhD
Electrical and computer
engineering ........................ MSE, PhD
Energy and mineral resources .. MA
Engineering management ....... MSE
Engineering mechanics ......... MSE, PhD
Environmental and water resources
engineering ....................... MSE
Materials science and engineering ... MSE, PhD
Mechanical engineering .......... MSE, PhD
Operations research
and industrial engineering ....... MSE, PhD
Petroleum engineering .......... MSE, PhD

College of Fine Arts
Art education ........................ MA, PhD
Art history .......................... MA, PhD
Dance ................................ MFA
Design ................................. MFA
Music ................................. MMus, DMA, PhD
Studio art ............................ MFA
Theatre ............................... MA, MFA, PhD

John A. and Katherine G. Jackson
School of Geosciences\textsuperscript{3}
Geological sciences ............. MA, MSGeoSci, PhD

School of Information
Information studies ............... MSInfoStds, PhD

College of Liberal Arts
American studies .................. MA, PhD
Anthropology ....................... MA, PhD
Arabic studies ...................... MA, PhD
Asian cultures and languages .. MA, PhD
Asian studies ...................... MA
Classics .............................. MA, PhD
Comparative literature ........ MA, PhD
Economics .......................... MA, MSEcon, PhD
English .............................. MA, PhD
French ............................... MA, PhD
Geography ........................ MA, PhD
Germanic studies ................ MA, PhD
Government ......................... MA, PhD
Hebrew studies .................... MA, PhD
History .............................. MA, PhD
Latin American studies ......... MA, PhD
Linguistics ........................ MA, PhD
Mexican American studies\textsuperscript{4} ....... MA

\textsuperscript{2} Final approval of the degree in audiology is pending.

\textsuperscript{3} Final approval is pending to establish the Jackson School as a campus-level unit rather than a part of the College of Natural Sciences.

\textsuperscript{4} Final approval of the degree program in Mexican American studies is pending.
AD HOC INTERDISCIPLINARY DOCTORAL PROGRAM

In addition to established interdisciplinary academic programs, students may propose to construct an ad hoc interdisciplinary doctoral program that draws on the intellectual resources of several graduate programs and involves faculty members from more than one college or school. This procedure allows students who have been admitted to a graduate program to design a course of study that does not fit into an existing degree plan. Each program must be approved by the graduate dean.

Students interested in the ad hoc interdisciplinary doctoral program should consult the graduate adviser of the program to which they are admitted or to which they plan to apply. Additional information is available from the Office of Graduate Studies and at http://www.utexas.edu/ogs/degree_programs/adhoc/.

DUAL DEGREE PROGRAMS

Dual degree programs are structured so that a student can pursue graduate work at the University in two fields and fulfill the requirements of two degrees; in programs leading to two master’s degrees, the degrees are awarded simultaneously. To enter a

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5. Final approval of the degree in textile and apparel technology is pending.
dual program, the student must be accepted by both of the individual programs. Students who wish to enter a dual program that involves the JD degree should contact the Admissions Office in the School of Law first. Dual programs are offered in the following fields.

<table>
<thead>
<tr>
<th>Dual Program Pattern</th>
<th>Degree(s) Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advertising/Business administration</td>
<td>MA/MBA</td>
</tr>
<tr>
<td>Advertising/Public affairs</td>
<td>MA/MPAff</td>
</tr>
<tr>
<td>Asian studies/Public affairs</td>
<td>MA/MPAff</td>
</tr>
<tr>
<td>Asian studies/Business administration</td>
<td>MA/MPAff</td>
</tr>
<tr>
<td>Communication studies/Business administration</td>
<td>MA/MBA</td>
</tr>
<tr>
<td>Communication studies/Public affair</td>
<td>MA/MA</td>
</tr>
<tr>
<td>Communication studies/Public affairs</td>
<td>MA/MPAff</td>
</tr>
<tr>
<td>Community and regional planning/Geography</td>
<td>MSCRIP/PhD</td>
</tr>
<tr>
<td>Journalism/Business administration</td>
<td>MA/MBA</td>
</tr>
<tr>
<td>Journalism/Latin American studies</td>
<td>MA/MA</td>
</tr>
<tr>
<td>Journalism/Middle Eastern studies</td>
<td>MA/MA</td>
</tr>
<tr>
<td>Journalism/Public affairs</td>
<td>MA/MPAff</td>
</tr>
<tr>
<td>Latin American studies/Community and regional planning</td>
<td>MA/MSCRP</td>
</tr>
<tr>
<td>Latin American studies/Public affairs</td>
<td>MA/MPAff</td>
</tr>
<tr>
<td>Latin American studies/Business administration</td>
<td>MA/MBA</td>
</tr>
<tr>
<td>Latin American studies/Law</td>
<td>MA/JD</td>
</tr>
<tr>
<td>Law/Business administration</td>
<td>JD/MBA</td>
</tr>
<tr>
<td>Law/Middle Eastern studies</td>
<td>JD/MA</td>
</tr>
<tr>
<td>Law/Russian, East European, and Eurasian studies</td>
<td>JD/MA</td>
</tr>
<tr>
<td>Law/Public affairs</td>
<td>JD/MPAff</td>
</tr>
<tr>
<td>Law/Community and regional planning</td>
<td>JD/MSCRP</td>
</tr>
<tr>
<td>Mechanical engineering/Business administration</td>
<td>MSE/MA</td>
</tr>
<tr>
<td>Middle Eastern studies/Business administration</td>
<td>MA/MBA</td>
</tr>
<tr>
<td>Middle Eastern studies/Information studies</td>
<td>MA/MSInfoStds</td>
</tr>
<tr>
<td>Middle Eastern studies/Public affairs</td>
<td>MA/MPAff</td>
</tr>
<tr>
<td>Nursing/Business administration</td>
<td>MSN/MA</td>
</tr>
<tr>
<td>Public affairs/Business administration</td>
<td>MPAff/MBA</td>
</tr>
<tr>
<td>Public affairs/Engineering</td>
<td>MPAff/MSE</td>
</tr>
<tr>
<td>Radio-television-film/Business administration</td>
<td>MA/MBA</td>
</tr>
<tr>
<td>Radio-television-film/Latin American studies</td>
<td>MA/MA</td>
</tr>
<tr>
<td>Radio-television-film/Middle Eastern studies</td>
<td>MA/MA</td>
</tr>
<tr>
<td>Radio-television-film/Public affairs</td>
<td>MA/MPAff</td>
</tr>
<tr>
<td>Radio-television-film/Russian, East European, and Eurasian studies</td>
<td>MA/MA</td>
</tr>
<tr>
<td>Russian, East European, and Eurasian studies/Business administration</td>
<td>MA/MBA</td>
</tr>
<tr>
<td>Russian, East European, and Eurasian studies/Public affairs</td>
<td>MA/MPAff</td>
</tr>
</tbody>
</table>
Dual degree programs with other institutions. The dual degree programs listed above lead to two University degrees. Dual degree programs in biomedical engineering and in cell and molecular biology allow students to pursue a Doctor of Philosophy degree from the University and a Doctor of Medicine degree from the University of Texas Medical Branch at Galveston; a similar program in neuroscience is pending final approval. A dual degree program in business administration allows students to pursue a Master of Business Administration degree from the University and the degree of Maestría en Administracion from the Instituto Tecnológico y de Estudios Superiores de Monterrey.

COMBINED JD/PHD PROGRAMS
The School of Law and the Graduate School offer programs leading to the Doctor of Jurisprudence and the Doctor of Philosophy with a major in government or philosophy. These programs are designed to prepare students for academic careers in law or the cognate discipline or both. By counting law courses toward the PhD and courses in the cognate discipline toward the JD, students can save up to a year of coursework. The law school provides financial aid to students at the dissertation stage of the program. More information on the JD/PhD in government is available at (512) 471-5121 and on the JD/PhD in philosophy, at http://www.utexas.edu/law/academics/curriculum/philosophy/.

MASTER’S AND DOCTORAL PORTFOLIO PROGRAMS
The goal of master’s and doctoral portfolio programs is to recognize and encourage cross-disciplinary research and scholarly activity. A portfolio program usually consists of four thematically related graduate courses and a research paper or presentation; for master’s portfolio programs, a practical experience may replace the paper or presentation. The portfolio must include courses offered by at least two graduate programs other than the student’s major program. Portfolio programs are approved by the Graduate School. Although the certification requirements of each program are independent of the requirements for graduate degrees, courses included in the Program of Work may, with appropriate approval, be counted toward certification. Upon completion of both degree and portfolio program requirements, the student’s University record reflects portfolio certification.

Doctoral portfolio programs are available in the following areas.
- African and African American studies
- Cellular and molecular imaging for diagnostics and therapeutics
- Communication, information, and cultural policy
- Cultural studies
- Dispute resolution
- Gerontology
- Interdisciplinary European studies
- Mexican American studies
- Nanoscience and nanotechnology
- Nonprofit and philanthropic studies
- Presidential studies
- The study of religion
- Women’s and gender studies

19 Master’s and Doctoral Portfolio Programs
Master's portfolio programs are available in the following areas.

- Communication, information, and cultural policy
- Dispute resolution
- Gerontology
- Nonprofit and philanthropic studies
- The study of religion
- Women's and gender studies

Information about portfolio programs is available from the Office of Graduate Studies and at http://www.utexas.edu/ogs/docport/.

PROFESSIONAL DEVELOPMENT AND COMMUNITY ENGAGEMENT

The Professional Development and Community Engagement Program (PDCE) in the Office of Graduate Studies is dedicated to ensuring that graduate students succeed at the University and in their careers. In a number of ways, PDCE encourages and supports graduate students who seek to become innovators and leaders. PDCE provides graduate courses, workshops, internships, and other structured opportunities for students to bring their expertise to bear on important community issues. The program serves as a clearinghouse, directing students to resources both on- and off-campus. PDCE also consults with graduate programs and departments, providing customized programs or help in developing resources and programs for their students.

Graduate School (GRS) courses that support PDCE are described on pages 541–542. A complete description of PDCE initiatives is available from the Office of Graduate Studies and at http://www.utexas.edu/ogs/development.html.

LIBRARIES AND OTHER ACADEMIC RESOURCES

The University Libraries

The libraries of the University are a resource center for Texas and the Southwest, as well as a national resource center for library materials on Latin America, Texas, the history of the American South and West, and nineteenth- and twentieth-century British, French, and American literature. The library system consists of the University of Texas Libraries, the Center for American History, the Harry Ransom Humanities Research Center, and the Joseph D. Jamail Center for Legal Research: Tarlton Law Library. The University of Texas Libraries are the Perry-Castañeda Library, the Undergraduate Library, the Nettie Lee Benson Latin American Collection, six science and technology libraries, and several other branch and special collections.

The University Libraries Web site, http://www.lib.utexas.edu/, serves as the gateway to an array of online information resources. These include UTNetCAT, the online catalog that provides information on most items located in the collections of the University of Texas Libraries, the Center for American History, and the Humanities Research Center, and a partial listing for items in the Law Library. The University Libraries Web site also offers access to more than two hundred databases, full-text of thousands of books and millions of journal articles, and other specialized full-text resources. A variety of library services are also available online.

Detailed information about the University Libraries is given in General Information.

Perry-Castañeda Library

This six-level open stack library contains more than three million volumes and is the main library of the University. It serves most subject areas but emphasizes the humanities; the social sciences; business; education; nursing; social work; and European,
East European, Asian, Middle Eastern, Hebraic, and Judaic studies. Special materials include United States and United Nations official documents, current journals and newspapers, and a large collection of research materials in microform. On-site reference service is offered and photoduplication services are available during most hours the library is open. Graduate students may consult subject bibliographers to identify useful resources and gain access to them.

Center for American History

The Center for American History is a special collections library, archive, and museum that facilitates research and sponsors programs on the historical development of the United States. The center supports research and education by acquiring and preserving research collections and making them accessible and by sponsoring exhibitions, conferences, fellowships, and grant-funded initiatives. Research collection strengths are the history of Texas, the South, the Southwest, and the Rocky Mountain West, congressional history, and other specific national topics.

More information is given in General Information.

Harry Ransom Humanities Research Center

The Harry Ransom Humanities Research Center is one of the world’s foremost institutions for literary and cultural research. It offers resources in a number of disciplines and periods, but its principal strength is in its collections of twentieth-century British, American, and French literature. The center houses about a million books, thirty million manuscripts, five million photographs, and more than one hundred thousand works of art.

Additional information is given in General Information and at http://www.hrc.utexas.edu/.

Law Library

The Joseph D. Jamail Center for Legal Research: Tarlton Law Library is one of the largest academic law libraries in the country, with more than a million volumes of codes, statutes, court decisions, administrative regulations, periodicals, textbooks, and treatises on law and related fields. It offers a strong collection of foreign and international legal materials.

More information is given in General Information.

Special Collections and Branch Libraries

The Nettie Lee Benson Latin American Collection, an internationally recognized resource for research in Latin American and United States Latino studies, contains more than a million volumes of books, pamphlets, and journals in addition to manuscripts, maps, newspapers, and microfilms. It includes materials on any subject related to Latin America or written by a Latin American, regardless of language.

The University has a variety of special collections that serve the research needs of scholars in many fields. The Edie and Lew Wasserman Public Affairs Library, located in the Lyndon B. Johnson School of Public Affairs, provides information resources on the creation, implementation, and evaluation of public policy. The library is an official depository for United States and Texas government documents.

The branch libraries are the Architecture and Planning Library (including the Alexander Architectural Archive), the Mallet Chemistry Library, the Classics Library, the McKinney Engineering Library, the Fine Arts Library, the Walter Geology Library, the Life Science Library, the Physics Mathematics Astronomy Library, and the Marine Science Library in Port Aransas. Reference, circulation, and reserves services are available at all branch libraries.
Other Libraries in Austin
The Lyndon Baines Johnson Library and Museum, located on campus, is operated by the National Archives and Records Administration. This library is a valuable resource for the study of the twentieth century. Faculty members and students also have access to other public and private libraries in the Austin area, including several special-interest libraries.

Research Facilities
The University offers some of the most extensive university research facilities in the United States. There are more than a hundred organized research units on campus and many other informally organized laboratories; they give graduate students the opportunity to conduct laboratory and field research in almost all fields of study. Internships are also offered in many fields. Facilities associated with specific degree programs are described in chapter 4.

Information Technology Services
Information Technology Services (http://www.utexas.edu/its/) supports the University’s academic and research programs by providing an information-technology–based environment, technological capabilities, and a staff to assist students, faculty and staff members, academic departments, and research centers with their learning, teaching, research, and outreach activities. Information Technology Services (ITS) provides the University’s core computing, wired and wireless networking, video-conferencing, satellite conferencing, remote dial access, network directory, domain name, and information processing infrastructure, as well as a broad range of services and support programs. The facilities and services provided by ITS are described in General Information. Many academic units support additional information technology resources; these are described in chapter four of this catalog.

COOPERATIVE ARRANGEMENTS
A cooperative arrangement between The University of Texas System and the Texas A&M University System allows a graduate student at one institution to use unique facilities or courses at the other institution with a minimum of paperwork. The graduate student registers and pays fees at the home institution and may retain any fellowship or financial assistance awarded by it. Space must be readily available, and the instructor or laboratory director of the proposed work must consent to the arrangement. Approval must be given by the graduate dean of each institution. A similar arrangement among component institutions of The University of Texas System has been authorized by the chancellor and the Board of Regents. The University has active arrangements with the University of Texas Health Science Center at Houston, the University of Texas M. D. Anderson Science Park in Bastrop County, and the University of Texas Medical Branch at Galveston.

Cooperative Degree Programs
With appropriate approval, the University of Texas at Austin and another component of The University of Texas System may enter into a cooperative agreement in which one component serves as the degree-granting institution while some or all of the courses in the degree program are taught at the other component. The component that grants the degree is the “sponsoring” institution. A student who enters such a cooperative program is admitted on the understanding that institutional sponsorship
of the program may change during the student’s enrollment. The student’s continu-
ation in the program will not be affected by such a transfer of sponsorship, but the
student will become subject to the policies and procedures of the new sponsoring
institution, which may differ from those of the original sponsor. The student will
receive his or her degree from the component that sponsors the program at the time
of the student’s graduation.

FINANCIAL AID

Fellowships
University fellowships, which are administered through the Graduate School, are
awarded to both new and continuing graduate students in most academic areas. Stu-
dents must be nominated by their graduate advisers for any fellowship administered
by the Graduate School. Additional information on University fellowships is pub-
lished by the Office of Graduate Studies at http://www.utexas.edu/ogs/
otherfellowships/.

University fellowships for entering graduate students are awarded on the basis of
scholastic excellence and adequate preparation for graduate study in the student’s
chosen field, as shown by his or her academic record and letters of recommen-
dation. University fellowships for continuing students are awarded on the basis of
the student’s record since entering the Graduate School, including performance in
relevant coursework and research or creative activity, letters of recommendation from
University faculty members, and the endorsement of the graduate adviser; financial
need is also considered. There are additional specific qualifications for many of the
competitive fellowships awarded by the University and by graduate programs. Gener-
ally, fellowships require no service from the recipient. Some fellowships provide for
payment of tuition and required fees in addition to the stipend.

Deadlines for financial aid. General deadlines for submitting all materials for finan-
cial aid are February 1 for summer or fall admission and October 1 for spring admis-
sion. However, some graduate programs have earlier or later deadlines. Applicants
for fellowships and other forms of financial assistance should contact the program of
interest to them for current deadlines.

Assistantships
Various teaching, research, and academic assistantships are awarded by the depart-
ments. These appointments require specific service. Nonresidents and international
students who hold assistantships of twenty hours or more a week may pay resident
tuition and fees if the assistantship duties are related to the student’s degree program.
An applicant to the Graduate School may indicate on the admission application that
he or she would like to be considered for a teaching assistantship or a research as-
sitanship. Enrolled students should apply directly to the department in which they
would serve.

Additional Financial Aid
The Office of Student Financial Services offers financial assistance in the form of
gift aid, which includes grants and scholarships, and self-help aid, which includes
student employment programs and long-term loans. These programs are described in
General Information. More information about financial aid is published by Student
Financial Services at http://finaid.utexas.edu/ . Information is also available by mail
from The University of Texas at Austin, Office of Student Financial Services, PO Box
7758, Austin TX 78713-7758.
STUDENT SERVICES
Support services for students are provided by several offices, including the Division of Housing and Food Service; University Health Services; Counseling, Learning, and Career Services; and Parking and Transportation Services. The functions of these and similar offices are described in General Information.

Graduate students are represented on campus and in the community by the Graduate Student Assembly, described below. In addition, there are social and professional groups for graduate students in most fields of study, and hundreds of registered student organizations that are open to undergraduates and graduate students.

Graduate Student Assembly
The Graduate Student Assembly (GSA) has been the official representative body for graduate students since 1994. Other groups, including the Council of Graduate Students, represented graduate students between 1968 and 1994. GSA addresses issues that are important to its constituents, not only as students but also as teaching assistants, research assistants, and assistant instructors. GSA reports administratively to the vice provost and dean of graduate studies. Administrative expenses are funded through an allocation from the student services fee.

The objectives of GSA are to represent the views of graduate students to the University community and the community at large; to facilitate graduate student communication and interaction; to gather and disseminate information pertinent to graduate students; to conduct activities that promote the general welfare of graduate students; and to provide a means of assisting in the selection of graduate student members of departmental, college, and University bodies.

More information about GSA, including contact information for officers, current representatives, meeting agendas and minutes, and current and past activities, is available at http://www.utgsa.org/.

STUDENT RESPONSIBILITY
While University faculty and staff members give students academic advice and assistance, each student is expected to take responsibility for his or her education and personal development. The student must know and abide by the academic and disciplinary policies given in this catalog and in General Information, including rules governing quantity of work, the standard of work required to continue in the University, warning status and scholastic dismissal, and enforced withdrawal. The student must also know and meet the requirements of his or her degree program; must enroll in courses appropriate to the program; must meet prerequisites and take courses in the proper sequence to ensure orderly and timely progress; and must seek advice about degree requirements and other University policies when necessary.

The student must give correct local and permanent postal addresses, telephone numbers, and e-mail address to the Office of the Registrar and must notify this office immediately of any changes. Official correspondence is sent to the postal or e-mail address last given to the registrar; if the student has failed to correct this address, he or she will not be relieved of responsibility on the grounds that the correspondence was not delivered. Students may update their addresses and telephone numbers at http://www.utexas.edu/student/registrar/rose/.
The student must register by the deadlines given in the Course Schedule and must verify his or her schedule of classes each semester, must see that necessary corrections are made, and must keep documentation of all schedule changes and other transactions. Students should be familiar with the following sources of information:

**University catalogs.** General Information gives important information about academic policies and procedures that apply to all students. It includes the official academic calendar, admission procedures, residence requirements, information about tuition and fees, and policies on quantity of work, grades and the grade point average, adding and dropping courses, and withdrawal from the University. This catalog also gives historical and current information about the University's organization and physical facilities. It describes the services of the Division of Student Affairs and the libraries and research facilities that support the University's academic programs.

The Graduate Catalog gives information about degrees offered by the Graduate School. It describes academic policies and procedures that apply to graduate students and lists courses and members of Graduate Studies Committees. The Undergraduate Catalog and the Law School Catalog give similar information about undergraduate programs and the programs of the School of Law.

Printed catalogs are available at campus-area bookstores and by mail from the Office of the Registrar. The online catalogs are available at http://www.utexas.edu/student/registrar/catalogs/.

**The Course Schedule.** The Course Schedule is published by the Office of the Registrar. It is available before registration for each semester and summer session at campus area bookstores and at http://www.utexas.edu/student/registrar/schedules/. The Course Schedule includes information about registration procedures; times, locations, instructors, prerequisites, and special fees of classes offered; and advising locations.

**The University Directory.** The printed University directory is distributed by Texas Student Publications each fall. It gives physical and e-mail addresses and telephone numbers of University offices and of students and faculty and staff members. Current directory information is available online at http://directory.utexas.edu/.

**World Wide Web.** The address for the University's home page on the World Wide Web is http://www.utexas.edu/. In addition to the publications described above, the Web site includes sites maintained by departments, colleges, graduate programs, museums, libraries, research units, and student-service offices.

The Office of Graduate Studies is the central source of information for graduate students. Doctoral and master's degree evaluators provide information about procedures for submission of reports, theses, dissertations, and treatises, and the student services section assists with registration and related matters. Information for both prospective and current students is available at http://www.utexas.edu/ogs/.

**Graduate advisers, assistant graduate advisers, and graduate coordinators.** The graduate adviser for each program is a faculty member designated to advise students and represent the Graduate School in matters pertaining to graduate study. He or she provides information about the program, including admission and degree requirements, and about fellowships, teaching assistantships, and research assistantships. The assistant graduate adviser, also a faculty member, serves in the absence of the graduate adviser. The graduate coordinator, a staff member who assists the graduate adviser and other faculty members in the administration of the program, also provides services to students.
Students seeking admission to the Graduate School should consult the Graduate and International Admissions Center Web site, http://www.utexas.edu/student/giac/, for information and application forms. The student must submit an official transcript from each senior-level college he or she has attended and official scores on the Graduate Record Examinations General Test (GRE) or Graduate Management Admission Test (GMAT). The applicant should consult the graduate adviser for the program to which he or she is applying to learn which test to take and to learn about additional material required by the program.

A nonrefundable processing fee is charged each applicant to the Graduate School, the McCombs School of Business, or the School of Law. Current fee amounts are given in *General Information*. Under certain circumstances, applicants to the Graduate School may be eligible for a waiver of the application fee; additional information about the fee waiver is given on the GIAC Web site. Applicants may apply simultaneously to more than one graduate program with no additional application fee.

Applicants from other countries should consult the International Graduate Admissions Web site, http://www.utexas.edu/student/admissions/gradintl/.

**ADMISSION**

**Admission Requirements**

General requirements for admission to the Graduate School are

1. A bachelor’s degree from a regionally accredited institution in the United States or proof of equivalent training in a foreign institution.
2. A grade point average of at least 3.00 in upper-division (junior- and senior-level) coursework and in any graduate work already completed.
3. An official score on the Graduate Record Examinations General Test (GRE), unless otherwise specified by the graduate program to which the student is applying. The McCombs School of Business requires master’s degree applicants to submit a satisfactory score on the Graduate Management Admission Test (GMAT) and doctoral degree applicants to submit a satisfactory GRE or GMAT score. Applicants to dual or combined degree programs with the School of Law must submit a satisfactory score on the Law School Admission Test (LSAT) as well as on the GRE or GMAT.
4. Adequate subject preparation for the proposed major. Evidence of adequate preparation varies by program, but examples include letters of reference, auditions, samples of work, and personal statements.
5. A recommendation for acceptance by the Graduate Studies Committee for the proposed major area.
International students whose native language is not English must also submit scores on the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). Applicants should consult the graduate adviser for the program of interest to learn which test the program requires.

Applicants may apply simultaneously to more than one graduate program. All complete applications are forwarded to the Graduate Studies Committee(s) to which they are directed. Admission decisions are based on a careful review of all aspects of the applicant's file. Scores on standardized tests such as the GRE are not the sole criterion for making an admission decision or ending consideration of the application. Each applicant’s test scores are compared with those of other applicants of similar socioeconomic status. Information about admission criteria for each graduate program is available from the graduate adviser.

When there are more qualified applicants than can adequately be instructed by the faculty or accommodated in the facilities, the Graduate Studies Committee for the proposed area may deny admission to students who have met the prescribed requirements. All admissions must be approved by the graduate dean.

Applicants who feel that their grade point averages or test scores are not valid indicators of ability should explain their concerns in a letter to the graduate adviser of the program to which they are applying.

**Admission Tests**

The Graduate Record Examinations General Test (GRE), the Graduate Management Admission Test (GMAT), and the Test of English as a Foreign Language (TOEFL) are offered at testing centers throughout North America and at selected international sites. Current information about GRE and TOEFL test dates, locations, and registration procedures is published by the Educational Testing Service at http://www.ets.org/. Similar information about the GMAT is published by the Graduate Management Admission Council by http://www.gmac.com/gmac/thegmat/.

The International English Language Testing System (IELTS) is administered in more than 120 countries and is available off-site in additional countries. Information about IELTS test dates, locations, and procedures is published by http://www.ielts.org/.

Applicants to dual or combined programs with the School of Law must also take the Law School Admission Test (LSAT), administered by the Law School Admission Council. Information about the LSAT is published by the council at http://lsac.org/.

**Graduate School Select Admission Program**

The Graduate School Select Admission Program allows graduate programs to recommend academically outstanding University undergraduates for admission to seek a graduate degree.

Nominations are forwarded to the Graduate School by the program's graduate adviser or graduate admissions office with the recommendation of the Graduate Studies Committee. Undergraduate candidates may be extended an offer of admission and financial aid as early as the junior year, conditional upon completion of the baccalaureate degree. Application and transcript fees are waived; some graduate programs may waive submission of GRE scores. Admitted students may enroll in graduate courses at undergraduate tuition rates during the senior year and reserve the courses for graduate credit.

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1. Graduates of foreign institutions may be required to have a minimum score on an English-language-proficiency test such as the TOEFL or the IELTS.
Additional information is available in the Office of Graduate Studies, from the graduate adviser of the nominating graduate program, and at http://www.utexas.edu/ogs/info/select.html.

Admission with Conditions
Almost all of the students who are admitted to the Graduate School have qualifications equal to or better than the minimum standards outlined on pages 15–16. However, a Graduate Studies Committee may recommend, with the consent of the graduate dean, that a student be admitted to the Graduate School with conditions. The committee may require the student to maintain a certain grade point average or to take a certain number of semester hours of coursework. A conditionally admitted student may also be required to remedy deficiencies in undergraduate preparation by taking upper-division or graduate courses. The graduate adviser notifies the student of these conditions at the time of admission. A student who does not fulfill the conditions within the specified time may be barred from subsequent registration in the Graduate School. If the student changes his or her major before the conditions have been fulfilled, the conditions remain in effect unless the graduate adviser for the new program, on behalf of the Graduate Studies Committee, petitions the graduate dean and receives approval for them to be changed.

Admission as a Nondegree Student
A person who would like to take graduate coursework without becoming a candidate for an advanced degree may apply for admission to a graduate program as a nondegree student. The applicant must submit an application and transcripts of all college coursework to the Graduate and International Admissions Center; Graduate Record Examinations scores are not required. Admission must be recommended by the Graduate Studies Committee for the program and approved by the graduate dean. Enrollment as a nondegree student is limited to one year. Nondegree students are not eligible to be teaching assistants, assistant instructors, graduate research assistants, academic assistants, or assistants (graduate). A graduate nondegree student who wishes to seek a graduate degree must submit the material described in “Applying for Admission” below by the program’s deadline and must pay the usual application fee. A degree-seeking student may petition to have applied to the master’s degree up to six semester hours of graduate credit earned while he or she was a graduate nondegree student.

Undergraduate nondegree students. With the approval of the instructor and the graduate adviser, an undergraduate nondegree student may take any graduate course for which he or she has met the prerequisite. The student will not receive credit toward a graduate degree for courses he or she takes as an undergraduate nondegree student.

Exchange students. A graduate student who is admitted to the University through a reciprocal exchange program is classified as a nondegree student and is subject to all policies affecting nondegree students. Additional information about the exchange student status is given on page 19.
Applying for Admission

Application for admission to the Graduate School consists of submitting to the Graduate and International Admissions Center the official online application form, transcripts, test scores, and processing fees. Instructions and forms are available at the Graduate and International Admissions Center Web site, http://www.utexas.edu/student/giac/. Students may also indicate their interest in assistantships and fellowships on the application form.

Each graduate program may require the submission of additional materials. These materials vary by program, but examples include letters of reference, auditions, samples of the student's work, and personal statements. Information about required materials is available from the graduate adviser of each program.

Because graduate programs set their own application deadlines, the applicant must be sure to inquire about the deadline for the program to which he or she is applying. February 1 is often the deadline for the summer session and the fall semester, but some programs set different dates. Few graduate programs admit new students for the spring semester; those that do have deadlines no later than October 1. It is the applicant's responsibility to meet the deadline set by the graduate program. A list of program deadlines is given at the GIAC Web site.

Applicants should also note that some programs grant admission only for the fall semester.

**Deadlines for those seeking financial aid.** The usual deadline for an applicant seeking financial aid to submit all materials is February 1 for summer or fall admission or October 1 for spring admission. Individual graduate programs may have earlier or later deadlines. Financial aid decisions are made soon after these program deadlines, and applicants whose materials have not been received may not be given full consideration. Applicants should contact the program of interest to them for current deadlines.

International Students

In addition to meeting the general requirements for admission, applicants whose native language is not English must demonstrate sufficient competence in English to study effectively at the University. These applicants are required to submit scores on either the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) to the Graduate and International Admissions Center. Information about TOEFL is published at http://www.ets.org/toefl/. Information about IELTS is published at http://www.ielts.org/.

Because transcripts from foreign universities require special evaluation, prospective international students are advised to submit their application forms, test scores, and transcripts well in advance of deadlines. Early submission gives the University enough time to process the application and gives the applicant enough time to obtain visas and make travel arrangements if admission is granted. A nonrefundable processing fee is required with each application for admission to the Graduate School, the McCombs School of Business, or the School of Law. All payments must be in US dollars and drawn on US banks. Current fee amounts are given in General Information.

International students must maintain approved comprehensive health insurance or coverage. The student's registration bill includes the premium for the University health insurance policy, unless approval to substitute alternate, comparable coverage has been given by the International Office.
ENROLLMENT DEPOSIT
Some graduate programs require students to pay a nonrefundable enrollment deposit upon admission to indicate that they accept the offer of admission. The current amounts of these deposits are given in General Information. For students applying to dual degree programs, one deposit serves to confirm the student’s intention of enrolling in both programs. When both programs require deposits, only the higher fee is required. The deposit is applied to the payment of fees when the student enrolls. Students who demonstrate financial need may qualify for assistance to cover the deposit.

READMISSION
All graduate students are expected to enroll and pay tuition and fees by the twelfth class day of the fall semester and the spring semester of each academic year until they graduate. A student who does not do so must apply for readmission in order to return to the University. He or she must submit an Application for Readmission to the Graduate and International Admissions Center by the deadline given in General Information and must pay the general application fee. The fee is waived if the student has received an official leave of absence as described on page 26. The student must also obtain the approval of the graduate adviser in the program in which he or she was last enrolled. To change to a different major, the student must submit an Application to Another Graduate Major to the Graduate and International Admissions Center; for additional information, see the section “Application to Another Graduate Major (Change of Major)” on page 27.

EXCHANGE STUDENTS
A graduate student who is admitted to the University through a reciprocal exchange program is classified as a nondegree student. An exchange student may not register for more than two long-session semesters and one summer session. The transferability of academic credit to the student’s home institution is determined by the home institution.

An exchange student who wishes to take a graduate course must obtain the approval of the instructor and of the graduate adviser for the program that offers the course, must meet all course prerequisites, and must meet any other requirements affecting nondegree students. The rules that apply to nondegree students are given in General Information.

An exchange student may later apply for admission to the University as a degree-seeking graduate student. To do so, he or she must submit the usual test scores, application fee, and other required material by the appropriate deadline, as described in “Applying for Admission,” page 18. If the applicant is admitted, the Graduate Studies Committee may seek the graduate dean’s approval to include on the Program of Work for the master’s degree up to six hours of graduate coursework that the student completed as a nondegree exchange student. All requirements related to courses that may be counted toward graduate degrees apply, including rules concerning courses counted toward another degree.

REGISTRATION
University students register online for each semester and summer session. Complete information about the registration process is given in the Course Schedule.
Registration for New Graduate Students
Applicants are notified by mail of their admission or denial. Admitted applicants should notify their graduate advisers as soon as possible whether they plan to accept admission. Either in an interview or by correspondence, the admitted applicant should then learn the specific requirements of his or her graduate program. Students should consult the Course Schedule to learn whether advising before registration is required in their major area.

Late Registration
The period of late registration is given in the Course Schedule. During this period, a student may register with the consent of the graduate adviser; a late fee is imposed. After this period, registration is permitted only under exceptional circumstances, upon recommendation of the graduate adviser, and with consent of the graduate dean and the registrar.

Registration for Continuing Graduate Students
Continuing graduate students should consult the Course Schedule to learn whether advising before registration is required in their major area.

To continue in the Graduate School beyond the first semester or summer session, the student must make satisfactory progress in fulfilling any admission conditions that were imposed, meet any requirements made in writing by the Graduate Studies Committee, maintain a graduate grade point average of at least 3.00, and receive the approval of the Graduate Studies Committee. For further information about grade requirements, see the section “Graduate Credit” on pages 23–26.

Course Load

Maximum Course Load
The maximum course load for a graduate student is fifteen semester hours in a long-session semester or twelve semester hours in a twelve-week summer session. A heavier course load must have the recommendation of the graduate adviser and the approval of the graduate dean. It is permitted only under exceptional circumstances.

Full-Time Course Load
There is no minimum course load for graduate students; however, the Graduate School recognizes nine semester hours during a long-session semester and three hours during a summer session as a minimum full-time course load. Individual graduate programs may require more.

Under various circumstances, graduate students must register for and must remain registered for a full-time load, defined as follows:

Holders of Graduate School–administered fellowships and scholarships: Nine hours each semester and three hours in the summer session (in any combination of summer-session terms).

Graduate student academic employees: Nine hours each semester and three hours in the summer session (in any combination of summer-session terms). A “graduate student academic employee” is a graduate student who is also employed by the University under one of the following titles: assistant instructor, teaching assistant, assistant (graduate), academic assistant, and graduate research assistant.

Students receiving certain student loans: Nine hours each semester and three hours in the summer session (in any combination of summer-session terms).
Students living in University housing should consult the Division of Housing and Food Service for course-load regulations.

International students: Nine hours each semester. An international student must consult with the International Office and must have the written permission of his or her dean to take fewer than nine hours. No minimum load is required in the summer. Some approved courses in English as a second language do not carry University credit, but each course is considered the equivalent of a three-hour course for purposes of the course load requirement. Students may enroll in these courses with the approval of their graduate adviser.

Affiliated studies: Students may enroll in affiliated studies if they are participating in a study abroad program offered by an institution with which the University has an affiliation agreement or are engaged in independent study or research under a University-approved scholarship, fellowship, or grant. Students enrolled in affiliated studies are considered full-time students. Affiliated studies registration satisfies the continuous registration requirement for doctoral students in candidacy.

Agencies that grant loans or provide for educational funding may establish different definitions of full-time status. The student should be familiar with the regulations of any agency to which he or she has an obligation.

IN ABSENTIA REGISTRATION

Students must be registered for the semester in which they graduate and must apply for graduation by the deadline published in the academic calendar. There are no exceptions to this policy for fall semester and spring semester graduation; a student who fails to complete all degree requirements or misses the deadline for acceptance of the thesis, report, recital, dissertation, or treatise must register and pay tuition and fees the following semester or summer session in order to receive the degree.

An exception is made for students who apply to graduate in the summer session but miss the deadline for acceptance of the thesis, report, recital, dissertation, or treatise. In this case, the student will be registered in absentia for the fall semester, only for the purpose of receiving the degree, by degree evaluators in the Office of Graduate Studies. The thesis, report, recital, dissertation, or treatise must be accepted by the deadline for in absentia registration, which falls before the beginning of the following fall semester. The fee for in absentia registration is $25. The student will be registered in absentia only once.

ADDING AND DROPPING COURSES

Before classes begin, a student who has registered may add or drop a course online as described in the Course Schedule. The student may also add or drop a course online during the first four class days of a long-session semester. From the fifth through the twelfth class day, he or she may add or drop a course with the approval of his or her graduate adviser and of the department in which the course is given. After the twelfth class day, the student may add a course only under rare and extenuating circumstances approved by the graduate dean.

In each summer-session term, the student may add or drop a course online during the first two class days. On the third and fourth class days, he or she may add or drop a course with the approval of his or her graduate adviser and of the department in which the course is given. After the fourth class day, the student may add a course only under rare and extenuating circumstances approved by the graduate dean.
A student may drop a course with the required approvals through the last class day of a semester or summer term. He or she receives a refund for courses dropped by the twelfth class day of a long-session semester or by the fourth class day of a summer term. From the thirteenth through the twentieth class day of a long-session semester, and from the fifth through the tenth class day of a summer term, the student may drop a course with no academic penalty; the symbol Q is recorded. If the student drops a course after that time, the instructor determines whether the symbol Q or a grade of F should be recorded.

If the student is in a warning status because of failure to maintain a grade point average of at least 3.00, he or she may not drop a course without the recommendation of the graduate adviser and the approval of the graduate dean.

The student should note that dropping a course may cause his or her course load to drop below that required for full-time status.

Specific deadlines for adding and dropping courses are given in the academic calendar; procedures are given in the Course Schedule.

EVALUATION

Letter grades and the symbols for credit and no credit, CR and NC, are most commonly used to record the instructor’s evaluation of students’ performance in a course. Under specific conditions, other symbols may be used to record students’ standing in a class. Grades and symbols and the policies governing them are described in General Information.

WITHDRAWAL FROM THE UNIVERSITY

Dropping an entire course load constitutes withdrawal from the University for that semester.

To withdraw from the Graduate School, the student must file with the graduate dean a withdrawal petition, a form that also explains refund policies. The student may withdraw through the last class day of the semester. If the student abandons his or her courses without withdrawing, the instructor in each class determines what grade should be recorded.

Students in a warning status because of failure to maintain a grade point average of at least 3.00 may not withdraw without a petition from the graduate adviser and the approval of the graduate dean.
3. Degree Requirements

The general requirements for graduate degrees are given in this chapter. Specific requirements and course descriptions for each graduate program are given in chapter 4. Detailed information about each degree program is available from the graduate adviser and the graduate coordinator for that program.

LIMITATION FOR FACULTY
No tenured member of the faculty of the University of Texas at Austin may pursue an advanced degree at this institution.

GRADE POINT AVERAGE
The graduate grade point average is calculated by the registrar and appears on the student's official record maintained by the registrar. To graduate, all graduate students must have a graduate grade point average of at least 3.00. Individual Graduate Studies Committees may set grade point average requirements of 3.00 or higher for all or a portion of their students' coursework.

Additional information about grades, symbols, and the graduate grade point average is given in General Information.

GRADUATE CREDIT
Only the courses that appear on the student's Program of Work are counted toward the degree. The following policies govern the inclusion of courses on the Program of Work.

Courses Taken in Residence
Courses completed with a letter grade. Courses in which the student earned a grade of at least C while registered in the Graduate School may be included in the Program of Work. Limitations on the amount of undergraduate work that may be included are given on pages 28–29 and in chapter 4.

Courses completed on the credit/no credit basis. No more than 20 percent of the hours on the Program of Work for a master's degree may have been taken on the credit/no credit basis, and no more than a comparable portion of the Program of Work for the doctoral degree. Thesis, master's report, master's recital, dissertation, and treatise courses, which are offered only on the credit/no credit basis, are not included in the 20 percent.
Courses with incomplete grades. Courses for which the symbol X (incomplete) or I (permanent incomplete) is recorded may not be included on the Program of Work. More information about credit/no credit grading and incomplete grades is given in General Information.

Transfer of Credit
Ordinarily, all work for the master's degree must be done at the University of Texas at Austin. Under some circumstances, a maximum of six semester hours of graduate coursework in which the grade is A or B may be transferred to the Program of Work from another institution, but only on the basis of a petition by the Graduate Studies Committee and with the approval of the graduate dean. (In the School of Nursing, a higher number of hours may be transferred in some degree programs.) A student seeking a transfer of credit must provide the Graduate School with an official transcript and an official explanation of the course numbering and grading systems at the school at which the credit was earned. Only graduate courses may be transferred. Work counted toward a degree at another institution cannot be transferred. Students are encouraged to seek approval before taking any coursework they plan to transfer. Students should not take courses at another institution the semester they plan to graduate, because the grades may not be received in time to certify the student's Program of Work for graduation. Unless its inclusion has been approved by the graduate dean, no coursework listed on the Program of Work may be over six years old. No formal petition is necessary for coursework from other institutions to be used on the doctoral Program of Work, but use on the Program of Work is subject to the approval of the Graduate Studies Committee. Transferred coursework as described in this section appears only on the student's Program of Work. It does not appear on the official student record maintained by the registrar. Because it is not part of the official record, such coursework does not appear on the student's transcript and is not included in the graduate grade point average.

Extension Credit
Up to six semester hours of work done in extension classes through the University's Division of Continuing and Extended Education may be listed on the Program of Work, with the approval of the Graduate Studies Committee and the graduate dean. The extension credit must be in graduate courses; the courses and instructors must be approved in advance by the Graduate School and by the program in which the student would otherwise take the work on campus; and the student must be admitted to the Graduate School before taking the extension courses. All grades in graduate courses taken through the Division of Continuing and Extended Education are included in the graduate grade point average.

Correspondence Credit
Courses taken by correspondence may not be counted toward graduate degrees.

Credit by Examination
Credit by examination may not be counted toward graduate degrees.
Enrollment of Undergraduates in Graduate Courses

Graduate Work for Undergraduate Credit

An undergraduate may enroll in a graduate course under the following conditions:

1. He or she must be an upper-division student and must fulfill the prerequisite for the course (except graduate standing).
2. He or she must have a University grade point average of at least 3.00.
3. He or she must receive the consent of the instructor of the course and of the graduate adviser for the field in which the course is offered. Some colleges and schools may also require the approval of the dean's office. Individual divisions may impose additional requirements or bar undergraduates from enrolling in graduate courses.
4. Students in most colleges must have their dean's approval before they register for a graduate course.

Undergraduate students may not enroll in graduate courses that have fewer than five graduate students enrolled.

A graduate course taken by an undergraduate is counted toward the student’s bachelor's degree in the same way that upper-division courses are counted, unless the course is reserved for graduate credit as described in the next section. Courses reserved for graduate credit may not also be used to fulfill the requirements of an undergraduate degree.

An undergraduate student enrolled in a graduate course is subject to all University regulations affecting undergraduates.

Reservation of Work for Graduate Credit

Under the following conditions, a degree-seeking undergraduate may enroll in a graduate course and reserve that course for credit toward a graduate degree.

1. The student must have a University grade point average of at least 3.00.
2. The student must have completed at least ninety semester hours of coursework toward an undergraduate degree.
3. The student may not register for more than fifteen semester hours in the semester or for more than twelve semester hours in the summer session in which the course is reserved.
4. No more than twelve semester hours may be reserved for graduate credit.
5. All courses reserved for graduate credit must be approved by the twelfth class day of the semester or the fourth class day of the summer session by the course instructor, the student's undergraduate adviser, the graduate adviser in the student's proposed graduate major area, the dean of the student's undergraduate college, and the graduate dean. A form for this purpose is available in the Office of Graduate Studies.

An undergraduate student enrolled in a graduate course is subject to all University regulations affecting undergraduates.

A student who reserves courses for graduate credit must be admitted to a University graduate program through regular channels before the credit may be applied toward a graduate degree. By allowing a student to earn graduate credit while still an undergraduate, the University makes no guarantee of the student's admissibility to any graduate program.

A course reserved for credit may be listed on the student's Program of Work for the master's or doctoral degree. Because it was taken before the student entered the Graduate School, it is not included in the graduate grade point average.
Use of the Course 398T on the Program of Work

With the consent of his or her Graduate Studies Committee, a student may include the college teaching methodology course, numbered 398T, on the Program of Work. Master's degree students may include up to three semester hours. Doctoral degree students may include up to six semester hours, if they complete both introductory and advanced teaching methodology courses.

Courses Counted toward Another Degree

No course counted toward another degree may be counted toward a master's degree, either directly or by substitution.

Work done for the master's degree may be included in the work for the doctoral degree, provided it is acceptable to the Graduate Studies Committee, the supervising committee, and the graduate dean and provided it has not already been used toward another doctoral degree.

Students in a dual degree program must meet the course requirements for both degrees. Courses common to the two curricula in a dual degree program are included on the Program of Work for one of the degrees and are waived by the other degree program as specified in the dual degree program requirements. The Program of Work on which courses are waived must meet the Graduate School's minimum-credit-hour requirements for the degree. A list of approved dual degree programs is given on pages 5–7.

CONTINUOUS REGISTRATION

All graduate students are expected to enroll and pay tuition and fees by the twelfth class day of the fall semester and the spring semester of each academic year until graduation. If the student has been admitted to candidacy for the doctoral degree, registration in the dissertation course or the equivalent or in affiliated studies is required. The only alternative to continuous registration is a leave of absence, discussed below.

If a student who is not on approved leave fails to register by the twelfth class day, he or she may not return to the University without applying for readmission. The student must apply for readmission both to the University and to the graduate program and must pay the general application fee. The application is reviewed by the Graduate Studies Committee, which may choose to readmit the student or to deny readmission.

LEAVE OF ABSENCE

Graduate students may apply for a leave of absence of no more than two semesters. If the student has not yet been admitted to candidacy for the doctoral degree, this request must be approved in advance of the leave by the graduate adviser. If the student has been admitted to candidacy, the application must be approved in advance by the graduate adviser and the graduate dean; it will be approved by the graduate dean only in rare and unusual circumstances.

A student on approved leave must apply for readmission in order to return to the University, but readmission during the approved period is automatic and the application fee is waived.

A student on leave may not use any University facilities; nor is he or she entitled to receive advice from any member of the faculty. A leave of absence does not alter the time limits for degrees or coursework.
APPLICATION TO ANOTHER GRADUATE MAJOR
(CHANGE OF MAJOR)

To change his or her major, a student must submit the form Application for Admission to Another Graduate Major to the Graduate and International Admissions Center. The application must be approved by the graduate adviser in the new program. Applications must be submitted to the Graduate and International Admissions Center by April 1 for the summer session, by July 1 for the fall semester, and by October 1 for the spring semester. Students should consult the graduate adviser for the proposed new major about priority deadlines and additional requirements, procedures, and materials.

If the student has been away from the University for a semester or longer, he or she must apply for readmission as described on page 19.

WARNING STATUS, ACADEMIC DISMISSAL, AND TERMINATION

To continue in the Graduate School beyond the first semester or summer session, the student must make satisfactory progress in fulfilling any admission conditions that were imposed, meet any requirements made in writing by the Graduate Studies Committee, maintain a graduate grade point average of at least 3.00, and receive the approval of the Graduate Studies Committee.

Graduate Studies Committees are responsible for evaluating the students in their programs to ensure that they are making satisfactory progress toward a degree. If the Graduate Studies Committee finds that a student is not making satisfactory progress, it may recommend to the graduate dean that the student's program be terminated.

A graduate student whose graduate grade point average falls below 3.00 at the end of any semester or summer session will be warned by the Office of Graduate Studies that his or her continuance in the Graduate School is in jeopardy. The student must attain a graduate grade point average of at least 3.00 during the next semester or summer session he or she is enrolled or be subject to dismissal; during this period, the student may not drop a course or withdraw from the University without the approval of the graduate adviser and the graduate dean.

A graduate student who has been dismissed may be readmitted for further graduate study only by petition of the Graduate Studies Committee in the student's major area or by the Graduate Studies Committee of another program that will accept the student. The petition must be approved by the graduate dean.

Academic dismissal is reflected on the student's academic record.

Additional information about grades and the grade point average is given in General Information.

TIME LIMITS

Master's degree. All requirements for a master's degree must be completed within one six-year period. Work over six years old may be reinstated only with the permission of the graduate dean, upon recommendation of the Graduate Studies Committee.

Doctoral degree. All completed work that is included in a doctoral student's degree program at the time of admission to candidacy must have been taken within the previous six years (exclusive of a maximum of three years of military service). The Graduate Studies Committee will review the program of students who have not completed the degree at the end of three years from admission to candidacy; the committee will
review the status of the student's program yearly thereafter. At those times, the committee may recommend additional coursework, further examinations, or termination of candidacy. In addition, the program is subject to review by the graduate dean.

**THE MASTER'S DEGREE**

The University offers two types of master's degree. The first, the Master of Arts, requires advanced study in the humanities, sciences, or education and the preparation of a thesis or report. This degree frequently serves as preparation for further study. The second type of master's degree provides preparation in a professional field. These degrees are offered in such fields as architecture, business administration, education, engineering, fine arts, information studies, nursing, pharmacy, public affairs, and social work. A complete list appears on page 3. Often, these degree programs require more coursework than the Master of Arts but do not include a thesis or report.

The following general requirements for the master's degree set a minimum standard. With the approval of the graduate dean, specific programs may impose additional requirements.

**Prerequisites**

Every master's degree program assumes that participants have a general college education through the baccalaureate level. Accordingly, to enter a master's degree program a student must hold a baccalaureate degree from a regionally accredited United States institution or proof of equivalent training outside the United States. He or she must also have taken at least twelve semester hours of upper-division undergraduate coursework in the area of the proposed graduate major or must have the consent of the graduate dean. Some areas may require more undergraduate preparation. Students who lack adequate preparation may be admitted to a graduate program on the condition that they complete additional preparatory coursework designated by the graduate adviser. These courses are in addition to the thirty semester hours or more required for the master's degree itself.

**Supervising Committee**

Each master's degree program is developed under the guidance of a supervising committee with two or more members, one of whom is designated as supervisor. The supervisor must be a member of the Graduate Studies Committee in the major area. In general, all committee members must be members of a Graduate Studies Committee. Occasionally, scholars who hold nonfaculty appointments at the University—research scientists, research engineers, or adjunct faculty members—or off-campus scholars are appointed because their expertise would be valuable to the student. The composition of the committee is subject to the approval of the graduate dean. The supervising committee is responsible for the quality, depth, and balance of the student's educational experience.

**Options**

The Graduate School recognizes three options under which a student may pursue the master's degree: with thesis, with report, and without thesis or report. All three options may not be available in any one field of study; information about the options that are possible is given in chapter 4 or is available from the student's graduate adviser.

At least thirty semester hours of coursework are required for the master's degree with thesis; at least thirty-three hours are required for the degree with report; at least thirty-six hours are required for the degree without thesis or report. No more than
nine semester hours of upper-division coursework may be included, of which no more than six hours may be in either the major area or the supporting work. In some fields of study, the number of upper-division hours allowed is lower.

At least eighteen semester hours must be in the major area; the thesis, report, or recital course, if part of the program, must be in the major. At least six hours must be in supporting work. Supporting work, often referred to as the minor, is an obligatory part of each degree program. It consists of coursework outside the major area, although the Graduate Studies Committee may permit some or all of it to be taken in other areas within the department.

The exact number of hours in the major area and in supporting work is determined in consultation with the graduate adviser. The Graduate Studies Committee must then review and approve the Program of Work, made up of the proposed courses in the major area and in supporting work. Courses listed on the Program of Work may not be more than six years old. The student may earn no more than 20 percent of the hours of credit listed on the Program of Work on the credit/no credit basis; thesis, report, and recital courses are not included in the 20 percent.

Master’s degree with thesis. At least thirty semester hours of coursework are required. Each program must include at least twenty-one semester hours of graduate coursework, including the thesis. The thesis is prepared under the direction of a supervisor, who is chair of the supervising committee. It is subject to the approval of the committee and ultimately to the approval of the graduate dean. Six semester hours of credit are granted for researching and writing the thesis. Course 698A (research project) must precede course 698B (writing period); 698A may not be repeated for credit. Both 698A and 698B must be taken on the credit/no credit basis. The student must register for 698B the semester he or she intends to graduate. The thesis cannot be accepted before the semester in which the student applies for graduation. The thesis is normally written in English. Requests for permission to write in another language pertinent to the research will be granted when there are circumstances warranting an exception. An insufficient command of English is not justification for an exception. The petition from the graduate adviser should include assurance that faculty members competent both in the language and in the field are available and willing to serve on the thesis committee. The request must be approved by the graduate dean when the student is admitted to candidacy. The abstract and a substantial summary and conclusions section in English must be submitted with the thesis. Some students seeking the Master of Music complete a recital rather than a thesis. All policies affecting the master's degree with thesis apply to the master's degree with recital, but the student completes the two-semester course Music 698R, Master’s Recital, rather than a thesis course. The recital is prepared under the direction of a supervisor, who is chair of the supervising committee, and graded by faculty members from the student's performance area.

Master’s degree with report. At least thirty-three semester hours of coursework are required. Each program must include at least twenty-four hours of graduate coursework, including the report. The report is prepared under the direction of a supervisor, who is chair of the supervising committee. Reports typically result from gathering special materials, from an internship or similar experience, or from seminars, conference courses, or supervised research. The report is subject to the approval of the committee and ultimately to the approval of the graduate dean. Three semester hours of credit are granted for preparing the report; the student must register for the master's report course. The student must take this course on the credit/no credit basis and must register for it the semester that he or she files for graduation.
**Master’s degree without thesis or report.** At least thirty-six semester hours of coursework are required. Each program must include at least twenty-seven semester hours of graduate coursework. Students must be registered the semester they file to graduate.

**THE DOCTOR OF PHILOSOPHY**

The Doctor of Philosophy is a research degree designed to prepare students to discover, integrate, and apply knowledge as well as to communicate and disseminate it. The degree emphasizes development of the capacity to make significant original contributions to knowledge within the context of free inquiry and expression. The student pursuing this degree is expected to develop the ability to understand and to evaluate the literature of his or her field and to apply appropriate principles and procedures to the recognition, evaluation, interpretation, and understanding of issues at the frontiers of knowledge. In contrast to the PhD, other doctorates such as the Doctor of Education and the Doctor of Musical Arts are designed for professional training or focus on applied rather than basic research.

**Course Requirements**

No specific number of semester hours has been set for attainment of the Doctor of Philosophy degree, although advanced coursework is an integral part of a doctoral candidate’s preparation. All the completed coursework that is included in a degree program at the time of admission to candidacy for a doctoral degree must have been taken within the preceding six years (exclusive of a maximum of three years of military service). All doctoral work is subject to review by the graduate dean.

In addition to courses and research in a field of specialization, additional work is taken to broaden or supplement the field. This supporting work may consist of coursework in one area or several; it may be in conference, laboratory, or problems courses; or it may be a supervised activity off campus relevant to the major interest. Normally, some or all of the supporting work is outside the major area, unless that area covers more than one department; at least three courses or the equivalent from outside the major area are generally proposed.

**Foreign Language Requirement**

The Graduate School has no foreign language requirement. However, many graduate programs require the study of one or more languages. These requirements are given in chapter 4 or are available from the graduate adviser.

**Graduate Studies Committee Requirements**

The Graduate Studies Committee specifies the coursework the student must complete, the qualifying examinations (written or oral or both) he or she must pass, the conditions under which he or she may retake all or part of an examination, and the procedures he or she must follow in developing a dissertation proposal.

In consultation with the graduate adviser, the student proposes a Dissertation Committee to advise or direct the student on the research and writing of the dissertation. The student selects the chair of the Dissertation Committee, with the consent of that person.
Admission to Candidacy

Each student seeking the PhD must be admitted to candidacy on the recommendation of the Graduate Studies Committee in the major area. Students may not register for the dissertation course until they are admitted to candidacy, and completion of coursework does not in itself constitute admission. Formal admission to doctoral candidacy consists of the submission and approval of the following:

1. **Program of Work.** The Program of Work comprises a list of courses taken and proposed, the prospective dissertation title, and similar information. The Graduate Studies Committee must approve the Program of Work. The Dissertation Committee may, in a review of the Program of Work, recommend additional course requirements to the Graduate Studies Committee.

2. **Dissertation Committee.** The membership of the Dissertation Committee, proposed by the student with the consultation and approval of the graduate adviser, is submitted to the Graduate School for approval by the graduate dean. The committee consists of at least five members, at least one of whom must be from outside the major program.

3. **Dissertation Proposal.** A brief statement of the proposed dissertation must be submitted.

The Dissertation Committee

The Dissertation Committee advises the student on the research and writing of the dissertation, conducts the final oral examination, and approves the dissertation. The chair of the Dissertation Committee ordinarily serves as the supervisor of research. Other members of the committee should be consulted as appropriate. Occasionally, a research scientist, research engineer, or faculty member who is not a member of the Graduate Studies Committee may be recommended by the Graduate Studies Committee to serve as the research supervisor for a specific dissertation. When the research supervisor is not a member of the Graduate Studies Committee, a member of the Graduate Studies Committee will be appointed as cochair of the Dissertation Committee.

The Dissertation

The student must register for dissertation courses for a period of more than one semester or summer session. The dissertation research course (-99R) must precede the dissertation writing course (-99W) and may not be repeated. A dissertation is required of every candidate. It must be an original contribution to scholarship, the result of independent investigation in the major area, and must be approved by the Dissertation Committee.

The dissertation is normally written in English. Requests for permission to write in another language pertinent to the research are granted when there are circumstances warranting an exception. An insufficient command of English is not justification for an exception. The formal petition from the graduate adviser should include assurance that faculty members competent both in the language and in the field are available and willing to serve on the Dissertation Committee. The request must be approved by the graduate dean when the student is admitted to candidacy. The abstract and a substantial summary and conclusions section in English must be submitted with the dissertation.
Review of Progress

The Graduate Studies Committee reviews the progress of students who have not completed the doctoral degree by the end of three years from admission to candidacy; the committee reviews each student’s progress annually thereafter. The committee may recommend that the student take additional courses or examinations or that the candidacy be terminated. Since annual reviews must be made after the first review, the committee will recommend extensions of only one or two semesters. Recommendations are forwarded to the graduate dean for approval.

Final Oral Examination (Defense of Dissertation)

A satisfactory final oral examination is required for the approval of a dissertation. The Office of Graduate Studies publishes the time and place of this examination. The exam is open to all members of the University community and the public, unless attendance is restricted by the Graduate Studies Committee.

Not less than four weeks before the date on which the student intends to defend the dissertation, a copy of the final draft of the dissertation, reviewed for technical and grammatical correctness by the supervisor, should be submitted to each member of the dissertation committee. Two weeks before the defense, a written request to hold the final oral examination must be submitted to the Graduate School. This request signifies the receipt of the doctoral dissertation for the purpose of giving the examination. The committee’s decision to examine a dissertation must be unanimous.

The examination covers the dissertation and the general field of the dissertation and such other parts of the student’s program as the committee determines. If the members of the committee are satisfied that (1) the dissertation is an independent investigation in the major field and itself constitutes a contribution to knowledge, (2) the student has passed the final oral examination, and (3) the student has submitted for publication in Dissertation Abstracts International an abstract approved by the committee, they indicate approval on the Report of Dissertation Defense. The Report of Dissertation Defense and individual reports on the dissertation are filed within two weeks following the defense.

The decision of the committee must be unanimous. In the event that a committee cannot agree on a single decision, the matter is referred to the graduate dean for review. The dean’s recommendation concerning the dissertation must be approved by a majority of the dissertation committee. The results of the review are communicated to the student, the graduate adviser, the chair of the Graduate Studies Committee, the committee members, and the department chair, if applicable.

Submission and Publication of the Dissertation

After defending the dissertation, the student must submit it in an approved electronic format to the Office of Graduate Studies. The dissertation is retained by the University Libraries. Information about format requirements is available at http://www.utexas.edu/ogs/etd/ and from the Office of Graduate Studies.

Dissertations must be made available to the public. A list of ways of doing this is available at http://www.utexas.edu/ogs/etd/ and from the Office of Graduate Studies. The student may request that the graduate dean delay making the dissertation available to the public for one year in order to protect patent or other rights. This request must be supported by a written recommendation from the dissertation supervisor.

The student may arrange for registration of copyright, at his or her own expense, by completing a form available in the Office of Graduate Studies or through an arrangement with a publisher of the student’s choice.
Approval of the Degree
Upon approval by the Dissertation Committee of the dissertation and its defense, the Graduate Studies Committee certifies that the student has completed all degree requirements, has passed all required examinations, and is entitled to the award of the doctoral degree.

THE DOCTOR OF EDUCATION
The Doctor of Education (EdD) is a professional degree that emphasizes preparation for the highest levels of educational practice. It provides academic training and educational service experiences for individuals who will have leading roles in educational practice and who will help define the scope and functions of education in society. Programs are oriented toward the application of theory and research to issues of education and human development and to the development of skilled practitioners to fill a variety of roles in institutions that educate children, youth, and adults.
Students in educational administration complete a treatise; those pursuing the EdD in other fields complete a dissertation. Most policies affecting the EdD are similar to those described above for the PhD. Additional policies on admission to the program and to candidacy are given below.

Admission
In addition to the requirements for admission to the Graduate School, each department may require evidence of successful performance in an educational setting and evidence of interpersonal problem-solving skills and other skills useful for predicting success in professional educational roles. The applicant must hold a master’s degree from a regionally accredited United States institution or the equivalent.

Admission to Candidacy
In addition to the requirements listed for the PhD degree, the curriculum must have a clear and predominantly applied focus. The student’s program normally entails an internship in an operational setting that is distinct from previous or concurrent work experience.
In addition to the requirements listed for the PhD degree in regard to the Dissertation Committee, at least one member of the committee must be from outside the major program or from the field of practice represented by the dissertation.

THE DOCTOR OF AUDIOLOGY
The Doctor of Audiology provides academic and clinical training for those who plan to enter the profession of audiology. The degree program involves preparation for the diagnosis and nonmedical treatment of hearing and balance disorders; it is designed to prepare audiologists to meet the standards for Texas state licensure in audiology.
The program requires 121 semester hours of coursework and is designed to be completed in four years. All preprofessional students in audiology complete the same set of core courses and basic clinical practicum. Students may choose from a set of electives based on their specific interests. Research experiences are part of the curriculum, but a dissertation is not required.
The Graduate Studies Committee in communication sciences and disorders oversees the AuD degree program. More information about the program is available from the graduate adviser in communication sciences and disorders.

1. Final approval of this degree is pending.
THE DOCTOR OF MUSICAL ARTS

The Doctor of Musical Arts degree allows for three majors: performance (including conducting, opera, and voice pedagogy emphases), composition, and music and human learning (including conducting and piano pedagogy emphases). Candidates for this degree must pass a comprehensive examination. They must demonstrate outstanding professional competence, artistic maturity, and exceptional knowledge of the historical and practical aspects of their major field. Each candidate must prepare a scholarly treatise in a field appropriate to the major or complete the alternative requirements of the nontreatise degree option. For composition majors, a musical work replaces the treatise. A jazz emphasis is available in each of the three majors.

Further information about requirements in various areas of concentration is available from the graduate adviser.

GRADUATION

The University holds commencement exercises at the end of the spring semester. Those who graduate in the preceding summer session or fall semester are eligible to attend along with those who graduate in the spring semester. In addition, the Graduate School holds a Convocation at the end of the fall semester and at the end of the spring semester at which master’s and doctoral degree candidates are recognized.

Graduation under a Particular Catalog

Degree requirements may be changed from one catalog to the next. The student is normally bound by the requirements of the catalog in force at the time of his or her first registration; the student may choose, however, to fulfill the requirements of a subsequent catalog. If the student does not fulfill the requirements within six years of his or her first enrollment in the Graduate School, he or she is then bound by the requirements of a subsequent catalog. The student may choose the catalog in effect in any year in which he or she is enrolled in the Graduate School, within the six-year limit.

Procedures of Graduation

Candidates for Master of Business Administration and Master in Professional Accounting degrees should consult advisers in their programs for graduation procedures. All other degree candidates must follow the procedures below. More detailed guidelines, deadlines, and forms are published by the Office of Graduate Studies at http://www.utexas.edu/ogs/pdn/.

Master’s Degree Candidates

1. Be registered in the Graduate School in the semester or summer session in which they plan to graduate.
2. File the Master’s Graduation Application Form with the Office of Graduate Studies.
3. Submit the thesis or report to the supervising committee by the deadline the committee establishes.
4. Submit the thesis or report to the Office of Graduate Studies for final approval by the graduate dean no later than the published deadline. The thesis or report may be submitted in electronic or printed format, but the format must follow the guidelines published online.
5. Submit the Master’s Degree Certification form, signed by the graduate adviser, to the Office of Graduate Studies by the published deadline. Candidates in thesis or report options must attach a signature page with original signatures of the supervising committee, a copy of the title page, and an abstract.
Doctoral Degree Candidates

1. Have completed the Intellectual Property (Copyright) Tutorial. If the candidate’s research involves human subjects, he or she must have provided evidence of ethical review by the departmental review committee and, if appropriate, by the University Institutional Review Board. The Institutional Review Board form should be attached to the Statement of Research with Human Participants form.

2. Be registered in the Graduate School in the semester or summer session in which they plan to graduate.

3. File the Doctoral Graduate Degree Candidate Form in the Office of Graduate Studies by the published deadline; if the student’s graduation is postponed, he or she must file a new form.

4. Provide each member of the Dissertation/Treatise Committee with a copy of the dissertation or treatise for evaluation.

5. Schedule the final oral examination with the Office of Graduate Studies.


7. Upload the final dissertation in electronic format to the submission site by the published deadline.

8. Submit the Committee Certification of Approved Version (signature page) and all required forms and fees associate with degree certification by the published deadline.

OTHER COMPONENTS OF THE UNIVERSITY OF TEXAS SYSTEM

For information about graduate programs and courses at the following components of The University of Texas System, consult their current catalogs.

The University of Texas at Arlington
The University of Texas at Brownsville
The University of Texas at Dallas
The University of Texas at El Paso
The University of Texas - Pan American
The University of Texas of the Permian Basin
The University of Texas at San Antonio
The University of Texas at Tyler
The University of Texas Southwestern Medical Center at Dallas
The University of Texas Medical Branch at Galveston
The University of Texas Health Science Center at Houston
The University of Texas Health Science Center at San Antonio
The University of Texas M. D. Anderson Cancer Center
The University of Texas Health Center at Tyler
4. Fields of Study

School of Architecture

ARCHITECTURE
Master of Architecture
Master of Arts
Master of Science in Architectural Studies
Master of Science in Historic Preservation
Master of Science in Sustainable Design
Master of Science in Urban Design
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK
The School of Architecture is housed in four adjacent buildings at the heart of the campus: Battle Hall (1911) and Sutton Hall (1918, renovated in 1982), designed by the noted American architect Cass Gilbert; Goldsmith Hall (1933, expanded and renovated in 1988), designed by the renowned French architect Paul Philippe Cret, one of the planners of the original forty-acre campus; and the West Mall Office Building (1961) by the Texas firm of Jessen, Jessen, Millhouse, and Greeven.

The Architecture and Planning Library, a branch of the University Libraries, collects materials on all aspects of architecture, landscape architecture, interior design, and community and regional planning, including design, history, criticism, theory, preservation, professional practice, case studies, and technology. The library houses over 84,000 volumes, including bound periodicals, professional reports, an extensive reference collection, a significant collection of about 15,000 rare books, and the Alexander Architectural Archive. The archive contains more than 200,000 architectural drawings, 740 linear feet of papers, photographic materials, models, and ephemera, representing thousands of projects in Texas, New York, Chicago, California, and Great Britain. Microform materials include many historic sources not available in book form. The University Libraries also provides access to a wide variety of electronic databases and a full range of reference and instructional services.

The School of Architecture Visual Resources Collection houses over 215,000 slides, 40,000 digital images, and related media. The Photo Union offers facilities and workshops where students can document their work and explore black and white photography.

Computer-aided design and research opportunities are provided by the school's computer laboratory, which maintains microcomputer equipment and terminals interfaced with the extensive computing facilities of Information Technology Services. The Center for American Architecture and Design provides support and resources for the scholarly study of American architecture. Through lectures, exhibitions, seminars, symposia, fellowship support, and the collection of research materials, the center encourages a community of architecture scholarship.
The University Co-op Materials Resource Center contains a lighting lab, a conservation lab, and a materials lab with more than ten thousand product and materials samples.

The resources of the Teresa Lozano Long Institute of Latin American Studies and the Benson Latin American Collection, and the proximity of Austin to Latin America, provide exceptional opportunities for the study of Latin American architecture.

AREAS OF STUDY

Master’s Degrees

The School of Architecture offers master’s degree programs that lead to professional, postprofessional, and academic degrees.

Master of Architecture. There are two Master of Architecture (MArch) programs. The MArch (first professional) degree program fulfills the professional degree requirements for registration as an architect. The MArch (postprofessional) degree program offers students with professional degrees in architecture the opportunity for advanced study in an area of concentration: historic preservation, sustainable design, advanced architectural design and theory, or urban design.

Master of Arts. The Master of Arts (MA) is an academic degree with a concentration in architectural history. It is a prerequisite for doctoral work in architectural history.

Master of Science in Architectural Studies. The MSArchStds, an academic degree, offers concentrations in architectural theory and interdisciplinary studies.

Master of Science in Historic Preservation. The MSHP is an academic degree that prepares students for practice or doctoral study in historic preservation.

Master of Science in Sustainable Design. The MSSD is an academic degree that prepares students for practice or for doctoral study.

Master of Science in Urban Design. The MSUD is an academic degree focusing on urban design with associated coursework in the disciplines of architecture, landscape architecture, urban planning, and urban development. Students may concentrate in one of three areas of study: urbanism and landscape, sustainable urbanism, or urban development.

Doctor of Philosophy

The Doctor of Philosophy is an academic degree with concentrations in the history of architecture and historic preservation. It provides students who have an appropriate master’s degree with a rigorous course of study intended to prepare them to conduct research and teach in these disciplines. The school’s faculty has particular expertise in early modern and modern architecture in Europe and the United States.

The concentration in the history of architecture places special emphasis on understanding buildings and their designers in context, and on viewing buildings and designs as complex and interconnected wholes that include aspects of aesthetics, tectonics, function, culture, and meaning. The student’s program of study may address the history of architectural theory; the history of design; the history of interior design; the history of urban design, settlement, or cities; and the history of building technology.

The concentration in historic preservation embraces multidisciplinary and culturally diverse approaches to the conservation of historic resources. The student’s program may address preservation planning and development; issues in the theory, history, and practice of the conservation of buildings, interiors, landscapes, and neighborhoods; historic site management; preservation and sustainable development; and innovative methodologies for preservation practice.
GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Dean Johnson Almy III         Daniel E. Leary
Anthony Alofsin               Gerlinde Leiding
Kevin Alter                   Christopher A. Long
Francisco Arumi-Noé           Carl Matthews
Simon D. Atkinson             Juan Miro
Michael L. Benedikt           Steven A. Moore
J. Sinclair Black             Michael Oden
Jeffrey Mark Chusid           Samantha L. Randall
Richard L. Cleary             Vincent L. Snyder
Elizabeth Danze               Lawrence W. Speck
Larry A. Doll                 Frederick R. Steiner
Billie Faircloth              Richard P. Swallow
Michael L. Garrison           Danilo F. Udovicki-Selb
Louise Harpman                Lois R. Weinthal
David D. Heymann              Nichole Wiedemann
Nancy P. Kwallek

ADMISSION REQUIREMENTS

Master of Architecture (first professional). This degree program is open to qualified applicants who hold baccalaureate degrees in any discipline, including pre-architecture.

Master of Architecture (postprofessional). This degree program is open to qualified applicants who hold professional degrees in architecture.

Master of Arts. This degree program in architectural history is open to qualified applicants who hold baccalaureate degrees in any discipline. Prerequisites include twelve hours of architectural history, which may include courses in art history, history, or related subjects, and design experience. The design requirement may be satisfied by coursework or by evidence of previous fieldwork or professional architectural experience.

Master of Science in Architectural Studies. This degree program is open to qualified applicants who hold baccalaureate degrees in any discipline. Prerequisites for students without architecture degrees vary according to the student's experience and intended area of concentration.

Master of Science in Historic Preservation. This degree program is open to qualified applicants who hold baccalaureate degrees in any discipline. Prerequisites include at least one three-semester-hour course in architectural history as well as design experience. The design requirement may be satisfied by coursework or by evidence of previous fieldwork or professional architectural experience.

Master of Science in Sustainable Design. This degree program is open to qualified applicants who hold baccalaureate degrees in any discipline. Prerequisites include at least one three-semester-hour course in architectural history as well as design experience. The design requirement may be satisfied by coursework or by evidence of previous professional experience in a related field.

Master of Science in Urban Design. This degree program is open to qualified applicants who hold baccalaureate degrees in any discipline. Prerequisites for students without degrees in architecture or landscape architecture vary according to prior experience and intended concentration.
**Doctor of Philosophy.** Students who enter the doctoral degree program must hold a master's degree or the equivalent in a discipline relevant to their area of concentration and must demonstrate the ability to excel in doctoral work. Admission decisions are made by the doctoral subcommittee of the Graduate Studies Committee.

**DEGREE REQUIREMENTS**

**Master of Architecture**

**Professional degree program.** For students entering with degrees other than professional degrees in architecture, the Master of Architecture is an accredited first professional degree, with accelerated graduate professional courses designed to prepare the student for advanced work in architecture; the coursework is prescribed on the basis of the student's previous college work as shown in transcripts, portfolio, statement of intent, and references. Before progressing into advanced architectural design, first professional degree candidates must demonstrate a certain proficiency in design and communication through a qualifying review conducted by the faculty. Students entering without a background in architecture normally complete the first professional degree program in approximately three and one-half years of study in residence; the academic records of students holding preprofessional degrees in architectural studies are individually evaluated for course credit toward the first professional degree requirements.

Students may earn a Certificate of Specialization in Historic Preservation, Urban Design, or Sustainable Design by completing the relevant sequence of courses. Additional information is available from the graduate adviser.

**Postprofessional degree programs.** For students entering with a professional degree in architecture, the Master of Architecture is a postprofessional degree. It requires either thirty semester hours of graduate work, including the six-hour thesis; or thirty-six hours of work, including a final six hours of independent study. Based on the student's interests and an evaluation of the statement of intent, portfolio, and transcripts, specific degree requirements are established for the postprofessional program offerings:

- **Design and Theory:** A postprofessional program providing an opportunity to examine and refine design philosophies. Participants may develop an individual program of study based on their specific design interests.
- **Historic Preservation:** A postprofessional program designed to provide knowledge and skills appropriate for architects who are engaged in preservation practice and policy, written and graphic documentation of historic structures, building pathology, materials conservation, and sensitive design for restoration or adaptive reuse.
- **Sustainable Design:** A postprofessional program emphasizing the integration of natural systems, building systems, and cultural systems into architectural design.
- **Urban Design:** Postprofessional graduate study designed to develop the student's understanding of the urban environment and its users' needs and to promote the design skills he or she needs to improve the quality and efficiency of the built environment.

**Master of Arts**

The degree program consists of at least thirty semester hours of coursework, including a thesis. Students must demonstrate reading knowledge of French, Spanish, German, or another language appropriate to their area of study. A typical course sequence is described on the School of Architecture Web site at [http://web.austin.utexas.edu/architecture/academic/architecture/grad/arch_hist/index.html](http://web.austin.utexas.edu/architecture/academic/architecture/grad/arch_hist/index.html). An individual plan of study is defined for each student by the director of the program.
Master of Science in Architectural Studies
The Master of Science in Architectural Studies degree program consists of advanced academic work with concentrations in architectural theory and interdisciplinary studies. This degree program is tailored to applicants who wish to pursue research and advanced academic study for a nonprofessional degree. It is available to students with or without a professional degree in architecture.

The program requires at least thirty semester hours of work if the student completes a thesis, or at least thirty-three hours if the student completes a professional report. Typical course sequences are described on the School of Architecture Web site at http://web.austin.utexas.edu/architecture/academic/main.html. An individual plan of study is defined for each student by the director of the concentration.

This degree does not fulfill the professional degree requirements for registration as an architect.

Master of Science in Historic Preservation
The degree program consists of at least forty-five semester hours of coursework, including a thesis or professional report. A typical course sequence is described on the School of Architecture Web site at http://web.austin.utexas.edu/architecture/academic/architecture/grad/histpres.html. An individual plan of study is defined for each student by the director of the program.

Master of Science in Sustainable Design
The degree program consists of at least forty-two semester hours of work, including a thesis or professional report. Up to twenty-four semester hours of coursework may be chosen in the student's area of concentration. An individual plan of study is defined by each student in conjunction with the program director. A typical course sequence is described on the School of Architecture Web site.

Master of Science in Urban Design
The degree program requires at least thirty-six semester hours of work, including a thesis or professional report. A typical course sequence for each area of concentration is described on the School of Architecture Web site.

Doctor of Philosophy
The doctoral subcommittee of the Graduate Studies Committee determines course requirements, prescribes qualifying examinations, and approves dissertation topics. The degree plan requires a minimum of twenty-one hours of seminars and reading courses leading to the comprehensive examination. Nine of these hours are taken as a minor outside the School of Architecture. The program requires experience in design, which may be gained through coursework or in a variety of professional contexts, and reading proficiency in two foreign languages approved by the doctoral subcommittee. After passing the comprehensive examination, the student registers in the dissertation colloquium to develop a dissertation topic. The writing, oral defense, and revision of the dissertation follow.
FOR MORE INFORMATION

Campus address: Sutton Hall (SUT) 2.130, phone (512) 471-0134, fax (512) 471-0716; campus mail code: B7500

Mailing address: The University of Texas at Austin, Graduate Program in Architecture, School of Architecture, 1 University Station B7500, Austin TX 78712

E-mail: gopaul@mail.utexas.edu

URL: http://web.austin.utexas.edu/architecture/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Architecture: ARC

381R. Advanced Visual Communication. Advanced topics in visual communication in such media as freehand drawing, modeling, photography, computer graphics, photogrammetry, and measured drawings. Five or six laboratory hours a week for one semester. With consent of the graduate adviser, may be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

Topic 1: Computer Imaging.

381T. Technical Communication. Studio to provide skills in producing construction documents as they relate to the design and building process. Six laboratory hours a week for one semester. Prerequisite: Graduate standing; Architecture 385N (or 387N), 394C, and 394D; concurrent enrollment in Architecture 695; and consent of the graduate adviser.

382. Professional Practice. Ethical, legal, economic, and administrative processes and responsibilities of the practitioner in architecture and allied fields. Topics may include preservation law, community development, participatory design, and other aspects of organizations; methods and roles in design, planning, and preservation of the built environment. Prerequisite: Graduate standing and consent of the graduate adviser.

383S. Site Design. Fundamentals of building and landscape relationships. Prerequisite: Graduate standing and consent of the graduate adviser.

383T. Site, Landscape, and Urban Studies. Topics in the history, design, and preservation of building sites, landscapes, and rural and urban communities. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

384K. Environmental Controls I. Survey of acoustics, color, light, illumination, and electrical and information systems in architectural interiors. Includes techniques of documentation. Prerequisite: Graduate standing and consent of the graduate adviser.

384L. Environmental Controls II. Survey of heating, ventilating, air conditioning, vertical transportation, and plumbing systems in buildings. Includes techniques of documentation. Prerequisite: Graduate standing and consent of the graduate adviser.

384T. Topics in Building and Environment Studies. Topics include daylighting and the history of building technology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

385K. Construction I. Materials and methods of construction systems. Three lecture hours and three laboratory hours a week for one semester. Prerequisite: Graduate standing and consent of the graduate adviser.

385L. Construction II. Introduction to statics and strengths of materials, structural forces, and principles of equilibrium. Three lecture hours and three laboratory hours a week for one semester. Prerequisite: Graduate standing, Architecture 385K (or 387K), Physics 303K and 103M, and consent of the graduate adviser.
385M. Construction III. Architectural potential, theory, and design of timber and steel structures. Three lecture hours and three laboratory hours a week for one semester. Prerequisite: Graduate standing, Architecture 385L (or 387L), and consent of the graduate adviser.

385N. Construction IV. Architectural potential, theory, and design of reinforced concrete in structures. Three lecture hours and three laboratory hours a week for one semester. Prerequisite: Graduate standing, Architecture 385M (or 387M), and consent of the graduate adviser.

385T. Topics in Building Construction. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

386K. Theory of Architecture I. Examines how architecture carries meaning. Uses case studies of buildings constructed in the past forty years. Prerequisite: Graduate standing and admission to the graduate program in architecture or architectural studies.

386L. Theory of Architecture II. Survey of architectural theory since the Renaissance. Prerequisite: Graduate standing and admission to the graduate program in architecture or architectural studies.

386M. Topics in Architectural Theory. Study of critical theories that affect the built environment. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

387F. World Architecture: Origins to 1100. Introduction to architectural types, principles, and building technologies from prehistory to the twelfth century. Architecture 387F and 388K may not both be counted. Prerequisite: Graduate standing and consent of the graduate adviser.

387G. World Architecture: The Middle Ages to the Industrial Revolution. Examination of architectural types, principles, and building technologies with special attention to cultural transfers. Architecture 387G and 388L may not both be counted. Prerequisite: Graduate standing, Architecture 387F (or 388K), and consent of the graduate adviser.

387H. Modern Architecture and Its Myths. Global perspective of buildings and their settings, and the dissemination of ideas. Architecture 387H and 388M may not both be counted. Prerequisite: Graduate standing, Architecture 387F and 387G (or 388K and 388L), and consent of the graduate adviser.

388R. Topics in the History of Architecture. Seminars and lecture/seminars on advanced topics in history and historiography of architecture and the history of building technology. Regular topics include ancient, medieval, Renaissance, Latin American, Asian, nineteenth-century, and twentieth-century history of architecture; and historiography of architecture. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, Architecture 388L (or 388H), and consent of the graduate adviser.

389. 689. Research in Architecture. Investigation of problems in architecture, urban design, and development selected by the student with approval of the Graduate Studies Committee. Three or six lecture hours a week for one semester. Prerequisite: Graduate standing and consent of the graduate adviser.

393. Visual Communication. Study and application of drawing and other communication skills for architects. Six laboratory hours a week for one semester. Prerequisite: Graduate standing, concurrent enrollment in Architecture 394, and consent of the graduate adviser.

394. Architectural Design. Design problems dealing with subjective and objective decision making, investigation of physical and social contexts, and the practical requirements of sound building. Nine laboratory hours a week for one semester. Prerequisite: Graduate standing, concurrent enrollment in Architecture 394, and consent of the graduate adviser.

695. Architectural Design V. Comprehensive advanced studio to develop skills in assimilating concepts into a feasible building design. Fifteen laboratory hours a week for one semester. Prerequisite: Graduate standing, Architecture 394C and 394D, concurrent enrollment in Architecture 394C, and consent of the graduate adviser.

696. Advanced Architectural Design. Advanced problems in architectural or urban design to develop skills in areas of students’ and faculty member’s choice, including interior architecture, preservation, and energy-conscious design. The equivalent of fifteen laboratory hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, Architecture 394C and 394D or the equivalent, and consent of the graduate adviser.
697. Master’s Studio. Forum for advanced study in architecture, addressing complex design problems and issues related to various architectural topics. The equivalent of eighteen laboratory hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, consent of the graduate adviser, and completion of design sequence for a professional degree in architecture.

397K. Doctoral Research in Architecture. Conference course for students preparing for the dissertation colloquium. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in architecture and consent of the graduate adviser.

698. Thesis. For students seeking the Master of Science or Master of Arts degrees in the School of Architecture, those seeking the Master of Architecture as a postprofessional degree, and those seeking the Master of Architecture as a first professional degree who choose to complete the requirements of a concentration. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in architecture and consent of the graduate adviser; for 698B, Architecture 698A.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in architectural studies and consent of the graduate adviser.

398T. Supervised Teaching in Architecture. Designed to orient the beginning teacher in effective methods of teaching architecture and related topics. Required for assistant instructors in architecture. Prerequisite: Graduate standing in architecture. 

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree and written consent of the graduate adviser.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Architecture 399R, 699R, or 999R, and written consent of the graduate adviser.

COMMUNITY AND REGIONAL PLANNING
Master of Science in Community and Regional Planning
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK
Facilities for the study of community and regional planning are centrally located on campus in three adjacent and historically significant buildings: Battle Hall (1911), Sutton Hall (1918, renovated in 1982), and Goldsmith Hall (1933, expanded and renovated in 1988). The Architecture and Planning Library and the Wasserman Public Affairs Library provide excellent resources for study and research in community and regional planning. Because of its interdisciplinary nature, the program also makes use of a wide range of resources available through the Bureau of Business Research, the School of Social Work, the Center for Transportation Research, the Population Research Center, the Center for Research in Water Resources, and the Bureau of Economic Geology. The program’s computer laboratory provides microcomputers and peripherals, computer simulation and graphics workstations, geographic information workstations, high-quality photographic and graphic production facilities, and several connections to Information Technology Services.

The program has a strong tradition of learning through service to the community, the region, the state, and the nation. A number of community planning projects and studies are produced through the program’s Center for Sustainable Development. Learning-through-service is also accomplished through the internship program administered by the Career Placement Office. The program draws on the resources of state, regional, and local planning agencies to provide research and community service opportunities.
AREAS OF STUDY

In conjunction with completion of the core portion of the curriculum, students may choose to specialize in a field within urban planning. An official specialization requires completion of a minimum of four elective courses plus a thesis or professional report within the chosen field. Areas of specialization include environmental and natural resources, housing, land use and land development, economic and community development, transportation, and historic preservation (through cross-listed architecture courses). Selection of an official field of specialization is not a requirement of the degree program. Students may instead choose a generalist approach to elective courses, tailoring the choice of elective courses to their personal interests.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Anne Beamish
Kent S. Butler
Jeffrey Mark Chusid
Terry D. Kahn
Tracy E. McMillan
Steven A. Moore
Michael Oden
Barbara McKeen Parmenter
Robert G. Paterson
Frederick R. Steiner
Patricia Wilson
Ming Zhang

ADMISSION REQUIREMENTS

There are no specific course prerequisites for admission to the master's degree program. However, facility in basic computer skills (using spreadsheets and word processing) is assumed. Some entering students find introductory courses in statistics and microeconomics to be helpful, although such courses are not formal prerequisites.

To be admitted to the doctoral program, an applicant must have a master's degree in community and regional planning or a related field, must have adequate preparation in the subject matter of the program, and must demonstrate competence in quantitative methods and planning theory.

To be admitted to any of the dual degree programs, the applicant must be admitted to each of the individual participating programs.

For more information about admission to the master's or doctoral degree program or to any of the dual degree programs, consult the graduate adviser in care of the program.

DEGREE REQUIREMENTS

Master of Science in Community and Regional Planning

Each student must complete forty-eight semester hours of coursework, including introductory courses on the planning process, quantitative methods, planning law, and finance of public services. The student may then choose an area of specialization; for each specialization, at least four courses are required. During the final year, the student synthesizes his or her educational experience either in a thesis or in an internship with a professional report. With the assistance of the graduate adviser, each student develops an individual program based on his or her interests; each program must include at least thirty semester hours in community and regional planning or acceptable substitutes.
Doctor of Philosophy
The doctoral degree requires forty-eight semester hours of work, including graduate coursework and directed research and the dissertation. Each student must choose a specialization from the following: economic and community development, environmental and natural resources planning, historic preservation, housing, land use and land development, transportation, urban design, or a special field defined by the supervisor and the student and approved by the community and regional planning PhD Committee. The specialization is supplemented by advanced work in an outside field; a variety of supporting (outside) fields are available through other University programs. Depth and breadth of experience in planning theory, research design, and methods are required of all doctoral students.

After completing the required coursework, the student advances to candidacy according to procedures set by the Graduate Studies Committee. Advancement to candidacy involves an evaluation of the student’s research proposal and a comprehensive written examination covering the inside field and the student’s coursework. A faculty committee reviews the student’s program of coursework and research proposal, evaluates the research in progress, and reads the dissertation.

DUAL DEGREE PROGRAMS
The School of Architecture has approval to offer the dual degree programs described below. Further information about these programs is available from the graduate adviser in each of the participating areas.

A student seeking admission to a dual degree program must apply through the Graduate and International Admissions Center. He or she must be accepted by each individual program in order to be admitted to the dual program. Like all other graduate applicants, the student is responsible for submitting any additional information required by the Graduate Studies Committee for each program.

Master of Science in Community and Regional Planning/
Master of Arts with a Major in Latin American Studies
Together with the Teresa Lozano Long Institute of Latin American Studies, the community and regional planning program offers a dual degree program structured so that a student may earn a Master of Arts with a major in Latin American studies and a Master of Science in Community and Regional Planning in three academic years. A minimum of sixty-six semester hours of graduate coursework is required to complete both degrees.

Master of Science in Community and Regional Planning/
Doctor of Jurisprudence
Together with the School of Law, the community and regional planning program offers a dual degree program structured so that a student may earn the Doctor of Jurisprudence and the Master of Science in Community and Regional Planning through a 116-semester-hour curriculum. The curriculum allows the student to complete both degrees within four years of study.
Master of Science in Community and Regional Planning/Doctor of Philosophy with a Major in Geography

The community and regional planning program and the Department of Geography and the Environment offer a program that leads to the Master of Science in Community and Regional Planning and then to the Doctor of Philosophy with a major in geography. This program is designed for students who are interested in the theoretical intersections between the fields of geography and urban planning. Students interested primarily in one field or the other should apply to the appropriate individual degree program rather than to this dual program.

FOR MORE INFORMATION

Campus address: Sutton Hall (SUT) 2.130, phone (512) 471-1922, fax (512) 471-0716; campus mail code: B7503
Mailing address: The University of Texas at Austin, Graduate Program in Community and Regional Planning, School of Architecture, 1 University Station B7503, Austin TX 78712
E-mail: gopaul@mail.utexas.edu
URL: http://web.austin.utexas.edu/architecture/academic/crp/main.html

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Community and Regional Planning: CRP

980. Planning Theory and Practice. A three-semester sequence in planning practice and communications; basic planning methods; history, theory, and ethics of planning. Students complete a comprehensive planning project in the final semester. Three lecture hours a week for three semesters. Prerequisite: Graduate standing and admission to the community and regional planning doctoral program.

381. Management and Implementation. Public policy and administration, law, public finance, economics of the public sector, political economy. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

   Topic 1: Financing Public Services.
   Topic 2: Planning Law.
   Topic 3: Preservation Law.
   Topic 4: Growth Management.
   Topic 5: Dispute Resolution.
   Topic 6: Politics and Economics of Cities and Regions.

383. Environment and Natural Resources. Seminars and workshops. Workshops are based on active research or cooperation with public or private clients. May also include studios. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

   Topic 1: Techniques in Environmental Analysis.
   Topic 2: Coastal Zone Planning.
   Topic 4: Planning for Natural Hazards.
   Topic 5: Natural Resources and Environmental Planning Workshop.

384. Transportation. Seminars and workshops on urban transportation policy and practice. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

   Topic 1: Urban Transportation Planning.
   Topic 2: Neighborhood Transportation Planning.
   Topic 3: Planning for Accessibility.
   Topic 4: Land Use and Transportation Planning.
385C. Economic and Community Development. Theory and analysis of community and regional structure and function; social and political organization; economic structure and development; growth problems. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.
Topic 1: Urban and Regional Theory.
Topic 3: Theory and Practice of Economic Development.
Topic 4: Community Development.
Topic 5: Local Development Planning in Latin America.

386. Applied Planning Techniques. Quantitative and qualitative methods of planning analysis; computer models; geographic information systems. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.
Topic 1: Quantitative Methods I.
Topic 2: Quantitative Methods II. Additional prerequisite: Community and Regional Planning 386 (Topic 1).
Topic 3: Data Sources and Analysis. Major sources and types of data available in the public and private domains; data analysis and applications.
Topic 4: Qualitative Research Methods.
Topic 5: Introduction to Geographic Information Systems.

387C. Infrastructure Planning. Policy and techniques for providing soft and hard urban infrastructure; infrastructure planning and analysis. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.
Topic 1: Infrastructure Planning and Development.
Topic 2: Water Resources Planning.
Topic 3: Urban Parks and Open Space Planning.
Topic 4: Neighborhood Participatory Planning.

388. Housing. Policy, production, maintenance, location, finance, and mortgages of single-family and multifamily housing; neighborhoods, gentrification, and public and private housing subsidy programs. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.
Topic 1: Housing Demand and Production.
Topic 2: Housing and Culture.
Topic 3: Affordable Housing Policy.

389C. Land Use and Land Development. Private land development investment decisions; public regulatory mechanisms; the public and private land development process; financial feasibility and market analysis; impact fees and special ordinances. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.
Topic 1: Planning for Land Development.
Topic 2: Research in Land Development.
Topic 3: Landscape and Culture.
Topic 4: Images of the City.

390. Conference Course in Community and Regional Planning. Readings and case studies in current topical issues in planning and planning education; may include planning and designing for the high-tech environment. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

391D. Doctoral Seminar. Advanced theory and research methodology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and admission to the community and regional planning doctoral program.
Topic 1: Colloquium on Planning Issues.
Topic 2: Planning Theory.
Topic 3: Research Methodology.

396. Independent Research in Community and Regional Planning. Prerequisite: Graduate standing and consent of the graduate adviser.

397. Planning Internship. Includes placement with a public or private planning agency, faculty supervision, and presentation of report. Prerequisite: Graduate standing and consent of the graduate adviser.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in community and regional planning and consent of the graduate adviser; for 698B, Community and Regional Planning 698A.

399R. Master's Report. Preparation of a report to fulfill the requirement for the master's degree under the report option; a student may choose this option with faculty approval if the student also completes an internship. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in community and regional planning and consent of the graduate adviser.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Community and Regional Planning 399R, 699R, or 999R.
LANDSCAPE ARCHITECTURE

Master of Landscape Architecture

FACILITIES FOR GRADUATE WORK

Facilities for the study of landscape architecture are centrally located on campus in three adjacent and historically significant buildings: Battle Hall (1911) and Sutton Hall (1918, renovated in 1982), designed by the distinguished American architect Cass Gilbert; and Goldsmith Hall (1933, expanded and renovated in 1988), designed by noted French architect Paul Philippe Cret, one of the planners of the original forty-acre campus.

The program has close working relationships with the Department of Geography and the Environment, the Lady Bird Johnson National Wildflower Research Center, and the Center for Maximum Potential Building Systems.

The Architecture and Planning Library, a branch of the University Libraries, maintains more than 84,000 volumes, including bound periodicals, professional reports, and all major architecture, landscape architecture, and planning journals. The library also houses the Alexander Architectural Archive, a collection of more than 300,000 architectural drawings, photographs, and 1,630 linear feet of documents on buildings and projects from all over the world. The collections of the nearby Harry Ransom Humanities Research Center include a large number of rare architecture books, including the classics of architectural literature.

The School of Architecture's Audiovisual Resources Collection contains audiovisual equipment, technical and design reference material, and more than 215,000 photographic slides and 40,000 digital images of architectural and related works.

The Center for American Architecture and Design provides support and resources for the scholarly study of American architecture. Through lectures, exhibitions, seminars, symposia, fellowship support, and the collection of research materials, the center encourages a community of architecture and landscape scholarship. The Center for Sustainable Development undertakes theoretical and applied research and projects related to sustainable systems, including land, infrastructure, and new urban growth. The Partnership for Quality Growth and Preservation undertakes community-based projects and provides a forum for landscape architecture faculty members and students to be involved in community service.

Computer-aided design and research opportunities are provided by the School of Architecture's computer laboratory, which maintains microcomputer equipment and terminals interfaced with the extensive computing facilities of Information Technology Services. Winedale, a museum of cultural history housed in restored nineteenth-century Texas buildings eighty miles east of Austin, provides in-residence research opportunities in Texas architectural history, preservation, and restoration. The resources of the Teresa Lozano Long Institute of Latin American Studies and Benson Latin American Collection and the proximity of Austin to Latin America provide exceptional opportunities for the study of Latin American architecture.

AREAS OF STUDY

The Master of Landscape Architecture, first professional degree, is a professional degree program for students who do not have a background in landscape architecture. The Master of Landscape Architecture, postprofessional degree, is a postprofessional degree program for landscape architecture professionals.
GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Dean Johnson Almy III  Hope H. Hasbrouck
Anne Beamish  David D. Heymann
Jeffrey Mark Chusid  Frederick R. Steiner
Larry A. Doll  Nichole Weidemann
Robin W. Doughty

ADMISSION REQUIREMENTS

Master of Landscape Architecture (first professional). This degree program is open to qualified applicants who hold baccalaureate degrees in any discipline. Applicants with an accredited professional degree in architecture may be eligible for admission with advanced standing. Applicants with a nonaccredited preprofessional degree in architecture, landscape architecture, or environmental design may also be granted advanced standing.

Those who qualify are generally granted advanced standing of up to one or two terms, subject to review by the admissions committee. These individuals may be able to waive degree requirements by demonstrating equivalent study in any of the required course areas.

Master of Landscape Architecture (postprofessional). This degree program is open to qualified applicants who hold accredited professional degrees in landscape architecture.

DEGREE REQUIREMENTS

The Master of Landscape Architecture, first professional degree, is an accelerated graduate program designed to prepare students for advanced work in landscape architecture. Upon admission, students must complete a structured core sequence of courses in design, visual communication, history and theory, and technology in landscape architecture. Upon successful completion of the core sequence, students are qualified to begin advanced study in the discipline. Students in the first professional degree program normally complete their studies in three years, with a total of seventy-eight semester hours of coursework. Students granted advanced standing normally complete their studies in two or more years, with forty-eight or more semester hours of coursework. The number of hours will vary according to the course of study outlined by the faculty upon admission.

The Master of Landscape Architecture, postprofessional degree, is a graduate program designed to provide individuals who have completed an undergraduate professional landscape architecture degree or its equivalent an opportunity to engage in advanced scholarship and professional development. Students in the postprofessional degree program normally complete their studies in two years, with a total of forty-eight semester hours of coursework.

FOR MORE INFORMATION

Campus address: Goldsmith Hall (GOL 2.308), phone (512) 475-7994, fax (512) 471-0716; campus mail code: B7500

Mailing address: The University of Texas at Austin, Graduate Program in Landscape Architecture, School of Architecture, 1 University Station B7500, Austin TX 78712

URL: http://web.austin.utexas.edu/architecture/academic/landscape/
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes that have been made to the courses listed here since this catalog was published.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Landscape Architecture: LAR

380. *Summer Atelier in Landscape Architecture.* An introduction to the fundamental components of landscape architecture and graphic communication. Students are introduced to basic drawing and representational skills. **Prerequisite:** Graduate standing.

381R. *Topics in Visual Communication.* Advanced topics in media and interpretation, such as freehand drawing, measured drawings, aspects of computer graphics, geographic information systems, and photography. Six laboratory hours a week for one semester. May be repeated for credit when the topics vary. Landscape Architecture 381M and 381R may not both be counted unless the topics vary. **Prerequisite:** Graduate standing and consent of the graduate adviser.

384. *Topics in Horticulture and Plants in Design.* Study of habitat, site and technical conditions, and characteristics of plant typologies and their application to landscape practice. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of the graduate adviser.

385. *Topics in Environmental Science.* Elective seminars in aspects of environmental analysis, ecological and systemic approaches, sustainable development, and applied methods of geographic information systems. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of the graduate adviser.

385K. *Technology Workshop I.* Fundamentals of building and landscape relationships as encompassed in site planning and design. Examines a variety of site conditions in relationship to both environmental protection and human usage. Considers the roles and usage of materials in terms of planting and construction. Three lecture hours and three laboratory hours a week for one semester. Landscape Architecture 383K and 385K may not both be counted. **Prerequisite:** Graduate standing and consent of the graduate adviser.

385L. *Technology Workshop II.* Site and ecological analysis and planning as related to site design issues. Three lecture hours and three laboratory hours a week for one semester. Landscape Architecture 383L and 385L may not both be counted. **Prerequisite:** Graduate standing. Landscape Architecture 385K (or 383K), and consent of the graduate adviser.

385M. *Advanced Seminar in Landscape Technology.* Current issues related to landscape technology and their influence and application in the built world. Landscape Architecture 383M and 385M may not both be counted. **Prerequisite:** Graduate standing, Landscape Architecture 385L (or 383L), and consent of the graduate adviser.

386. *Professional Practice.* Ethical, legal, economic, and administrative processes and responsibilities of the landscape architect practitioner. **Prerequisite:** Graduate standing and consent of the graduate adviser.

387. *Landscape Ecology.* **Prerequisite:** Graduate standing and consent of the graduate adviser.

388. *Topics in Landscape Architecture History and Theory.* Seminars on advanced topics in history and theory, including analysis, readings, and critique of significant positions, practice, and discourse. May be repeated for credit when the topics vary. Landscape Architecture 382M and 388 may not both be counted unless the topics vary. **Prerequisite:** Graduate standing, Landscape Architecture 388L (or 382L), and consent of the graduate adviser.

388K. *History and Theory of Landscape Architecture I.* An introduction to the history narrative of landscape architecture through the development of ideas and principles related to context, designer, and text. Landscape Architecture 382K and 388K may not both be counted. **Prerequisite:** Graduate standing and consent of the graduate adviser.
388L. History and Theory of Landscape Architecture II. An examination of precedents and influences upon twentieth-century landscape, and the critical components of contemporary landscape thought. A consideration of elements and positions forming the discourse on meaning and appropriateness. Landscape Architecture 382L and 388L may not both be counted. Prerequisite: Graduate standing, Landscape Architecture 388K (or 382K), and consent of the graduate adviser.

389, 689. Research in Landscape Architecture. Investigation of problems in landscape architecture selected by the student with approval of the Graduate Studies Committee. Independent study. Prerequisite: Graduate standing and concurrent enrollment in Landscape Architecture 390K, and consent of the graduate adviser.

390. Landscape Studio I. Methods of survey, recording, interpretation, and representation of landscape. An introduction to design through examination of object, space, relationship, movement, the human condition, materiality, and ecology. Nine laboratory hours a week for one semester. Prerequisite: Graduate standing, concurrent enrollment in Landscape Architecture 390K, and consent of the graduate adviser.

390K. Visual Communication I. An introduction to the study and application of graphic, representational, and communication skills. Six laboratory hours a week for one semester. Landscape Architecture 381K and 390K may not both be counted. Prerequisite: Graduate standing and concurrent enrollment in Landscape Architecture 390.

391. Landscape Studio II. A continued exploration of survey methods, design, decision making, and representation through an increasingly complex series of projects of varied scale and context. Nine laboratory hours a week for one semester. Prerequisite: Graduate standing, Landscape Architecture 390 and 390K (or 381K), concurrent enrollment in Landscape Architecture 391K, and consent of the graduate adviser.

391K. Visual Communication II. Study of a variety of interpretive and design representation skills directed to support the survey, design, and presentation needs of landscape architects. Six laboratory hours a week for one semester. Landscape Architecture 381L and 391K may not both be counted. Prerequisite: Graduate standing and concurrent enrollment in Landscape Architecture 391.

695. Comprehensive Landscape Studio. Provides students with an opportunity to consider a landscape project from initial research and site investigation to detailed design, implementation, and technical detail. Explores relationships between theory and practice, and from conceptual to detailed design throughout stages of the project. Fifteen laboratory hours a week for one semester. May not be counted by students with credit for Landscape Architecture 692 unless the subject matter varies. Prerequisite: Graduate standing, Landscape Architecture 390 and 391, and consent of the graduate adviser.

696. Advanced Design. Elective studios offering students an opportunity to explore particular topics in landscape, often in collaboration with architecture and community and regional planning students. Fifteen laboratory hours a week for one semester. May be repeated for credit when the topics vary. Landscape Architecture 693 and 696 may not both be counted unless the topics vary. Prerequisite: Graduate standing, Landscape Architecture 695, and consent of the graduate adviser.

397. Master’s Design Study in Landscape Architecture—Preparation. Investigation of problems in landscape architecture selected by the student in preparation for Landscape Architecture 697K. The equivalent of three lecture hours a week for one semester. Prerequisite: Graduate standing and consent of the graduate adviser.

697K. Master’s Design Study in Landscape Architecture. An independent design project in which the investigation, design process, and critical evaluation are formulated by the student. The project must have a theoretical and research base, provide a comprehensive exploration of a landscape design topic, and offer insight for the furthering of landscape studies. Eighteen laboratory hours a week for one semester. Landscape Architecture 694 and 697K may not both be counted. Prerequisite: Graduate standing, Landscape Architecture 696 (or 693) and 397, and consent of the graduate adviser.
Red McCombs
School of Business

BUSINESS ADMINISTRATION
Master of Business Administration

FACILITIES FOR GRADUATE WORK
Facilities for graduate study in business include state-of-the-art classrooms and seminar rooms, most of which are equipped with multimedia and computer terminal facilities. Computer classrooms, computer laboratories, a Financial Trading and Technology Center, and a behavioral science laboratory are also available. A variety of special collections and databases are available for research and study. In addition, there are extensive study and research facilities for individual and group projects. Library holdings in business, economics, and related areas are unusually comprehensive; the University has several noteworthy collections, such as those on Latin America and Texas, that are of special interest to business students. Also available are personalized reference services, including library instruction classes, Web-based subject and course guides, and an extensive array of online business and statistical databases; a tax collection; and a large selection of materials to aid in productive problem solving. These holdings are located in the Perry-Castañeda Library and are available through the University Libraries Web site, http://www.lib.utexas.edu/.

Other facilities of interest, especially to students of international business, include the Center for International Business Education and Research, the Benson Latin American Collection, the Teresa Lozano Long Institute of Latin American Studies, the Center for Middle Eastern Studies, the Center for East Asian Studies, the South Asia Institute, and the Population Research Center. Additional opportunities for research are provided by the AIM Investment Center; the Center for Business Measurement and Assurance Services; the Center for Business, Technology, and Law; the Center for Customer Insight; the Manufacturing Systems Center; the Center for Organizations Research; the Center for Real Estate Finance; the Center for Research in Electronic Commerce; the EDS Financial Trading and Technology Center; the Hicks, Muse, Tate & Furst Center for Private Equity Finance; the Herb Kelleher Center for Entrepreneurship; the IC² Institute; and the Supply Chain Management consortium.

The McCombs School of Business has its own computer network that links the school’s laboratories and other computing resources. The network is also connected to the University’s computing infrastructure. All Master of Business Administration (MBA) students are required to own a laptop computer.

The MBA Program Office provides information, academic advising, and student services to MBA students; contact information is given on page 55.
AREAS OF STUDY
Graduate study is offered in the following functional areas of business: accounting, finance, management, information technology, and marketing. Students in the full-time program may concentrate their coursework in one of these areas. They may also choose one of the following specializations: financial reporting and control; corporate finance, investments, and financial services; energy finance; private equity finance; real estate finance; entrepreneurship; operations management; global business management; market-based consulting; information management; customer insight; and social enterprise.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Anitesh Barua
Alison Davis-Blake
James W. Fredrickson
Stephen M. Gilbert
Kate Gillespie
Genaro J. Gutiérrez
D. Eric Hirst
Julie R. Irwin
Steven J. Kachelmeier
Robert Parrino
Ramesh K. S. Rao
Thomas W. Sager
Steven R. Salbu

ADMISSION REQUIREMENTS
Several scheduling options are available to students seeking the MBA: full-time, executive, and evening programs in Austin; weekend programs in Dallas and Houston; and a weekend program on the Mexico City campus of the Instituto Tecnológico y de Estudios Superiores de Monterrey.

Admission decisions for all programs are based on the applicant’s test scores, academic and professional background, letters of recommendation, and other factors. Applicants to the Mexico City program may submit scores on the Graduate Management Admission Test (GMAT) or the Tecnológico de Monterrey Prueba de Admisión a Estudios de Posgrado (PAEP); all other applicants must submit GMAT scores. TOEFL or IELTS scores are required of applicants to the Mexico City program and all other applicants who received their undergraduate education in a non-English–speaking country.

Upon admission to the program, the student must pay a nonrefundable enrollment deposit to indicate that he or she accepts the offer of admission. The deposit is applied to the payment of fees when the student enrolls. Students who demonstrate financial need may qualify for assistance to cover the deposit. The deposit is also required of students admitted to the dual degree programs described on page 56.

More information about the admission process for each program is published by the McCombs School at http://www.mccombs.utexas.edu/students/apply.asp.

DEGREE REQUIREMENTS
The objective of each of the programs described below is to develop managers who are able to assume high-level responsibilities in the rapidly changing national and international environment of the public and private sectors. The curriculum is designed to stimulate intellectual curiosity; to develop analytical and research ability; and to give students the ability to make sound managerial decisions, to plan, organize, and control activities in order to achieve established goals, and to manage people, organizations, and change. Students are expected to acquire the concepts, tools, and
understanding to operate in and contribute successfully to new economic environments. Such environments are characterized by rapid technological change, global competition, and information-rich or information-deficient management decisions. Each program is designed to accommodate students with baccalaureate degrees in a wide variety of fields. Each affords the student a wide range of choices to complete a course of advanced study that integrates developments, theory, and applications involved in the exercise of executive and staff administrative responsibilities.

**Full-Time Program**

The full-time MBA, sometimes called Option I, is a two-year program taught in Austin. Students enter the program in the fall and graduate at the end of the second spring semester. Fifteen hours of coursework are required each semester.

A total of sixty semester hours is required. Twenty-seven hours are provided by required core courses. Students are required to take certain core courses in an assigned cohort.

During the first semester of the program, students are organized into cohorts of about seventy members. The students in each cohort take most core courses together. Within the cohort and in particular courses, students may be assigned to four- or five-person study groups to encourage group problem solving and teamwork and the development of leadership skills.

Thirty-three semester hours of graduate electives are required; with the adviser’s approval, nine hours may be taken outside the McCombs School. The student may concentrate the elective coursework within a discipline, such as marketing, or may choose a specialization, such as customer insight; each specialization consists of a sequence of courses that offers strong preparation for a particular career path. Students are not required to choose a concentration or specialization.

Option I MBA students are required to earn ethics certification. Certification requirements are set by the Option I MBA Policy Committee.

Further information about prerequisites, requirements, and concentrations is available from the MBA Program Office, online at http://mba.mccombs.utexas.edu/, and by e-mail from mccombsmba@mccombs.utexas.edu.

**Weekend and Evening Programs in Austin**

A carefully planned program of continuing training and education for executives is essential in today’s dynamic business environment. The following programs, sometimes called Option II, provide this graduate business education for midlevel to senior managers while permitting them to continue their careers.

**Weekend scheduling (executive) option.** The executive MBA program is a two-year course-scheduling option with classes held on alternate Fridays and Saturdays. This rigorous and demanding program requires a serious commitment on the part of both the student and the student’s employer. All students must complete thirty-six semester hours of required coursework and six hours of electives.

Prospective students should have at least five years of experience in management. The average work experience of currently enrolled students exceeds ten years. A brochure describing the program is available from the Executive Education Office. Information is also available at http://www.bus.utexas.edu/optionii/ and by e-mail from inquiry@optionii.bus.utexas.edu.
**Evening scheduling option.** The evening MBA program is a three-year course-scheduling option with classes on Monday and Tuesday evenings. Students attend classes in the fall, spring, and summer; they must complete forty-eight semester hours of coursework (sixteen courses). The high academic standards and dedicated faculty are the same as in the full-time MBA program.

**Weekend Programs outside Austin**

The following two-year “Option III” programs allow midlevel managers and professionals to pursue a graduate education in business while maintaining their careers. These rigorous and demanding programs require a serious commitment from the student and the student’s employer. Additional information about them is published by the McCombs School at http://www.mccombs.utexas.edu/students/programs.asp.

**Dallas, Houston.** The MBA programs in Dallas and Houston require students to complete forty-eight semester hours of coursework. Classes meet every other weekend, from 4 to 8 PM on Fridays and from 8 AM to 5 PM on Saturdays. Students also take part in two intensive courses in Austin and an international study course.

**Mexico City.** This executive program is conducted in cooperation with the Mexico City campus of the Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM). Students who complete the program earn both the MBA degree from the University and the degree of Maestría de Administración from ITESM. Classes meet every other weekend, from 8 AM to 5 PM on Fridays and Saturdays. Students complete forty-five semester hours of coursework and take part in three one-week executive seminars, two in Austin and one at an international location.

**DUAL DEGREE PROGRAMS**

The McCombs School of Business offers several dual degree programs in cooperation with other divisions of the University. The dual degree programs allow students to prepare for careers that encompass both business and another discipline. Each program is administered by faculty and staff members from the McCombs School and from the cooperating field. All requirements of both programs must be met, and both programs must be completed, in the same semester, for either degree to be awarded.

A student seeking admission to a dual degree program must apply through the Graduate and International Admissions Center; to enter the MBA/JD program, the student must apply for admission both to the Graduate and International Admissions Center and to the School of Law. The student must be accepted by each individual program in order to be admitted to the dual program. Like all other graduate applicants, the student is responsible for submitting any additional information required by the Graduate Studies Committee for each program and for meeting any admission conditions imposed by either program.

Prospective students should be aware that the area studies degrees listed below—Asian studies; Latin American studies; Middle Eastern studies; and Russian, East European, and Eurasian studies—all include a language proficiency requirement. Further information about prerequisites, requirements, and coursework for the dual programs is available from the MBA Program Office.
### Field of Study

<table>
<thead>
<tr>
<th>Field of Study</th>
<th>Degree</th>
<th>Total Hours Required</th>
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</thead>
<tbody>
<tr>
<td>Advertising</td>
<td>Master of Arts</td>
<td>69</td>
</tr>
<tr>
<td>Asian studies</td>
<td>Master of Arts</td>
<td>66–69</td>
</tr>
<tr>
<td>Communication studies</td>
<td>Master of Arts</td>
<td>69</td>
</tr>
<tr>
<td>Journalism</td>
<td>Master of Arts</td>
<td>69</td>
</tr>
<tr>
<td>Latin American studies</td>
<td>Master of Arts</td>
<td>66–69</td>
</tr>
<tr>
<td>Law</td>
<td>Doctor of Jurisprudence</td>
<td>134</td>
</tr>
<tr>
<td>Mechanical engineering, with a concentration in manufacturing and decision systems engineering</td>
<td>Master of Science in Engineering</td>
<td>75</td>
</tr>
<tr>
<td>Middle Eastern studies</td>
<td>Master of Arts</td>
<td>69–75</td>
</tr>
<tr>
<td>Nursing, with a concentration in nursing systems</td>
<td>Master of Science in Nursing</td>
<td>72</td>
</tr>
<tr>
<td>Public affairs</td>
<td>Master of Public Affairs</td>
<td>75</td>
</tr>
<tr>
<td>Radio-televison-film</td>
<td>Master of Arts</td>
<td>69</td>
</tr>
<tr>
<td>Russian, East European, and Eurasian studies</td>
<td>Master of Arts</td>
<td>69</td>
</tr>
</tbody>
</table>

### INTERNATIONAL PROGRAM

Students interested in a Master of Business Administration degree with an international focus may seek admission to the International Program. This program allows students in the full-time MBA program to take a substantial part of their coursework at a partner school outside the United States. The student must complete at least thirty-six semester hours of graduate coursework in residence at the McCombs School and must also fulfill the foreign school’s requirements for coursework in residence. Students who complete the program earn both the MBA from the University and the equivalent degree from the partner school.

Applicants must be proficient in English and must have advanced language skills in German, Portuguese, or Spanish. The McCombs School offers this program in cooperation with ESADE Business School in Barcelona, Spain; Escuela de Administración de Negocios para Graduados, Lima, Peru; Fundação Getúlio Vargas, São Paulo, Brazil; Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico; Pontificia Universidad Católica de Chile, Santiago; and WHU—Otto Beisheim Graduate School of Management, Vallendar, Germany. Additional information on the International Program is published by the McCombs School at [http://mba.mccombs.utexas.edu/students/global/](http://mba.mccombs.utexas.edu/students/global/).

### FOR MORE INFORMATION

**Campus address:** College of Business Administration Building (CBA) 2.316, phone (512) 471-7612, fax (512) 471-4131; campus mail code: B6004

**Mailing address:** The University of Texas at Austin, MBA Program, McCombs School of Business, 1 University Station B6004, Austin TX 78712

**E-mail:** mccombsmba@mccombs.utexas.edu

**URL:** [http://mba.mccombs.utexas.edu/](http://mba.mccombs.utexas.edu/)

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1. Students in the MBA/MSN program must complete at least twenty-seven semester hours in nursing.
GRADUATE COURSES
The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

 Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Business Administration: B A

380C. Information Technology Management. Restricted to first-year students in the MBA Program. Technical architecture, including hardware/software platforms, operating systems, networking and the Internet; development strategies; and management issues for the introduction of new technology. Business Administration 380C and Management Information Systems 380N (Topic 1: Information Technology Management) may not both be counted. Prerequisite: Graduate standing.

380D. Microeconomics and Operations. Restricted to first-year students in the MBA Program. Concepts in microeconomics, including the basic tools of supply and demand, cost and productivity, game theory, pricing strategy, and the application of these tools to questions about consumer behavior, competition among firms, and government policy. Concepts in operations, including introductory process analysis, lean production, and management of customer waiting times. Prerequisite: Graduate standing.

380E. Managerial Accounting and Macroeconomics. Restricted to first-year students in the MBA Program. Financial information regarding revenue, cost, and assets, with emphasis on the interpretation of numbers to derive well-informed management decisions. Concepts in macroeconomics, including long-run economic growth, international trade, business cycles, fiscal and monetary policies, and exchange rate and interest rate determinations. Special emphasis on global macroeconomic conditions. Only one of the following may be counted: Business Administration 380E, Accounting 329, 359, 459, 387 (Topic 1: Introduction to Managerial Accounting). Prerequisite: Graduate standing.

380M. Management Science. Introduction to the structure and use of mathematical models and methods for analyzing managerial decision problems. Development and application of modeling concepts and skills underlying the analytical techniques used to solve such problems. Introduction to a range of computers, and use of the latest in computer-based decision support systems. Prerequisite: Admission to the McCombs School of Business.

380N. Operations Management. Study of modeling and computer concepts, focusing on applications in production and operations management, including resource allocation, production scheduling, inventory control, and waiting line problems. Prerequisite: Admission to the McCombs School of Business.

380S. Managerial Economics. Microeconomic and macroeconomic forces that influence an organization’s decisions: interest rates, business cycles, financial systems, input demand and supply, industry factors, market structure, and externalities. Prerequisite: Admission to the McCombs School of Business.

381T. Marketing Management. Key elements of marketing strategy and tactics development. Topics include analysis of the marketing and business environment, customer analysis, pricing, distribution, product development and management, promotional strategy, and marketing program evaluation and control. Prerequisite: Admission to the McCombs School of Business.

382T. Managerial Accounting. The conceptual and operational relationship of planning and control with management and accounting information systems. Topics include data collection and analysis for short-range and long-range organizational decisions. Prerequisite: Admission to the McCombs School of Business.

384T. Financial Accounting. The information needs of capital market participants in a dynamic and complex socioeconomic system; emphasis on normative and conventional valuation models. Accounting 381 and Business Administration 384T may not both be counted. Prerequisite: Admission to the McCombs School of Business.

385T. Financial Management. Concepts and techniques employed in the determination of optimal capital structures, procurement of resources from financial markets, and allocation of resources to productive investments. Prerequisite: Admission to the McCombs School of Business.
386T. Statistics. A unified approach to basic concepts in collection, analysis, and interpretation of data, emphasizing capabilities of different statistical methods and business applications. Prerequisite: Admission to the McCombs School of Business.

287T. Legal and Regulatory Environment of Business. Examination of relationships between public and private institutions, with emphasis on the legal constraints on managerial decision making. Two lecture hours a week for one semester. Prerequisite: Admission to the McCombs School of Business.

388T. Strategic Management. Restricted to first-year students in the MBA Program. Designed to help students develop a general management orientation. Subjects include the role of the general manager, formulating business and corporate-level strategy, managing strategic change, strategy implementation, and developing general managers. Business Administration 388T and Management 385 (Topic 49: Strategic Management) may not both be counted. Prerequisite: Graduate standing.

389T. Managing People and Organizations. Development of the general areas of theory most central to dealing with the varieties of social/psychological behavior of direct import to the administrator and manager. Prerequisite: Admission to the McCombs School of Business.

390C. Hardware, Software, and Telecommunications. Provides a broad familiarity with the latest advances in the fundamental concepts and terminology of computer architecture and software. Prerequisite: Admission to the McCombs School of Business and to the concentration in information systems management.

190D, 390D. Management Information Systems. The use of decision support systems and database management concepts in an organization for information management and processing by mainframe and personal computer. One or three lecture hours a week for one semester. Prerequisite: Admission to the McCombs School of Business; additional prerequisite for 390D: admission to the concentration in information systems management.

390E. Business and Systems Change. Mainframe and microcomputer software used to illustrate prototyping and computer-assisted analysis. Use of cognitive modeling and the basic models and concepts of human information processing to improve the practice of requirements definition. Prerequisite: Admission to the McCombs School of Business and to the concentration in information systems management.

390F. Information Systems Design and Implementation. Specification, design, implementation, and testing of information systems. Prerequisite: Admission to the McCombs School of Business and to the concentration in information systems management.

390H. Managing Information. Management and use of information in organizations, including database management, analytical approaches for effective information management, and organizational issues. Prerequisite: Graduate standing.

390J. Data Communications, Networks, and Distributed Processing. Functional aspects of data communications, computer networks, and distributed information systems, using campus computers and the network systems available in the classroom. Prerequisite: Admission to the McCombs School of Business and to the concentration in information systems management.

191, 291, 391, 691. Special Studies in Business Administration. Conference course in any of the areas offered by the McCombs School of Business. May be repeated for credit when the topics vary. With consent of instructor, some topics may be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Finance.
Topic 2: Management.
Topic 3: Real Estate.
Topic 4: Risk Management.
Topic 5: Accounting. Some sections are offered on the credit/no credit basis only; these are identified in the Course Schedule.
Topic 6: Marketing.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in business administration, completion of the core courses for the degree, and consent of the supervising professor and the graduate adviser.

398T. Supervised Teaching in Business Administration. Teaching in the McCombs School of Business for two semesters under the close direction of the course instructor or supervisor; weekly group meetings with the instructor, individual consultations, and reports throughout the teaching period. Prerequisite: Graduate standing, approval of the department chair and the dean, and appointment as a teaching assistant.
ACCOUNTING

Master in Professional Accounting
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK
The physical facilities, computing systems, and research centers that support graduate work in the McCombs School are described on page 53. Of particular relevance to accounting students is the Center for Business Measurement and Assurance Services. The center supports research and curriculum development aimed at developing and disseminating knowledge about optimal decision making in a technology-driven business environment.

AREAS OF STUDY
The objective of this program is to provide the student with a sound foundation in the body of knowledge of business administration, broad exposure to the discipline of accounting, and the greater depth in accounting required to specialize and to enter the profession with the prospect of rapid career progress, high-level responsibility, and future leadership. The program is designed to provide outstanding students with the educational foundation for successful careers in public accounting, industry, consulting, not-for-profit organizations, and educational and financial institutions.

The faculty has designed three concentrations within the MPA program: financial reporting and assurance, taxation, and managerial accounting and control. Each concentration is a sequence of courses that offers strong preparation for a particular career path. In addition, the student may choose a generalist curriculum.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Urton L. Anderson Rowland Atiase Gerhard J. Barone Michael B. Clement James W. Deitrick Shane S. Dikolli Robert N. Freeman Michael H. Granof Jeffrey W. Hales D. Eric Hirst Ross G. Jennings Steven J. Kachelmeier


ADMISSION REQUIREMENTS

Master in Professional Accounting
Applications to the MPA program are accepted for the fall semester only.

The Admissions Committee considers each completed application, giving particular attention to the statement of purpose, prior academic performance, letters of recommendation, extracurricular and community activities, honors and achievements, test scores, and work history (if applicable). Personal characteristics that add to the diversity of the class may also be considered, such as country of citizenship, family background, gender, multilingual skills, and socioeconomic history.
The MPA program is sufficiently flexible to accommodate students with bachelor’s degrees in any field of study. However, students without a sufficient background in financial accounting may be required to complete undergraduate coursework before they begin the MPA curriculum.

Upon admission to the program, the student must pay a nonrefundable enrollment deposit to indicate that he or she accepts the offer of admission. The deposit is applied to the payment of fees when the student enrolls. Students who demonstrate financial need may qualify for assistance to cover the deposit. All fees and deposits are subject to change with appropriate approval. Students should consult General Information for the current amount of the enrollment deposit.

**Doctor of Philosophy**

Admission to the PhD program is based on a holistic review by the PhD Admissions Committee of several factors, including the applicant’s motivations for doctoral study, academic and work experience, and academic credentials. The number of applicants admitted is limited by the faculty’s commitment to provide financial assistance, excellent teaching, and expert guidance to each student.

**DEGREE REQUIREMENTS**

**Master in Professional Accounting**

The core of the MPA curriculum consists of twenty-five semester hours of coursework. Three of the core courses may be waived if the student has completed equivalent undergraduate work. In addition to the core, students complete eighteen hours in more specialized courses. They may choose one of the three tracks designed by the faculty—financial reporting and assurance, managerial accounting and control, and taxation—or they may choose courses to meet their specific academic and professional goals.

Depending on their undergraduate backgrounds, students must earn from thirty-five to forty-three semester hours of credit to complete the program; all MPA students must complete at least nineteen semester hours in accounting.

**Doctor of Philosophy**

The coursework for the doctoral degree includes four nonaccounting core courses, five accounting seminars, and coursework in two supporting fields outside accounting. Students also write first-year and second-year research papers. Those without teaching experience complete Accounting 398T and teach an entry-level accounting course. Four or five years are generally needed to complete the coursework and dissertation phases of the degree program.

**FOR MORE INFORMATION**

**MPA Program**

*Campus address:* College of Business Administration Building (CBA) 2.302, phone (512) 471-6559, fax (512) 471-3365; campus mail code: B6400

*Mailing address:* The University of Texas at Austin, MPA Program, Department of Accounting, 1 University Station B6400, Austin TX 78712

*E-mail:* texasmpa@mccombs.utexas.edu

*URL:* http://www.mccombs.utexas.edu/dept/accounting/mpa/
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Accounting: ACC

180C. MPA Lyceum. Discussion of current issues confronting the accounting profession. Two lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and admission to the Master in Professional Accounting program.

380D. Advanced Topics in Financial Reporting. Examines issues in financial reporting from a user’s perspective, including how important economic transactions of large public companies are reflected in financial statements. May not be counted by students with credit for Accounting 380K (Topic 1: Financial Accounting Standards and Analysis I) or 380K (Topic 2: Financial Accounting Standards and Analysis II). Prerequisite: Graduate standing, admission to the Master of Business Administration program, and Business Administration 384T.

180K, 280K, 380K. Contemporary Accounting Topics. In-depth study of selected accounting topics. One, two, or three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing. Some topics also require consent of instructor; these are identified in the Course Schedule.

Topic 1: Financial Accounting Standards and Analysis I. Accounting 326 and 380K (Topic 1) may not both be counted. Additional prerequisite: For students enrolled in the Master of Business Administration program, Business Administration 384T and 385T; for students enrolled in the Master in Professional Accounting program, Accounting 381 or the equivalent and credit or registration for Business Administration 385T or the equivalent; for students enrolled in the Professional Program in Accounting, Accounting 356 (or 456) and Finance 357 or the equivalent.

Topic 2: Financial Accounting Standards and Analysis II. Accounting 360 and 380K (Topic 2) may not both be counted. Additional prerequisite: Accounting 380K (Topic 1) or the equivalent or consent of instructor.

Topic 4: Introduction to Assurance Services. Only one of the following may be counted: Accounting 358C, 362, 380K (Topic 4). Additional prerequisite: For students enrolled in the Master of Business Administration program, Business Administration 384T; for students enrolled in the Master in Professional Accounting program, Accounting 381 or the equivalent; for students enrolled in the Professional Program in Accounting, Accounting 356 (or 456).

Topic 5: Introduction to Management Advisory Services. Additional prerequisite: For students enrolled in the Master of Business Administration program, Business Administration 384T; for students enrolled in the Master in Professional Accounting program, Accounting 381 or the equivalent; for students enrolled in the Professional Program in Accounting, Accounting 356 (or 456).
Topic 6: Issues in Accounting and Control for Non-profit Organizations. Accounting 361 and 380K (Topic 6) may not both be counted. Additional prerequisite: For students enrolled in the Master of Business Administration program, Business Administration 384T; for students enrolled in the Master in Professional Accounting program, Accounting 381 or the equivalent; for students enrolled in the Professional Program in Accounting, Accounting 356 (or 456).

Topic 7: Financial Statement Analysis. Accounting 327 and 380K (Topic 7) may not both be counted. Additional prerequisite: For students enrolled in the Master of Business Administration program, Business Administration 384T; for students enrolled in the Master in Professional Accounting program, Accounting 381 or the equivalent; for students enrolled in the Professional Program in Accounting, Accounting 356 (or 456).

Topic 8: Topics in Accounting and/or Taxation for the Mineral Industries. Additional prerequisite: For students enrolled in the Master of Business Administration program, Business Administration 384T; for students enrolled in the Master in Professional Accounting program, Accounting 381 or the equivalent; for students enrolled in the Professional Program in Accounting, Accounting 356 (or 456).

Topic 10: Tax Factors in Business Management. Additional prerequisite: For students enrolled in the Master of Business Administration program, Business Administration 384T; for students enrolled in the Master in Professional Accounting program, Accounting 381 or the equivalent; for students enrolled in the Professional Program in Accounting, Accounting 356 (or 456).

Topic 11: Introduction to Taxation. Only one of the following may be counted: Accounting 355, 455, 364, 380K (Topic 11). Additional prerequisite: For students enrolled in the Master of Business Administration program, Business Administration 384T; for students enrolled in the Master in Professional Accounting program, Accounting 381 or the equivalent; for students enrolled in the Professional Program in Accounting, Accounting 356 (or 456).

Topic 12: Computer Auditing and Systems Security. Additional prerequisite: For students enrolled in the Master of Business Administration program, Business Administration 384T; for students enrolled in the Master in Professional Accounting program, Accounting 381 or the equivalent; for students enrolled in the Professional Program in Accounting, Accounting 356 (or 456).

Topic 13: Information Technology for Accounting and Control. Additional prerequisite: For students enrolled in the Master of Business Administration program, Business Administration 384T; for students enrolled in the Master in Professional Accounting program, Accounting 381 or the equivalent or consent of instructor; for students enrolled in the Professional Program in Accounting, Accounting 356 (or 456).

Topic 14: Managing Information. Additional prerequisite: For students enrolled in the Master of Business Administration program, Business Administration 384T; for students enrolled in the Master in Professional Accounting program, Accounting 381 or the equivalent; for students enrolled in the Professional Program in Accounting, Accounting 356 (or 456).

Topic 15: Business and Systems Change. Additional prerequisite: For students enrolled in the Master of Business Administration program, Business Administration 384T; for students enrolled in the Master in Professional Accounting program, Accounting 381 or the equivalent; for students enrolled in the Professional Program in Accounting, Accounting 356 (or 456).


Topic 17: Cross-Functional Project Management. Additional prerequisite: For students enrolled in the Master of Business Administration program, Business Administration 384T; for students enrolled in the Master in Professional Accounting program, Accounting 381 or the equivalent; for students enrolled in the Professional Program in Accounting, Accounting 356 (or 456).

Topic 18: Project Management in Fast-Cycle Environments. Additional prerequisite: For students enrolled in the Master of Business Administration program, Business Administration 384T; for students enrolled in the Master in Professional Accounting program, Accounting 381 or the equivalent; for students enrolled in the Professional Program in Accounting, Accounting 356 (or 456).
Topic 2: Computer Auditing. Additional prerequisite: Accounting 358C or 380K (Topic 4: Introduction to Assurance Services), and Accounting 380K (Topic 13: Information Technology for Accounting and Control) or the equivalent.

Topic 3: Topics in Accounting Systems and Control.
Topic 4: Database Management in Accounting.
Topic 5: Topics in Information Systems.

383K. Studies in Auditing. Professional and technical aspects of practice; ethics and legal responsibilities; review of fieldwork, emphasizing materiality, sampling, and working papers; reporting problems, including long-form and special purpose reports; fraud examination and audit methods. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Studies in Auditing, PPA/MPA Programs. Additional prerequisite: For students in the Professional Program in Accounting, Accounting 358C or the equivalent; for students in the Master in Professional Accounting program, Accounting 380K (Topic 4: Introduction to Assurance Services) or the equivalent or consent of instructor.

Topic 2: Management Auditing and Control. Additional prerequisite: For students in the Master of Business Administration program, Business Administration 384T or the equivalent; for students in the Master in Professional Accounting program, credit or registration for Accounting 381, Business Administration 384T, or the equivalent; for students in the Professional Program in Accounting, credit or registration for Accounting 358C or the equivalent.

Topic 3: Auditing and Control, MBA Program. Additional prerequisite: Accounting 387 (Topic 1: Introduction to Managerial Accounting) or the equivalent, and Business Administration 384T or the equivalent.

Topic 4: Fraud Examination. Additional prerequisite: For students in the Master of Business Administration program, Business Administration 384T or the equivalent; for students in the Master in Professional Accounting program, Accounting 381, Business Administration 384T, or the equivalent, or consent of instructor; and Accounting 387 (Topic 1: Introduction to Managerial Accounting) or the equivalent, or consent of instructor; for students in the Professional Program in Accounting, Accounting 356 (or 456), or consent of instructor, and Accounting 359, 459, or the equivalent, or consent of instructor.

Topic 5: Topics in Auditing. Additional prerequisite: Accounting 387 (Topic 1: Introduction to Managerial Accounting) or the equivalent, and Business Administration 384T or the equivalent.

381. Financial Accounting. Concepts and issues involved in the preparation and interpretation of financial statements; the use of financial information to evaluate and control an organization. Accounting 381 and Business Administration 384T may not both be counted. Prerequisite: Admission to the Master in Professional Accounting degree program.

381M. Financial Accounting Issues in Business Decisions. An integrative and intensive examination of financial accounting, with emphasis on management's alternative reporting strategies and investors' decisions. Prerequisite: Graduate standing, and Business Administration 384T or the equivalent.

382K. Studies in Accounting Information Systems. Quantitative and/or computerized applications to business problems; computer-based accounting information systems; analysis of optimizing models; simulation of important functional activities; large-scale simulation of the firm. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; Accounting 356 (or 456), Accounting 381, Business Administration 384T, or the equivalent, or consent of instructor; and Accounting 359 (or 459), Accounting 387 (Topic 1: Introduction to Managerial Accounting), or the equivalent, or consent of instructor.

Topic 1: Principles of Systems Analysis. Some sections require two laboratory hours a week as well; these sections are identified in the Course Schedule. Accounting 365 and 382K (Topic 1) may not both be counted.
384. Research and Planning in Federal Taxes. Advanced analysis in federal taxation, with emphasis on historical and current developments; application of research techniques to income tax and estate tax planning; case studies and reports. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and admission to the Master in Professional Accounting degree program or consent of instructor.

Topic 1: Tax Research Methodology. Additional prerequisite: For students in the Professional Program in Accounting, Accounting 355 (or 455) or the equivalent; for students in the Master in Professional Accounting program, credit or registration for Accounting 380K (Topic 11: Introduction to Taxation) or the equivalent or consent of instructor.

Topic 2: Taxation of Entities I. Focuses on taxation of C corporations and their shareholders. Additional prerequisite: Credit or registration for Accounting 384 (Topic 1).

Topic 3: Taxation of Entities II. Focuses on flow-through entities, including partnerships. Additional prerequisite: Credit or registration for Accounting 384 (Topic 1).


Topic 5: Family Tax Planning—Estates, Trusts, and Gifts. Additional prerequisite: Credit or registration for Accounting 384 (Topic 1) or consent of instructor.

Topic 6: International and Interstate Taxation. Additional prerequisite: Accounting 355 (or 455), Accounting 380K (Topic 11: Introduction to Taxation), or the equivalent.


Topic 8: Miscellaneous Tax Topics. Restricted to students enrolled in the tax internship program. Additional prerequisite: Accounting 384 (Topic 1) and consent of instructor.

386K. Studies in Accounting Theory. Financial accounting theory; current pronouncements on theory; problems of income determination; accounting research and research methodology applied to accounting issues. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, admission to the doctoral degree program in accounting, and consent of instructor.

Topic 1: Contemporary Accounting Topics.

Topic 2: Introduction to Research Methodology in Accounting.

387. Studies in Profit Planning and Control. The use of accounting information by managers within the organization for decision making, planning, and the design of control systems for implementing the organization’s strategy. Topics include long-range planning, annual profit planning, activity-based costing, cost prediction, strategic control systems, and performance evaluation. Case studies are used. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Introduction to Managerial Accounting. Only one of the following may be counted: Business Administration 380E, Accounting 329, 359, 459, 387 (Topic 1).

Topic 2: Topics in Profit Planning and Control. Additional prerequisite: Accounting 359 (or 459), 387 (Topic 1), Business Administration 380E, or the equivalent.

Topic 3: Strategic Cost. Additional prerequisite: Accounting 359 (or 459), 387 (Topic 1), Business Administration 380E, or the equivalent.

Topic 4: Strategic Control Systems. Additional prerequisite: Accounting 359 (or 459), 387 (Topic 1), Business Administration 380E, or the equivalent.

191C, 291C, 391C, 691C. Special Studies in Accounting. Conference course. May be repeated for credit. Some sections are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing; admission to the Professional Program in Accounting, the Master in Professional Accounting program, or the doctoral program in accounting; and consent of instructor.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree and fulfillment of language requirement for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Accounting 399R, 699R, or 999R.
FINANCE
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK
Faculty members and doctoral students in finance are involved in the work of several research centers: the AIM Investment Center; the Center for Energy Finance Education and Research (CEFER); the Hicks, Muse, Tate & Furst Center for Private Equity Finance; and the Real Estate Finance and Investment Center. Additional research centers that support graduate work in the McCombs School, as well as the school's physical facilities and computing systems, are described on page 53.

AREAS OF STUDY
The doctoral program in finance gives students opportunities for specialized study in corporate finance, investments, financial intermediaries, international finance, and real estate.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Andres Almazan  
Aydogan Alti  
Keith C. Brown  
Tyrone W. Callahan  
Lorenzo Garlappi  
George W. Gau  
John M. Griffin  
Beverly L. Hadaway  
Jay C. Hartzell  
Jennifer Huang  
Stephen P. Magee  
Robert Parrino  
Ramesh K.S. Rao  
Ehud I. Ronn  
Lewis J. Spellman  
Laura T. Starks  
Paul C. Tetlock  
Sheridan Titman  
Zhenyu Wang  
Hong Yan

ADMISSION REQUIREMENTS
Admission to the program is extremely competitive. The admission decision is based on the applicant's academic record, test scores, personal statement, résumé, and letters of recommendation.

Students must enter the program in a fall semester.

DEGREE REQUIREMENTS
The core of the program is a set of courses required of all students. The core is supplemented with special courses and electives. Students are required to study two minor fields in addition to finance; typically, they choose economics, statistics, or mathematics, all of which provide skills important to financial research.

Students normally complete coursework, research, and the dissertation in four or five years.
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Finance: FIN

390. Seminar: Money and Capital Markets. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, Business Administration 385T, and Finance 397 (Topic 1: Investment Theory and Practice).


Topic 2: Special Topics in Capital Markets and Financial Institutions. Study of issues and topics in the capital markets and financial institutions that are not covered in other courses.

394. Seminar: Financial Management and Theory. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and Business Administration 385T.

Topic 1: Advanced Corporate Finance. Advanced corporate financial management in the global marketplace; valuation of financial and real investments; optimal capital structure; corporate control and restructuring; mergers and acquisitions.


Topic 6: Special Topics in Corporate Finance.

395. Finance Doctoral Seminar. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.


Topic 4: Empirical Methods in Finance. In-depth study of existing empirical work in finance, including the econometric and statistical methods.


Topic 6: Current Research Topics in Finance. Restricted to doctoral students in finance. Offered on the credit/no credit basis only.

Topic 7: Summer Research Topics. Restricted to doctoral students in finance. Provides an opportunity for students to develop and conduct original research projects.

Topic 8: Special Topics in Finance Theory.


Topic 9: **Applied Finance Research.** Restricted to doctoral students in finance. Provides an opportunity for students to develop and conduct original research.

**397. Seminar: Investment Theory and Management.**
May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and Business Administration 385T.

**Topic 1: Investment Theory and Practice.** Analysis of the investment decision-making process, asset allocations, security analysis, risk and expected return measurement, asset pricing models, international investment.

**Topic 2: Portfolio Management and Security Analysis.** Modern practices in managing the investment portfolio, portfolio optimization methods, asset management for individual and institutional investors, valuation of equity securities. Additional prerequisite: Finance 394 (Topic 1: Advanced Corporate Finance) and 397 (Topic 1).


**Topic 5: Fixed Income Analysis.** Comprehensive analysis of debt securities and the techniques used to value these instruments. Additional prerequisite: Finance 394 (Topic 1: Advanced Corporate Finance) and 397 (Topic 1).

**Topic 6: Special Topics in Investments.** Issues and topics in the investment area that are not covered in other courses. Additional prerequisite: Finance 397 (Topic 1).

**399R, 699R, 999R. Dissertation.** Offered on the credit/no credit basis only. **Prerequisite:** Admission to candidacy for the doctoral degree and fulfillment of language requirement for the doctoral degree.

**399W, 699W, 999W. Dissertation.** Offered on the credit/no credit basis only. **Prerequisite:** Finance 399R, 699R, or 999R.

**Real Estate: RE**

**386. Seminar in Real Estate Analysis.** May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and Business Administration 385T.

**Topic 1: Real Estate and Urban Land Economics.**

**Topic 2: Real Estate Investment Decisions.** Additional prerequisite: Finance 394 (Topic 1: Advanced Corporate Finance), 397 (Topic 1: Investment Theory and Practice), and Real Estate 386 (Topic 1); or consent of instructor.

**Topic 3: Real Estate Analysis.** Additional prerequisite: Finance 394 (Topic 1: Advanced Corporate Finance), 397 (Topic 1: Investment Theory and Practice), and Real Estate 386 (Topic 1); or consent of instructor.

**388. Seminar in Real Estate Finance.** Current aspects of real estate finance as they affect lenders, borrowers, and investors. Institutional changes affecting trends in real estate finance, presented within a decision-making framework. **Prerequisite:** Graduate standing, and Finance 397 (Topic 1: Investment Theory and Practice) or consent of instructor.
MANAGEMENT SCIENCE AND INFORMATION SYSTEMS

Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

Faculty members and doctoral students in management science and information systems are involved in the work of the Center for Business, Technology, and Law and the Center for Research in Electronic Commerce. Additional research centers that support graduate work in the McCombs School, as well as the school’s physical facilities and computing systems, are described on page 53.

AREAS OF STUDY

The doctoral degree program has three independent concentrations: information systems; risk analysis and decision making; and supply chain and operations management.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

John R. Allison  Paula C. Murray
Mark B. Baker  Robert A. Prentice
Anantaram Balakrishnan  Gautam Ray
Anitesh Barua  Timothy W. Ruefli
Patrick L. Brockett  Maytal Saar-Tsechansky
Alina Chircu  Thomas W. Sager
Frank B. Cross  Steven R. Salbu
Paul Damien  Billy M. Shaw
James S. Dyer  Thomas S. Shively
Betsy S. Greenberg  David B. Spence
Bin Gu  Huseyin Tanriverdi
Sirkka L. Jarvenpaa  Kerem Tomak
Jonathan Jay Koehler  Stathis Tompaidis
Prabhudev Konana  Andrew B. Whinston
Leon S. Lasdon  Gang Yu
Reuben R. McDaniel Jr.  Thaleia Zariphopoulou
John R. Mote

ADMISSION REQUIREMENTS

Admission to the program is extremely competitive. The admission decision is based on the applicant’s academic record, test scores, personal statement, résumé, and letters of recommendation.

Students must enter the program in a fall semester.

DEGREE REQUIREMENTS

Information Systems

To be admitted to candidacy for the doctoral degree, the student must (1) fulfill the core course requirements described below; (2) pass a written qualifying exam that covers the material in the core courses; (3) submit a qualifying paper, which is reviewed by the student’s adviser and two other faculty members; (4) complete course requirements for two minor areas (three courses in the first area and two courses
in the second area); (5) submit a candidacy paper, which must be accepted by the student’s dissertation committee; and (6) submit a dissertation proposal, if one is required by the student’s dissertation chair.

**Core courses.** During the fall semester of their first year of graduate study, all students must complete Economics 387L (Topic 1: *Microeconomics I*) and Management Information Systems 381N (Topic 2: *Information Systems Concepts and Readings*) and 381N (Topic 4: *Decision Support Systems*). In the spring semester of their first year, students in the electronic commerce track must complete Economics 387L (Topic 3: *Microeconomics II*) and Management Information Systems 381N (Topic 15: *Introduction to Electronic Commerce*); those in the organizational track must complete Management Information Systems 381N (Topic 12: *Advanced Information Systems Readings*) and 382N (Topic 3: *E-Business Application Development*). All students must maintain a graduate grade point average of at least 3.33.

**Written qualifying examination.** After satisfying the core course requirements above, at the end of his or her second semester in the program, the student must take a written qualifying exam that covers material from the three common core courses and the two core courses in the student's track. If a student does not pass the exam on the first attempt, he or she may take it again about three months later. The student may not take the exam more than two times.

**Qualifying paper.** After completing the core courses, the student writes the qualifying paper, which surveys the field of information systems and identifies and examines issues for future research. The paper is evaluated by the student’s adviser and two other faculty members. Each student also presents the qualifying paper to the information systems faculty and doctoral degree students.

**Candidacy paper.** After satisfying the requirements above, and within thirty-six months of entering the program, the student must submit a candidacy paper, which focuses on his or her area of research and provides background for the dissertation. At this point, the student’s dissertation committee is organized. This committee reviews the candidacy paper and evaluates it during an oral presentation. The presentation is open to all interested parties.

**Dissertation proposal.** The requirement of a dissertation proposal is at the discretion of the student’s dissertation chair. In the dissertation proposal, the student identifies an issue for dissertation research. The proposal should provide relevant background on the topic and should defend the originality and research contribution of the proposed work. It is reviewed by the student’s committee and evaluated during an oral proposal defense. The oral defense may be concurrent with the candidacy paper presentation and is open to all interested parties.

**Risk Analysis and Decision Making**

To be admitted to candidacy for the doctoral degree, the student must (1) fulfill the core course requirements described below; (2) pass a written qualifying exam that covers the material in the first-year core courses; (3) complete the requirements of one of three tracks: decision analysis, quantitative finance, or risk management; and (4) fulfill the oral dissertation proposal defense requirement described below.

**First-year core courses.** During the first year of graduate study, the student must take five core courses: *Mathematical Statistics I, Microeconomics I, Stochastic Processes and Applications, Mathematical Statistics II,* and *Optimization*. The student must earn a grade of at least B in each course and a grade point average in the five courses of at least 3.50. A well-prepared student may seek to fulfill the core course requirement by earning satisfactory grades on the final examinations for some of these courses rather
than by registering for them. In rare circumstances, a student may receive a waiver for a core course without taking the final exam. These circumstances are determined by the faculty for the concentration and the graduate adviser. In either case, the student does not receive graduate credit for the course, the grade is not counted toward the required average, and the subject matter of the course must be included in the qualifying exam.

**Written qualifying examination.** At the end of his or her second semester in the program, after satisfying the first-year core course requirements above, the student must pass a written qualifying exam that covers material from the five core courses. If the student does not pass the exam on the first attempt, he or she may take it again. The student may not take the exam more than twice.

**Second-year core courses.** During the second year of graduate study, the student must take the remaining four core courses: *Econometrics, Asset Pricing Theory, Game Theory,* and *Mathematics of Finance.* The student must earn a grade of at least B in each course and a grade point average in the four courses of at least 3.50.

**Track requirements.** Students in the decision analysis or risk management track must complete three courses from a list approved by their adviser. Students in the quantitative finance track must complete five courses from such a list.

**Oral dissertation proposal defense.** After satisfying the requirements above, and within thirty-six months of entering the program, the student must pass an oral dissertation proposal defense. The proposal defense consists of a presentation before the student’s dissertation committee, followed by a question period. The presentation is open to all interested parties. The questions during this session are directed toward clarifying the presentation and determining whether the student has a solid grasp of the basic material needed for research in his or her specialization. The student passes the proposal defense by obtaining a positive vote from at least four of the five faculty members on the dissertation committee.

**Supply Chain and Operations Management**

To be admitted to candidacy for the doctoral degree in this concentration, the student must (1) fulfill the core course requirements described below; (2) pass a written qualifying exam that covers the material from the first-year core courses; (3) fulfill the minor field requirement; and (4) pass the research paper and comprehensive exam requirement described below.

**Core courses.** The student must complete the following courses in the first two years. The student must earn a grade of at least B in each course and a grade point average in the required courses of at least 3.50.

1. Core methodology courses in linear optimization and stochastic processes, and *Microeconomics I,* to be completed in the first year of the program; and either *Introduction to Research Methods* or *Mathematical Statistics,* to be completed by the end of the second year.

2. Core contextual courses: At least three courses on the theory of supply chain and operations management, dealing with topics such as supply chain optimization models, supply chain economic models, stochastic models/inventory theory, and product development.

3. At least three advanced graduate courses from the following fields: (a) optimization, including courses such as *Network Optimization, Nonlinear Programming, Integer Programming,* and *Stochastic Programming,* (b) stochastic processes, including courses such as *Queueing Theory* and *Advanced Stochastic Processes,* (c) economics, including courses such as *Microeconomics, Econometrics,* and *Game Theory;* and (d) statistics.
**Written qualifying examination.** After completing the three first-year core methodology courses described above, the student must pass a written qualifying exam that covers material from these courses.

**Minor field.** Students are also required to take at least two courses in a minor field other than supply chain and operations management before entering candidacy.

**Research paper and comprehensive examination.** By the end of the second year, the student must complete a research paper under the guidance of an adviser and must pass written and oral comprehensive exams. The oral exam consists of the student’s presentation of his or her research, followed by questions from committee members.

**FOR MORE INFORMATION**

*Campus address:* College of Business Administration Building (CBA) 5.202, phone (512) 471-3322, fax (512) 471-0587; campus mail code: B6500

*Mailing address:* The University of Texas at Austin, Doctoral Program, Department of Information, Risk, and Operations Management, 1 University Station B6500, Austin TX 78712

*E-mail:* iromphd@mccombs.utexas.edu

*URL:* http://www.mccombs.utexas.edu/dept/irom/phd/

**GRADUATE COURSES**

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

**Legal Environment of Business: LEB 380. Topics in the Legal Environment of Business.**

Selected topics on legal constraints affecting managerial decision making and business behavior. May be repeated for credit when the topics vary. Some sections are offered on the letter-grade basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing.

Topic 1: **Social and Ethical Responsibility of Business.** Ethical aspects of the managerial decision-making process; application of fundamental ethical principles to business, legal, and social problems. Topics include ethical implications of financial markets; race and gender discrimination; employee privacy; health, safety, environmental, and consumer issues; multinational business firms. Legal Environment of Business 380 (Topic 1) and 380 (Topic 17) may not both be counted.

Topic 2: **Antitrust Law and Economics.** Legal regulation of anticompetitive market structures and business practices, including political, economic, and historical factors. Monopolies, mergers, horizontal and vertical restraints of trade, and price discrimination.

Topic 3: **Law of Commercial Real Estate Finance and Development.** The legal framework of commercial real estate finance and development, including basic real estate law concepts, legal aspects of financing techniques and instruments, subdivision land-use controls, environmental regulation of real estate development, and other topics.

Topic 4: **Securities Regulation.** Legal regulation of the issuance and trading of securities, including insider trading, public offerings, takeovers, and broker-dealer activities.

Topic 5: **The Law and the Multinational Corporation.** Study of the legal environment in which the multinational enterprise operates, including negotiation and drafting of international contracts, international dispute resolution, expropriation, international investment regulation, letters of credit, tax havens, and cultural and ethical issues.
Topic 6: Intellectual Property and Antitrust. Relationships and tensions between laws designed to encourage competitive markets (antitrust laws) and those that grant limited monopolies (patents, copyrights, and trademarks).

Topic 7: Corporation Law. Legal framework for the formation and operation of partnerships and corporations, including limited liability partnerships and limited liability corporations; introduction to securities regulation concepts such as insider trading, mergers, and acquisitions.

Topic 8: Legal Environment of Business. Additional prerequisite: Admission to the MBA Option II Program.

Topic 9: Law of the Entertainment Business. Legal aspects of management in the entertainment industry, including contractual and financing arrangements, licensing, and copyright.

Topic 10: Law of Wills, Trusts, and Estates. Planning and management of estates through the use of wills, trusts, and gifts; intestacy, guardianships, marital property systems, and prenuptial agreements.

Topic 11: Environmental Dispute Resolution. Theoretical and practical study of the prevention, management, and resolution of environmental disputes, such as those involving protection of endangered species, wetlands preservation, natural resource conservation, and liability for environmental damage and clean-up.

Topic 12: Legal Regulation of Unfair Competition. Competitive actions that violate state or federal law, such as intentional interference with the contractual relations of others, defamation in business contexts, and misappropriation of trade secrets. Ethical and international dimensions are included where appropriate.


Topic 14: Intellectual Property. Legal aspects of protecting intellectual property, including patents, trade secrets, trademarks, and copyrights; the contractual licensing of these property rights and other legal aspects of technology.

Topic 15: Environmental Regulation of Business. Federal and state regulation of business activities that affect the environment; potential liability of business for environmental damage.

Topic 16: Legal Aspects of Marketing. State and federal laws on consumer protection, pricing (including price fixing and price discrimination), packaging, advertising, distribution, dealer control, and related topics. Ethical and international dimensions are included where appropriate.

Topic 17: Liability and Regulation of Accountants. State and federal regulations and tort and contract law principles that constrain accountants and create potential liability. Ethical and international dimensions are included where appropriate. Legal Environment of Business 380 (Topic 1) and 380 (Topic 17) may not both be counted.

Topic 18: Products Liability. Public policy, economics, and legal rules regarding liability for the manufacture or sale of defective products. Ethical and international dimensions are included where appropriate.

Topic 19: Employment Law. State and federal laws on hiring, supervising, disciplining, and terminating employees: wrongful discharge law, discrimination law, workers' compensation and employee safety laws, and several related topics. Ethical and international dimensions are included where appropriate.

Topic 20: Creating and Enforcing Contracts. Legal rules and practical policies on creating, monitoring, and enforcing contractual rights in a wide variety of business settings. Ethical and international dimensions are included where appropriate.

Topic 21: Environmental Issues in Real Estate Transactions. Federal and state environmental regulations affecting commercial real estate transactions, including the Comprehensive Environmental Response, Compensation, and Liability ("Superfund") Act, the Clean Water Act, the Endangered Species Act, wetlands regulation, and other related topics. Ethical and international dimensions are included where appropriate.

Topic 22: Law of Corporate Finance and Governance. Legal rules and regulations applicable to a broad range of corporate financial issues, including agency theory, limited liability, valuation, bondholder rights, dividend policy, accountant and investment banker liability, and capital structure and leverage. Ethical and international dimensions are included where appropriate.

Topic 23: Law of Corporate Mergers and Takeovers. Legal rules, policies, and economics of mergers, acquisitions, hostile takeovers, leveraged buyouts, and related topics. Ethical and international dimensions are included where appropriate.

Topic 24: Law of Real Estate Finance. Federal and state regulation of real estate finance. Topics include creation, transfer, and discharge of mortgagor's and mortgagee's interests; mortgage substitutes; foreclosures; priority of liens; bankruptcy; and government intervention in the private mortgage market. Ethical and international dimensions are included where appropriate.
Topic 25: *Bankruptcy Law and Debtor-Creditor Relations.* The legal framework governing the rights and duties of companies, and their owners, creditors, and other stakeholders, in times of severe financial distress. Includes liquidation and reorganization proceedings in bankruptcy as well as alternatives to bankruptcy. Ethical and international dimensions are included where appropriate.

Topic 26: *Law for Entrepreneurs.* Legal issues and principles affecting the business entrepreneur, including those related to formation of the appropriate type of business organization, capitalization, protection of personal assets from business liabilities, protection of innovative ideas, hiring key personnel, and related topics. Ethical and international dimensions are included where appropriate.

Topic 27: *Cyberlaw.* Highly focused coverage of intellectual property law (copyright, trade secret, patent, trademarks, and related topics) as it relates to computer hardware and software; substantial coverage of hardware and software licensing; Internet-related legal issues; antitrust issues in the computer industry; and other topics as time permits, such as encryption, privacy, and computer-system vendor liability.


Topic 30: *Legal Environment of Business for MPA Students.* Introduction to the legal system, with particular emphasis on its applications to the accounting profession. Additional prerequisite: Admission to the Master in Professional Accounting program.

Topic 31: *Energy Law.* Introduction to the legal issues facing energy-generating and energy service companies in a deregulating, though not fully deregulated, world. Includes the (de)regulation of generation, wholesale transactions, and retail service, as well as the contractual and other legal issues governing the commercial market for energy.

Topic 32: *E-Commerce: Law, Policy, and Strategy.* The responsibilities of the strategist for choosing, developing, and managing an overall e-business firm strategy in uncertain legal, market, technology, and policy environments.

Topic 33: *The Legal Life Cycle of a Technology Start-up.* Comprehensive coverage of the legal issues faced by a technology start-up firm, including choice of an organizational form, employee compensation issues, negotiating real estate leases, protecting intellectual property, raising capital, and taking the firm public. Additional prerequisite: Admission to the Master of Business Administration program.

Topic 34: *Business, Government, and Public Policy.* Traces the relationship between business and government throughout the policy process and examines the constitutional constraints that affect businesses across different political and legal regimes. Includes discussion of the ethical issues that are intertwined with any discussion of business' role in the policy process. Additional prerequisite: Admission to the Master of Business Administration program.

**Management Information Systems: MIS**

**380. Seminar in Organizational Communication.** Selected topics in organizational communication, written and oral. May be repeated for credit when the topics vary. Prerequisite: Graduate standing. Some topics also require consent of instructor; these are identified in the Course Schedule.

Topic 1: *Research Methodology in Business and Organizational Communication.*

Topic 2: *Projects, Proposals, and Presentations.* Communicating effectively in business using advanced writing and presentation concepts and techniques to increase individual and team effectiveness.

Topic 3: *Advanced Report Writing, Professional Reports, and Other Scholarly Papers.*

**380N. Topics in Information Management.** May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 2: *Managing Information.* Understanding, designing, and controlling the information processing activities of an organization. Complements Business Administration 380C by focusing on information systems rather than information technology. Includes business intelligence, knowledge management, data modeling, group decision support systems, and electronic commerce. Offered on the letter-grade basis only. Additional prerequisite: Business Administration 380C (or Management Information Systems 380N [Topic 1]).
Topic 3: Business Process Excellence. Emerging technology, data and process modeling (flow focus for integrated applications), reengineering, and change management. Offered on the letter-grade basis only. Additional prerequisite: Business Administration 380C (or Management Information Systems 380N [Topic 1]).

Topic 4: Digital Economy and Commerce. Offered on the letter-grade basis only. Additional prerequisite: Management Information Systems 380N (Topic 2) and credit or registration for Management Information Systems 380N (Topic 3).

381N. Topics in Information Systems. Selected topics in information technology and management of information systems development. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Introduction to Data Management.


Topic 6: Research Seminar.


Topic 8: Managing Disruptive Innovations. Focuses on the management of disruptive technologies, including analyzing whether an emerging technology is sustaining or disruptive, identifying new markets for disruptive technologies, justifying investments in disruptive technologies, implementing disruptive technologies, and appropriating value from them. Offered on the letter-grade basis only.

Topic 9: Change Management Practicum I. Project-oriented course focusing on design of organizational change.


Topic 11: Research in Information Technology.


Topic 14: Global Information Technology Management.

Topic 15: Introduction to Electronic Commerce.

Topic 16: Information Systems Projects/Internships.

Topic 17: Client/Server Development.

Topic 18: Innovation, Technology, and Commercialization.


382N. Topics in Information Management. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Managing Financial Information. Data modeling and information management for investment analysis and financial systems.

Topic 2: E-Business Change. Offered on the letter-grade basis only.

Topic 3: E-Business Application Development.


Topic 5: Managing Complexity.


Topic 7: Project Management in Fast-Cycle Environments.

Topic 8: Balanced Scoreboard: An Information Systems Perspective. Theory and tools that support the design and implementation of balanced scoreboard evaluation systems.

Topic 9: Data Mining.

Topic 10: Data Mining for Marketing.

383N. Topics in Information-Intensive Business Processes. Topics in management of information in specific industries or application areas. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Health Care Management. Management 385 (Topic 3: Health Care Management) and Management Information Systems 383N (Topic 1) may not both be counted.

Topic 2: Health Services Seminar.

Topic 3: Customer Insights.

Topic 4: Supply Chain Management.


Topic 6: Trading-Floor Technology.

Topic 7: Computational Finance.


Topic 10: Practicum in Multimedia Systems Development. Restricted to MBA and MPA students who have chosen the information management concentration. Additional prerequisite: Business Administration 380C (or Management Information Systems 380N [Topic 1: Hardware, Software, and Telecommunications]) and consent of instructor.


Topic 12: E-Business Innovation.

385. Management Information Systems. Overview of hardware and software life cycles; in-depth considerations of program design, including experience programming for large-scale computer systems in COBOL, FORTRAN, and/or BASIC. Prerequisite: Graduate standing.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree and fulfillment of language requirement for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Management Information Systems 399R, 699R, or 999R.

Management Science: MSC

380. Seminar in Management Science. Selected topics in the application of management science to business problems. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Combinatorial Optimization. Concepts of computational complexity; the foundation of discrete mathematics and combinatorial theory.

Topic 2: Linear Programming. Model formulation: solution algorithms; duality theory; decomposition; sparse matrix issues; sensitivity and parametric analysis; optimization and matrix generation computer software.

Topic 3: Network Optimization. Applications, theory, and algorithms of the shortest path, maximum flow, and minimum cost flow problems. Discussion of classic and contemporary aspects of network optimization, including auction algorithms and cost-scaling techniques, to provide an integrated view of theory, algorithms, and applications. Additional prerequisite: Linear algebra and introduction to management science.
Topic 4: *Algorithms and Implementations*. Design, analysis, implementation, and use of computer algorithms. Introduction to fundamental data structures, sorting, recursive programs, dynamic data structures, memory management, algorithm design techniques and complexity analysis, and applications in optimization problems. Examples from linear and integer programming, covering, knapsack, graph-theoretic problems, network analysis, and scheduling.

Topic 5: *Foundations of Utility, Risk, and Decision Analysis*. Doctoral-level examination of the logical basis, validity, and usability of the concepts that form the foundation of decision theory: utility, a measure of subjective value; and probability, a measure of subjective uncertainty. Additional prerequisite: Introductory coursework in management science.

Topic 6: *Business Process Simulation*. Modeling with simulation languages; random number generation; statistical analysis of input and output; variance reduction techniques; computer software applications. Additional prerequisite: Introductory coursework in management science and statistics.


Topic 8: *Nonlinear Programming*. Optimization of nonlinear functions of many variables subject to linear or nonlinear constraints. Basic theory, solution algorithms, applications, computer software. Additional prerequisite: Coursework in linear programming.


Topic 10: *Stochastic Processes*. Discrete stochastic systems, queueing processes, inventory models, replacement, renewal theory, Markovian processes. Additional prerequisite: Mathematics 362K or the equivalent; completion of calculus and mathematical statistics and probability is recommended.


Topic 12: *Decision Making with Risk and Multiple Objectives.*
386. Current Issues in Operations Management. Strategic problems, policies, models, and concepts for the design and control of new or existing operations systems. May be repeated for credit when the topics vary. Some sections are offered on the letter-grade basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Service Management. Management 386 (Topic 1: Service Management) and Management Science 386 (Topic 1) may not both be counted.

Topic 2: Supply Chain and Operations Strategy. Management 386 (Topic 7: Supply Chain and Operations Strategy) and Management Science 386 (Topic 2) may not both be counted.

Topic 3: Strategic Quality Management. Management 386 (Topic 3: Strategic Quality Management) and Management Science 386 (Topic 3) may not both be counted.

Topic 4: Operations Practicum. Management 386 (Topic 10: Operations Practicum) and Management Science 386 (Topic 4) may not both be counted.

Topic 5: Managing Projects. Management 386 (Topic 6: Managing Projects) and Management Science 386 (Topic 5) may not both be counted.

392. Seminar: Operations Management. Intensive analysis of operations management issues. May be repeated for credit when the topics vary. Management 392 and Management Science 392 may not both be counted unless the topics vary. Prerequisite: Admission to the doctoral degree program and consent of instructor.

Topic 1: Operations Management Colloquium.

Risk Management: R M

395. Seminar: Risk Management. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Corporate Risk Management. Analysis of risk management and security needs of businesses and individuals; related insurance coverages and other tools available to deal with risk.


Topic 3: Risk Management and Finance. Examination of theories underlying risk management techniques for business and insurance mechanisms; theoretical analysis of problems and practices in risk management.

Topic 5: Managing Environmental Risk.

Topic 6: Risk Analysis and Management.

Topic 7: Managing International Risk. The global aspects of risk management; basic risk and crisis management principles pertinent to multinational firms; financially, legally, and culturally multinational marketplaces such as reinsurance markets, captive offshore insurance.


Statistics: STA

380. Seminar in Business Statistics. Selected topics in the applications of statistical methods to business problems. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Correlation and Regression Analysis.

Topic 2: Design of Experiments.

Topic 3: Statistical Computing with SAS.

Topic 4: Nonparametric Methods.


Topic 6: Survey Research Methods.


Topic 10: Mathematical Statistics for Applications. Introduction to the basic concepts of probability and mathematical statistics for doctoral degree students who plan to use statistical methods in their research but do not need a highly mathematical development of the subject. Topics include probability distributions and estimation theory and hypothesis testing techniques. Additional prerequisite: A calculus course covering integration and differentiation.
Topic 11: Analysis of Variance. Additional prerequisite: Business Administration 386T or the equivalent.

Topic 12: Applied Multivariate Methods. Additional prerequisite: Business Administration 386T or the equivalent, and familiarity with statistical software.


Topic 14: Risk Analysis and Management. The quantification and analysis of risk, considered from several perspectives: financial risk measures, strategic risk measures, stochastic dominance rules, chance constrained programming, and safety-first approaches.

381. Sampling. Theory of sampling; sample design, including stratified, systematic, and multistage sampling; nonsampling errors. Prerequisite: Graduate standing and Business Administration 386T.

MANAGEMENT
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK
The physical facilities, computing systems, and research centers that support graduate work in the McCombs School are described on page 53.

AREAS OF STUDY
Students in the doctoral degree program in management concentrate in either organization science or strategic management.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Edward G. Anderson
Uttarayan Bagchi
John Sibley Butler
Alison Davis-Blake
Janet M. Dukerich
James Albert Fitzsimmons
James W. Fredrickson
Stephen M. Gilbert
Melissa E. Graebner
Genaro J. Gutiérrez
Pamela Haunschild
Andrew D. Henderson
George P. Huber
David B. Jemison
Viswanathan Krishnan
Dovev Lavie
Kyle Lewis
Jeffrey Loewenstein
Jeffrey Martin
Stewart Miller
Douglas J. Morrice
James D. Westphal

ADMISSION REQUIREMENTS
Admission to the program is very competitive. Decisions are based on the applicant’s test scores, academic record, work experience, personal statement, and letters of recommendation.

Students must enter the program in a fall semester.
DEGREE REQUIREMENTS

All students must complete three core courses: Management 390 (Topic 2: Introduction to Research Methods in Management), 390 (Topic 5: Organizational Theory and Design), and 393 (Topic 2: Contemporary Issues in Strategic Management). Those who concentrate in organization science must also complete Management 390 (Topic 4: Seminar in Organizational Behavior); those in strategic management must complete either this course or another course approved by the faculty. Students must also complete at least two courses in the concentration, at least two courses outside management, at least three advanced statistics/methodology courses, and a research colloquium.

An important factor in the student’s development as a scholar is participation in a faculty research project. Students generally begin this collaboration in the spring of their first year in the program; a successful project will result in a conference presentation and a journal article. The quality of the student’s work on the project is a factor in judging the student’s progress in the degree program.

Students take the comprehensive examination, which assesses their knowledge of research methodology and of the concentration, at the end of the second year. They then undertake dissertation research as described in chapter 3. A well-prepared student generally completes the degree in four years.

FOR MORE INFORMATION

Campus address: College of Business Administration Building (CBA) 4.202, phone (512) 471-2622, fax (512) 471-3837; campus mail code: B6300

Mailing address: The University of Texas at Austin, Doctoral Program, Department of Management, 1 University Station B6300, Austin TX 78712

E-mail: julie.rodriguez@mccombs.utexas.edu

URL: http://www.mccombs.utexas.edu/dept/management/phd/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Management: MAN

382. Seminar in Organizational Behavior. A study of psychological and social factors in administration. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Seminar in Organizational Behavior.

383. Current Issues in Organization Science. May be repeated for credit when the topics vary. Some sections are offered on the letter-grade basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 16: Managing People and Organizations. Designed to increase the student’s effectiveness as a manager through discussion of organizational behavior and design, and guidelines for applying these concepts.

Topic 20: Art and Science of Negotiation.

Topic 22: Creating and Managing Human Capital. Covers issues related to making human resource decisions in a more effective manner. Uses a strategic perspective, with particular emphasis on the links between human resource decisions and a firm’s competitive position.

Topic 31: Organizational Change and Strategic Renewal.
385. **Current Issues in Strategic Management.** May be repeated for credit when the topics vary. Some sections are offered on the letter-grade basis only; these are identified in the Course Schedule. **Prerequisite:** Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

- **Topic 1:** Action Skills for Managers: Implementing Strategy.
- **Topic 2:** The Art of Leadership.
- **Topic 6:** Management Planning and Control in Complex Systems.
- **Topic 8:** Managing Corporate Diversification and Renewal.
- **Topic 9:** Strategic Analysis for High-Tech Industries. Management 385 (Topic 9) and Management Information Systems 381N (Topic 3: Strategic Analysis for High-Tech Industries) may not both be counted.
- **Topic 20:** Advanced Venture Development.
- **Topic 22:** New Venture Creation.
- **Topic 23:** Entrepreneurial Management.
- **Topic 24:** Entrepreneurial Growth.
- **Topic 25:** Social and Economic Aspects of Entrepreneurship.
- **Topic 33:** Managing and Marketing in the Global Arena. Offered on the letter-grade basis only.
- **Topic 43:** Facilitating Process Improvement. Same as Civil Engineering 397 (Topic 15: Facilitating Process Improvement) and Mechanical Engineering 397 (Topic 3: Facilitating Process Improvement).
- **Topic 49:** Strategic Management. Designed to help students develop a general management orientation. Subjects include the role of the general manager, formulating business and corporate-level strategy, managing strategic change, strategy implementation, and developing general managers. Business Administration 388T and Management 385 (Topic 49: Strategic Management) may not both be counted.
- **Topic 61:** Perspectives on Public Policy. Designed to prepare MBA students, both as individuals and in their professional careers as managers and leaders, for active and effective participation in the democratic process. Taught via video teleconferencing with instructors from The Washington Campus.
- **Topic 62:** Corporate Governance. Examines the roles and responsibilities of organizational leadership in a variety of settings, including large and small companies, startups and established companies, global, single-country, and single-region companies, and nonprofit entities.
- **Topic 63:** Economics of Competitive Strategy. Develops and uses concepts from microeconomics, game theory, and the economics of industrial organization and applies these concepts to competitive decision making, using a combination of case analyses and lectures.
- **Topic 64:** Enterprise of Technology: From Mind to Market. Focuses on moving an idea from the mind of the researcher to the marketplace by examining the activities involved in commercializing a technology from conception to profitable enterprise.

386. **Current Issues in Operations Management.** Strategic problems, policies, models, and concepts for the design and control of new or existing operations systems. May be repeated for credit when the topics vary. Some sections are offered on the letter-grade basis only; these are identified in the Course Schedule. **Prerequisite:** Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

- **Topic 1:** Service Management. Management 386 (Topic 1) and Management Science 386 (Topic 1: Service Management) may not both be counted.
- **Topic 2:** Manufacturing Management.
- **Topic 3:** Strategic Quality Management. Management 386 (Topic 3) and Management Science 386 (Topic 3: Strategic Quality Management) may not both be counted.
- **Topic 5:** Managing Projects. Management 386 (Topic 5) and Management Science 386 (Topic 5: Managing Projects) may not both be counted.
- **Topic 7:** Supply Chain and Operations Strategy. Management 386 (Topic 7) and Management Science 386 (Topic 2: Supply Chain and Operations Strategy) may not both be counted.
- **Topic 8:** Quality Practicum.
- **Topic 10:** Operations Practicum. Management 386 (Topic 10) and Management Science 386 (Topic 4: Operations Practicum) may not both be counted.
- **Topic 26:** Business Process Simulation. Students model and analyze processes found in manufacturing, inventory, supply chain, and service systems using spreadsheet simulation and a simulation modeling technique. Additional prerequisite: Business Administration 380N or 380D, and Business Administration 386T.

390. **Seminar: Organization Science.** Intensive analysis of organizational science issues. May be repeated for credit when the topics vary. **Prerequisite:** Admission to the doctoral degree program and consent of instructor.
Topic 1: Research in Organizational Science. Offered on the credit/no credit basis only.
Topic 3: Research Methods in Management.
Topic 4: Seminar in Organizational Behavior.
Topic 5: Seminar in Organization Theory and Design.
Topic 6: Organizational Decision Making.
Topic 9: Behavioral Decision Theory.
Topic 11: Management of Knowledge Workers. The study of knowledge workers at four levels of analysis: as individuals, as team members, as organizational resources, and as national resources. Strong emphasis on theory building.

392. Seminar: Operations Management. Intensive analysis of operations management issues. May be repeated for credit when the topics vary. Management 392 and Management Science 392 may not both be counted unless the topics vary. 
Prerequisite: Admission to the doctoral degree program and consent of instructor.
Topic 4: Operations Management Colloquium.
Topic 5: Research Topics.

393. Seminar: Strategic Management. Intensive analysis of strategic management issues. May be repeated for credit when the topics vary. 
Prerequisite: Admission to the doctoral degree program and consent of instructor.
Topic 1: Foundations of Strategic Management.
Topic 3: Research in Strategic Management. Offered on the credit/no credit basis only.
Topic 5: Executive Leadership.
Topic 6: Management of Diversification.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. 
Prerequisite: Admission to candidacy for the doctoral degree and fulfillment of language requirement for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. 
Prerequisite: Management 399R, 699R, or 999R.

MARKETING
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK
The physical facilities, computing systems, and research centers that support graduate work in the McCombs School are described on page 53. Of particular relevance to marketing students is the Center for Customer Insight, which works to develop pragmatic, market-relevant management knowledge, skills, and experience.

AREAS OF STUDY
Students in the doctoral degree program in marketing concentrate in buyer behavior, international marketing, marketing management, or quantitative methods.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Mark I. Alpert
Susan M. Broniarczyk
Eli P. Cox III
William H. Cunningham
Kate Gillespie
Linda L. Golden
Wayne D. Hoyer
Julie R. Irwin
Romana Khan
Vijay Mahajan
Leigh M. McAlister
Robert A. Peterson
Rajagopal Raghunathan
Raji Srinivasan
Frenkel Ter Hofstede
ADMISSION REQUIREMENTS
Admission decisions are made by the PhD Admission Committee. Decisions are based on a balanced consideration of multiple factors, including academic credentials, test scores, work experience, personal statement, and letters of recommendation.

DEGREE REQUIREMENTS
Before beginning advanced work toward the degree, students must demonstrate computer literacy and functional competence in economics, mathematics, and business administration. These background requirements may be met by coursework the student has taken within the past five years or by work completed after the student enters the program; to fulfill the computer literacy requirement, the student may also seek certification of his or her proficiency in data analysis from a member of the faculty.

All students must then complete a course in each of the four tools essential to marketing research—behavioral science, mathematical statistics, multivariate statistics, and experimental design—and five seminar courses in marketing. In addition to these core courses, students complete eighteen hours of coursework, including twelve hours at the graduate level, in buyer behavior, international marketing, marketing management, or quantitative methods. After completing most of the core courses and area courses, students take the comprehensive examination. They then complete at least twelve hours in specialization courses in the field of the dissertation, conduct research, and write the dissertation.

A well-prepared student generally completes the program in four years.

FOR MORE INFORMATION
Campus address: College of Business Administration Building (CBA) 7.202, phone (512) 471-1126, fax (512) 471-1034; campus mail code: B6700
Mailing address: The University of Texas at Austin, Doctoral Program, Department of Marketing, 1 University Station B6700, Austin TX 78712
E-mail: mktphd@mccombs.utexas.edu
URL: http://www.mccombs.utexas.edu/dept/marketing/phd/
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

International Business: I B

Additional courses that focus on international business are available in Asian studies, economics, finance, Latin American studies, management, marketing, and Middle Eastern studies. Each course is described in the section of this catalog for the graduate program that offers it.

191, 291, 391. Directed Studies in Global Management. Open only to second-year MBA students. Global business practices studied through lectures on campus and trips to international partner schools. One and one-half lecture hours a week for one semester, and thirty hours of fieldwork abroad. May be repeated for credit. Students may count more than three hours of credit only when the work is completed in different locations. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

395. Seminar: International Trade. Study of contemporary topics in international trade and investment theories, policies, and problems. May be repeated for credit when the topics vary. Some sections are offered on the letter-grade basis only, while others are offered on the credit/no credit basis only; these sections are identified in the Course Schedule. Some topics also require consent of instructor; these are identified in the Course Schedule. Prerequisite: Graduate standing.

395. Seminar: Marketing Administration. Survey and analysis of current marketing problems; their significance, evaluation, and probable outcome. May be repeated for credit when the topics vary. Some sections are offered on the letter-grade basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing.

Marketing: MKT

382. Seminar: Marketing Administration. Survey and analysis of current marketing problems; their significance, evaluation, and probable outcome. May be repeated for credit when the topics vary. Some sections are offered on the letter-grade basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing.

Topic 1: Market Area Analysis. Same as Geography 394C. Conceptual and methodological aspects of analyzing the geographical dimensions of demand. Students complete a field project in which they apply concepts and techniques to the analysis of a problem.
Topic 2: Analytical Methods in Marketing. Basic analytical techniques that are used to improve market-oriented decisions: brand-switching, linear programming applications in advertising, competitive bidding, distribution and location models, conjoint measurement, and multivariate data analysis for strategy formulation. The course stresses the use of the models to deal with marketing variables and problems and the acquisition of relevant data. Case analyses and projects.

Topic 3: Business and Public Policy. Provides a historical framework in which to study key issues in contemporary government and business relations in the United States and, to a limited extent, in other countries. Settings range from the Depression and the New Deal to more recent periods of social regulation of business; topics range from the role of the international oil companies to the deregulation of the airlines.

Topic 4: Strategic Marketing. Strategic marketing decisions made at the corporate and business-unit levels, and organizational issues that affect the formulation and implementation of marketing strategy; an experiential course, taught primarily through the case method and a marketing strategy computer simulation game.

Topic 5: Current Topics in Consumer Marketing. Reasons for the shift in allocation from advertising to promotion, and implications of this shift for the structure of packaged-goods marketing.

Topic 6: Buyer Behavior in Global Markets. The application of marketing strategy and buyer behavior principles in the global environment.

Topic 7: Industrial Marketing. Concepts, theories, and models from industrial marketing strategy provide the foundation for case analyses of a variety of technology-intensive firms, primarily in electronics, data processing, and pharmaceuticals.

Topic 8: Product Policy and Tactics. Tactical and strategic product decisions, with emphasis on the former. Consumer goods, with some attention to the marketing needs of industrial products and service industries; decisions about a firm’s product portfolio. Uses case analyses and personal computer–oriented analytical exercises. Additional prerequisite: Completion of Master of Business Administration core courses.

Topic 9: Marketing Strategy for Small Business. Basics of marketing strategy and marketing plan development; students develop such a plan for a beginning business.

Topic 11: Quality and Competitiveness. The globalization of competition, the challenge to the United States position in the world economy, and the total quality management movement as a competitive response.

Topic 12: Building Systemic Business Relationships. External resources for competitiveness, such as customer relationships that can help deliver superior quality and drive down costs. The course brings together experienced managers and students who have interned with them to explore issues underlying total quality in marketing. Additional prerequisite: Completion of an instructor-approved internship.

Topic 13: Pricing and Distribution Strategies. Analysis of distribution and pricing decisions, factors that influence these decisions, and the role of pricing and distribution in the formulation of marketing strategy. Lecture/discussions, cases, and group projects.

Topic 14: Marketing of Services. Organizations that market services rather than goods; differences between tangible goods and services; unique service-marketing problems and opportunities.

Topic 15: Marketing High-Tech Products. The forces driving competition in industrial markets, with emphasis on technological products. This course focuses on honing students’ analytical skills for leveraging marketing decision making.

Topic 16: Project Management in Fast-Cycle Environments.

Topic 17: Data Mining for Marketing.

383. Acquisition, Consumption, and Disposition Behavior. The acquisition, consumption, and disposition of goods, services, time, and ideas by individuals, families, and organizations, examined from a managerial viewpoint. Prerequisite: Graduate standing.

384. Marketing Research Methodology. An applied approach to advanced marketing research, covering both the design and execution of marketing research projects and the management of the marketing research function. Prerequisite: Graduate standing, three semester hours of coursework in marketing, and three semester hours of coursework in statistics.

386. Advanced Marketing Management. Major marketing concepts and variables, their interrelationships, and their implications for policy making, problem solving, and strategy formulation. Some sections are offered on the letter-grade basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing.

397. Seminar: Current Topics in Marketing. Survey and analysis of current marketing problems; their significance, evaluation, and probable outcome. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.
Topic 1: *Marketing Theory and Development of Marketing Thought.* Analysis of marketing phenomena and their causes. Provides a historical framework to study issues among key components of the marketing system (customers, distributors, and manufacturers).

Topic 2: *Marketing Management and Strategy.* Examination from the marketing perspective of the process of strategy development and implementation at various levels of the organization: corporate, strategic business unit, and product line/brand.

Topic 3: *Buyer Behavior.* Theoretical examination of the acquisition and consumption of goods, services, time, and ideas by individuals and groups.

Topic 4: *Marketing Research Methods.* Advanced statistical procedures and analytical methods for data analysis; reliability and validity of data.

Topic 5: *Research Topics in Marketing.* Current research issues, methods, and models in marketing; focus on both theory and methodology.

Topic 6: *Advanced Research Methods in Marketing.* New methodological developments and research procedures; selected topics.

Topic 7: *Marketing Models.* Analytical techniques and models developed by management scientists to aid marketing-oriented decisions in contexts such as marketing mix management, new product development, and product adoptions.

Topic 8: *Quantitative Marketing Strategy.* Decision models and analytical procedures used in strategic decision making in marketing; strategic planning approaches, industry analysis (models related to growth in sales and competition), competitive structure (approaches for market structure analysis), and new product design and development models.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Marketing 399R, 699R, or 999R.
COMMUNICATION

Master of Arts
Master of Fine Arts
Doctor of Audiology\(^2\)
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

In addition to the extensive library and computer resources of the University, certain special resources provide support for graduate work in communication. Chief among these is the Jesse H. Jones Communication Center. Communication Building A (CMA) is a six-level building housing classrooms, offices, and sophisticated multimedia facilities. All of the instructional and office spaces are equipped with Ethernet. Communication Building B (CMB), a nine-level production building, houses Austin's public television station, KLRU, and the National Public Radio station KUT-FM. Also housed in Communication Building B are teaching and production facilities for the School of Journalism and the Department of Radio-Television-Film. These facilities provide opportunities for programs of graduate study that cross departmental lines, that interrelate print and electronic media, or that combine the resources of the College of Communication in other ways not feasible in a single department. Additional facilities are listed in each graduate program's section below.

AREAS OF STUDY

Graduate work in the College of Communication may lead to the Master of Arts, the Master of Fine Arts, the Doctor of Audiology, or the Doctor of Philosophy or may be taken as a supporting field for a graduate degree in an area outside the college. For the Master of Arts or Doctor of Philosophy, the student may major in advertising, communication sciences and disorders, communication studies, journalism, or radio-television-film; radio-television-film majors may seek the Master of Fine Arts in production; communication sciences and disorders majors may seek the Doctor of Audiology degree. Advanced graduate work in communication may emphasize the processes of communication, or interdisciplinary combinations of areas of study, or appropriate subdivisions indicated by the courses taught and the specialties of faculty members.

ADMISSION REQUIREMENTS

The applicant must have an undergraduate degree from an accredited college or university and may be required to complete up to twelve semester hours of upper-division coursework in the area of the proposed graduate major. Each program reserves the right to examine the applicant orally or in writing or both regarding the subject matter prerequisite to graduate courses in the major.

\(^2\) Final approval of this degree is pending.
DEGREE REQUIREMENTS

Master of Arts
The Master of Arts usually requires thirty semester hours of graduate coursework, although additional courses may be required to make up deficiencies.

Master of Fine Arts
The Master of Fine Arts is available only in the area of video and film production. Information about the program is given on page 110.

Doctor of Philosophy
The doctoral program cannot be defined in terms of a specific number of hours of credit, although a few core requirements may be stated. Beyond these core courses, the student is required to select a major area of study, to take courses recommended by an advisory committee in this area, and to pursue coursework in one or more supporting fields. The graduate programs in the college work closely together in the coordination of courses for the doctoral degrees in communication. Supporting fields are most commonly in the social and behavioral sciences, business, education, and linguistics, but the student may suggest other fields.

Core requirements include graduate courses in communication theory and research methodology specified by the departments. Foreign language or substitute research tool requirements are specified by Graduate Studies Committees. Students should consult the program’s graduate adviser for specific requirements.

FOR MORE INFORMATION

Campus address: Jesse H. Jones Communication Center (Academic) (CMA) 4.130, phone (512) 471-5775, fax (512) 471-8500; campus mail code: A0900

Mailing address: The University of Texas at Austin, Office of the Dean, College of Communication, 1 University Station A0900, Austin TX 78712

URL: http://communication.utexas.edu/
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Communication: COM

281, 381. Seminar in Communication. Communication in a pluralistic society; nature of theory development; state of communication theory; conceptual models; sources of communication theory; semantic, linguistic, perceptual, sociological; information theory. Two or three lecture hours a week for one semester. May be repeated for credit when the topics vary. Communication 281 is offered on the credit/no credit basis only. Prerequisite: For 281, graduate standing; for 381, graduate standing and at least twelve semester hours of upper-division coursework in the major.

384K. Information Networks. Historical development, design, and use of various kinds of information, communication, and computer-based networks; alternative conceptions of networking from the standpoint of different institutions, missions, disciplines, technologies, users, funders, and geographical areas; network management functions and networking as an alternative to development of intraorganizational resources; databases and data communications technology, standards, and operations. Prerequisite: Graduate standing.

385T. Seminar in Information Science and Knowledge Systems. Critical examination of theories, applications, trends, and problems in information science and knowledge systems, with emphasis on problems suggested by students. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

386. Seminar in Foundations for Library and Information Studies. Problems, issues, and trends, historical and current, in libraries, librarianship, information science, knowledge systems, and relevant technologies. Prerequisite: Graduate standing and consent of instructor.

389C. Seminar in Archival Enterprise. Topics in the nature of, and current problems in, the techniques and administration of archival and manuscript repositories. Intended to stimulate creative thinking about the process and functions of archival administration. Prerequisite: Graduate standing and consent of instructor.

398T. Supervised Teaching in Communication. Required for assistant instructors. Offered on the letter-grade basis only. Prerequisite: Graduate standing.
ADVERTISING

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

In addition to the extensive library and computer resources available on the campus, certain special resources provide support for graduate work in advertising.

Classrooms and laboratories devoted to research and creative work in advertising include a copy and layout studio equipped with the latest computer technology for advertising design and production; the University Co-op Interactive Studio, which includes data banks of media and market studies for audience analyses, research on media trends and competitive expenditures, and other studies; the Leo Burnett Library, containing Clio award–winning commercials from 1960 to the present and creative advertising texts and periodicals; the John Paul Goodwin Conference Room, equipped for client and research presentations; and a collection of over a thousand television and radio commercials for studies on commercial trends, comparative appeals, and cultural developments.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Ronald B. Anderson  John D. Leckenby
Neal M. Burns  Wei-Na Lee
Sejung Choi  Deborah K. Morrison
Isabella C. M. Cunningham  John H. Murphy
Terry Daugherty  Jef I. Richards
Minette Drumwright  Patricia A. Stout
John A. Fortunato  Carson B. Wagner
William G. Griffin  Gary B. Wilcox
Geraldine R. Henderson  Jerome D. Williams
LeeAnn Kahlor

ADMISSION REQUIREMENTS

The entering student must hold a bachelor's degree from an accredited institution. All students must complete each of the following courses or its undergraduate equivalent prior to enrollment or during the first two semesters: Advertising 385 (Topic 1: Strategic Advertising Principles), 385 (Topic: Media Research), Marketing 320F (Foundations of Marketing), and a statistics course.

DEGREE REQUIREMENTS

In addition to the general University requirements for the master's degree, Advertising 380J, 382J, 387, and 388K are required for the Master of Arts with a major in advertising.

Option II. The Master of Arts is offered both in a traditional format and in the Option II format. Option II provides a planned program of study that includes intensive summer work and special internationally focused enrichment opportunities. It gives students enrolled in participating academic programs access to a multinational and global experience. Option II students must complete a master's report.
DUAL DEGREE PROGRAMS

Master of Arts/Master of Business Administration

This dual degree program is designed to develop leaders for an increasingly complex world. The program exposes students both to the issues and principles involved in communication and business and to the skills and techniques needed for efficient and effective management. The student must complete a total of sixty-nine semester hours of coursework in the Department of Advertising and the McCombs School of Business. The advertising program may require additional hours of background work. A joint committee composed of faculty members from both the Department of Advertising and the McCombs School of Business selects students for admission. Students must be accepted by both programs before admission to the dual program. Upon admission to the dual degree program, the student must pay a nonrefundable enrollment deposit to indicate that he or she accepts the offer of admission. The deposit serves to confirm the student’s intention of enrolling in both programs and is applied to the payment of fees when the student enrolls. Students who demonstrate financial need may qualify for assistance to cover the deposit.

Master of Arts/Master of Public Affairs

The purpose of this dual degree program is to allow students to study the relationships among the theories and processes of communication and a variety of public policy issues. It is designed to meet the need for public policy analysts with an understanding of the principles and techniques of communication and to equip communication specialists with an understanding of the public policy process. Students are expected to complete a total of sixty-nine semester hours of coursework in the Department of Advertising and the Lyndon B. Johnson School of Public Affairs, including a master’s report and a summer internship.

Admission to the public affairs program is considered by an Admissions Committee made up of faculty members and second-year students. Admission to the advertising program is considered by the program’s Graduate Studies Committee. After the student has been admitted to each program, a decision on his or her application to the dual program is made by consultation between the two programs.

FOR MORE INFORMATION

Campus address: Jesse H. Jones Communication Center (Academic) (CMA) 7.142, phone (512) 471-1101, fax (512) 471-7018; campus mail code: A1200
Mailing address: The University of Texas at Austin, Graduate Program, Department of Advertising, 1 University Station A1200, Austin TX 78712
E-mail: advertising@mail.utexas.edu
URL: http://advertising.utexas.edu/
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Advertising: ADV

380J. Quantitative and Qualitative Research. An introduction to advertising research designs and procedures. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

381. Consumer Behavior. An interdisciplinary study using behavioral science concepts to explain consumer motivation, information processing, and consumption behavior; sociological and psychological factors affecting the consumption process and the marketing/advertising of goods and services. Prerequisite: Graduate standing and Advertising 380J.

382J. Theories of Persuasive Communication and Consumer Decision Making. Communication and behavioral science theories as they relate to contemporary advertising practices. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

383. Supervised Individual Creative Studies. Conference course. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and written consent of instructor received prior to registering.

385. International Advertising. Study of the managerial, economic, legal, and cultural aspects of multinational advertising. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

387. Creative Strategies. The process of developing creative concepts and their effective execution. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

388J. Principles of Advertising Management. The study of planning, organization, and control of the advertising functions. Prerequisite: Graduate standing, Advertising 370J or the equivalent, and consent of the graduate adviser.

388K. Integrated Communications Management. The application of management principles to the solution of integrated communications management problems. Prerequisite: Graduate standing.

389, 489. Problems in Specialized Fields of Advertising. Research project chosen from area of student’s major interest; written report or creative project required. For each semester hour of credit earned, the equivalent of one lecture hour a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, consent of instructor, and written consent of the graduate adviser received prior to registering.

391K. Seminar in Advertising. Survey and analysis of current advertising issues and practices. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

392. Issues in Advertising Theory and Research. Examination of important current areas in advertising research and theory. May be repeated for credit when the topics vary. Prerequisite: Admission to a doctoral program and consent of the graduate adviser.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in advertising and written consent of the supervising faculty member and the graduate adviser received prior to registering; for 698B, Advertising 698A and written consent of the supervising faculty member and the graduate adviser received prior to registering.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in advertising and written consent of the supervising faculty member and the graduate adviser received prior to registering.
COMMUNICATION SCIENCES AND DISORDERS

Master of Arts
Doctor of Audiology
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

Facilities include state-of-the-art laboratories in all major research areas in communication sciences and disorders. Two audio laboratories in the College of Communication Instructional Media Center are also available. The Speech and Hearing Center of the College of Communication provides a comprehensive facility for clinical training and research. Additional facilities include Information Technology Services and state and community institutions and agencies.

AREAS OF STUDY

The graduate degree program in communication sciences and disorders provides training in speech/language pathology, audiology, deafness studies/education of the deaf, and speech and hearing science.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Lisa M. Bedore
Mark E. Bernstein
Craig A. Champlin
Barbara L. Davis
Ronald B. Gillam
Joyce Harris

Swathi Kiran
Thomas P. Marquardt
Frederick N. Martin
Jan Moore
Elizabeth D. Peña
Harvey M. Sussman

ADMISSION REQUIREMENTS

Applicants to the program must meet the requirements for admission to the Graduate School given on pages 15–16; however, satisfying these minimum requirements does not guarantee admission. Each applicant’s credentials are scrutinized by members of the faculty of the program. No single criterion, such as grade point average or GRE score, is given undue weight in the decision process; every attempt is made to assess the special strengths that the applicant might bring to the program.

DEGREE REQUIREMENTS

Students seeking professional certification in speech/language pathology, audiology, or education of the deaf must meet coursework and clinical requirements specific to the specialization or area of study. Information about certification requirements is available from the graduate adviser.

3. Final approval of this degree is pending.
To be counted toward the degree, all coursework in the major must be at the graduate level. Individual study programs must be arranged in consultation with the graduate adviser.

**Master of Arts**
The Master of Arts provides graduate training in the following specializations.

**Speech/Language Pathology**
Students in speech/language pathology complete a set of core courses and clinical practicum experiences. Students may also choose from a set of electives based upon their specific interests.

**Audiology**
All students in audiology complete the same set of core courses and basic clinical practicum. Students may choose from a set of electives based upon their specific interests. The program of study is not designed to lead to professional certification. Students who are interested in professional certification in audiology should consider the Doctor of Audiology degree described below.

**Deafness Studies/Education of the Deaf**
The specialization in deafness studies/education of the deaf is inactive. Current information about its status is available from the graduate adviser.

**Speech and Hearing Science**
Students in speech and hearing science follow a broad, research-oriented program of study that is not designed to lead to professional certification. Additional information is available from the graduate adviser.

**Doctor of Audiology**
The Doctor of Audiology (AuD) provides academic and clinical education for those who plan to enter the profession of audiology. The degree program involves preparation for the diagnosis and nonmedical treatment of hearing and balance disorders; it is designed to prepare audiologists to meet the standards for Texas state licensure in audiology.

The program requires 121 semester hours of coursework and is designed to be completed in four years. All preprofessional students in audiology complete the same set of core courses and basic clinical practicum. Students may choose from a set of electives based upon their specific interests. Research experiences are part of the curriculum, but a dissertation is not required.

**Doctor of Philosophy**
The Doctor of Philosophy is a research degree; students can expect opportunities to work closely with the faculty on research and to participate in the publication of research findings. All students in this program are expected to achieve mastery of research design principles and methods appropriate to their program of study.
FOR MORE INFORMATION

Campus address: Jesse H. Jones Communication Center (Academic) (CMA) A7.202, phone (512) 471-2385, fax (512) 471-2957; campus mail code: A1100

Mailing address: The University of Texas at Austin, Graduate Program, Department of Communication Sciences and Disorders, 1 University Station A1100, Austin TX 78712

E-mail: csdgrad@uts.cc.utexas.edu
URL: http://csd.utexas.edu/graduate.html

GRADUATE COURSES

Professional liability insurance is required of all students enrolled in off-campus clinical practicums in speech/language pathology or audiology. The insurance policy must cover the duration of the placement, beginning on or before the first day of the placement and extending through the final day of the placement.

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Communication Sciences and Disorders: CSD

180E, 280E, 380E, 480E. Conference Course in Communication Sciences and Disorders. Readings in the literature of communication sciences and disorders designed to expand the graduate student’s opportunity for individual consultation both in research and in informational aspects of the work. One, two, three, or four conference hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing.

181L, 281L, 381L. Clinical Practicum. Supervised practicum in speech/language pathology or audiology. Two, four, or six clinical teaching hours and one, two, or three lecture hours a week for one semester. May be repeated for credit. Prerequisite: Admission to the graduate program in speech/language pathology or audiology.

383N. Seminar in Human Communication Development. Strategies for original research in developmental sequences of communication behaviors and for research in classroom applications; representative topics include linguistic behaviors, oral language development, and second language instruction. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

386N. Research in Communication Sciences and Disorders. Strategies and methodology in the design and analysis of research in communication sciences and disorders. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

393D. Evaluation and Remediation in Speech/Language Pathology. Core courses for clinical competence in speech/language pathology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Voice Disorders.
Topic 2: Developmental Speech Disorders.
Topic 3: Fluency Disorders.
Topic 4: Language Intervention with Infants and Toddlers.
Topic 5: Developmental Language Disorders.
Topic 6: Language Intervention with School-Age Children.

393E. Topics Cognate to Speech/Language Pathology. New developments in related areas and their applications to speech/language pathology. Topics include infants and young children, clinical instrumentation, neuroanatomy, genetic considerations in speech/language pathology, prosody. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Dysphagia.
Topic 2: Measurement in Communication Sciences and Disorders.
Topic 3: Acquired Language Disorders.
Topic 4: Collaborative Models of Assessment and Intervention for Bilingual Children.
Topic 6: Language Theory and Bilingualism.
393F. Recent Developments in Speech/Language Pathology. Current developments in selected categories of speech and language disorders; designed to provide depth in one or more areas. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Aphasia.
Topic 2: Acquired Speech Disorders.
Topic 3: Team Management of Craniofacial Patients.

393G. Measurement and Bias in Communication Sciences and Disorders. Selected topics in speech/language pathology, including pronunciation problems in second language learning, remedial programs for the disadvantaged, and multicultural assessment. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Multicultural Research in Communication Sciences and Disorders.

393H. Auditory Rehabilitation. Acoustic, vocational, social, and psychological rehabilitation of the hearing-impaired child and adult. Prerequisite: Graduate standing, and Communication Sciences and Disorders 394C or consent of instructor.

394K. Problems in Audiology. A review of current literature on diagnostic procedures; habilitation for hearing-impaired children or rehabilitation for adults. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; and Communication Sciences and Disorders 373 and 378, or consent of instructor.

Topic 1: Aural Habilitation.
Topic 2: Psychoacoustics. Anatomy and physiological mechanisms of the peripheral auditory system; behavioral measures of auditory performance—masking, sound localization, pitch and loudness perception, temporary and permanent hearing loss. Only one of the following may be counted: Communication Sciences and Disorders 394K (Topic 2), Neuroscience 394U (Topic 1: Psychoacoustics), Psychology 394U (Topic 5: Psychoacoustics).

Topic 3: Readings in Audiology.

395. Pediatric Audiology. Current methods of testing the hearing of young children; included are identification, electrophysiological and operant audiometry, and medical aspects of hearing loss in children. Prerequisite: Graduate standing, and Communication Sciences and Disorders 378 or consent of instructor.

395C. Language Acquisition in Deaf Children. Examination of current research studies in expressive and receptive language function; relationships of research to existing classroom procedures. Prerequisite: Graduate standing and consent of instructor.

395G. Strategies for Speech Improvement of the Deaf. Designs for evaluation and intervention to improve the speech of deaf students. Prerequisite: Graduate standing, concurrent enrollment in Communication Sciences and Disorders 195L, and consent of instructor.

395H. Problems in Deafness. Selected topics on the implications of deafness for the deaf child's development. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Literacy.
Topic 3: Instructional Practices.

195L. Speech Improvement in the Hearing Impaired: Practicum. Supervised clinical experience conducting speech development activities with hearing-impaired children. Two hours of clinical teaching a week for one semester. Prerequisite: Graduate standing and concurrent enrollment in Communication Sciences and Disorders 395G.
396C. Advanced Amplifying Systems. Fitting of advanced amplification systems, including digital hearing aids, frequency modulation and other wireless systems, and assistive listening devices. Prerequisite: Graduate standing and Communication Sciences and Disorders 394C.

396D. Auditory Processing Disorders. Assessment and treatment of disorders of the central auditory nervous system in children and adults. Prerequisite: Graduate standing.

396E. Advanced Auditory Electrophysiology. Advanced diagnostic tools including acoustic immittance, otoacoustic emissions, auditory evoked potentials, intraoperative monitoring, and vestibular function. Prerequisite: Graduate standing and Communication Sciences and Disorders 394E.

396G. Surgically Implanted Auditory Prostheses. Determining candidacy for treatment, programming devices, and evaluating treatment outcomes associated with implantable hearing technologies. Prerequisite: Graduate standing and Communication Sciences and Disorders 394F.

396M. Instrumentation in Communication Sciences. Electrophysiological and electroacoustic procedures in the study of communication behaviors. Prerequisite: Graduate standing and consent of instructor.

396N. Speech Production and Perception. Neurophysiological mechanisms underlying the encoding and decoding of speech. Prerequisite: Graduate standing.

997. Clinical Externship in Audiology. Intensive clinical experience in a work setting. Nine hours of fieldwork a week for one semester. Prerequisite: Graduate standing.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in communication sciences and disorders and consent of the graduate adviser; for 698B, Communication Sciences and Disorders 698A.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in communication sciences and disorders and consent of the graduate adviser.

398T. Supervised Teaching in Communication Sciences and Disorders. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Communication Sciences and Disorders 399R, 699R, or 999R.
COMMUNICATION STUDIES

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

Facilities available in the Department of Communication Studies include two state-of-the-art audio laboratories; a library of more than two thousand audiotapes; a conversation library of about two hundred hours of interpersonal interaction, both audiotaped and transcribed; and an editing center equipped for making master recordings and for dubbing to and from audio cassettes, reel-to-reel tape, and videotape. Additional facilities for training and research include Information Technology Services, specialized libraries such as the Wasserman Public Affairs Library, an extensive collection of manuscripts of twentieth-century writers, and a major oral history collection.

AREAS OF STUDY

The master's and doctoral degree programs in communication studies provide training in the following areas: interpersonal communication, organizational communication, and rhetoric and language studies.

The Doctor of Philosophy degree with a major in communication studies is a research degree; doctoral students can expect opportunities to work closely with the faculty on research and to participate in the publication of research findings. All doctoral students are expected to achieve mastery of research design principles and methods appropriate to their program of study.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Dawna I. Ballard
Larry D. Browning
Barry Brummett
Richard A. Cherwitz
Dana L. Cloud
John Daly
Loril M. Gossett
Roderick P. Hart
Sharon E. Jarvis
Mark L. Knapp
Laurie Lewis
Madeline Maxwell
Matthew McGlone
David Nino
Craig R. Scott
Rachel Smith
Jürgen K. Streeck
Anita L. Vangelisti

ADMISSION REQUIREMENTS

Entering students must have a bachelor's degree (or the equivalent) from an accredited institution, and their undergraduate preparation should include at least twelve semester hours of upper-division coursework in communication studies. All applicants must meet the requirements for admission to the Graduate School given in chapter 2. Satisfying these minimum requirements does not guarantee admission. Each applicant’s credentials are scrutinized by each member of the faculty of the program. No single criterion, such as grade point average or GRE score, is given undue weight in the decision process; every attempt is made to assess the special strengths that the applicant might bring to the program.
DEGREE REQUIREMENTS
With the approval of the Graduate Studies Committee and the graduate dean, work toward the major may be divided among two or more areas in communication. To be counted toward the degree, all coursework in the major must be at the graduate level and must be completed with a grade of at least B. Students in the master's degree program should complete all requirements for the degree in one or two years of graduate study; doctoral students should complete all requirements in three or four years of graduate study. Individual study programs must be arranged in consultation with the graduate adviser.

DUAL DEGREE PROGRAMS
Master of Arts/Master of Arts with a Major in Latin American Studies
This dual degree program allows students to study the relationships between the theories and processes of communication and issues pertinent to an understanding of the histories and current policies of the societies and cultures of Latin America. It is designed to meet the need for specialists with multidisciplinary knowledge of Latin American affairs and mastery of the principles and techniques of communication.

The student must complete thirty-three semester hours of coursework in communication studies and thirty hours of coursework in Latin American studies, including a summer internship in Latin America and a thesis on a topic involving both fields. The communication studies program may require additional background work.

To be admitted to the dual degree program, the student must pass a language proficiency examination in either Spanish or Portuguese. A joint committee composed of faculty members from the Department of Communication Studies and the Teresa Lozano Long Institute of Latin American Studies selects students for admission. Students must be accepted by both programs before admission to the dual program.

Master of Arts/Master of Business Administration
This dual degree program is designed to develop leaders for an increasingly complex world. The program exposes students both to the issues and principles involved in communication and business and to the skills and techniques needed for efficient and effective management. The student must complete a total of sixty-nine semester hours of coursework in the Department of Communication Studies and the McCombs School of Business. The communication studies program may require additional hours of background work.

A joint committee composed of faculty members from both the Department of Communication Studies and the McCombs School of Business selects students for admission. Students must be accepted by both programs before admission to the dual program.

Upon admission to the dual degree program, the student must pay a nonrefundable enrollment deposit to indicate that he or she accepts the offer of admission. The deposit serves to confirm the student's intention of enrolling in both programs and is applied to the payment of fees when the student enrolls. Students who demonstrate financial need may qualify for assistance to cover the deposit.
Master of Arts/Master of Public Affairs

The purpose of this dual degree program is to allow students to study the relationships among the theories and processes of communication and a variety of public policy issues. It is designed to meet the need for public policy analysts with an understanding of the principles and techniques of communication and to equip communication specialists with an understanding of the public policy process. Students are expected to complete a total of sixty-nine semester hours of coursework in the Department of Communication Studies and the Lyndon B. Johnson School of Public Affairs, including a master’s report and a summer internship.

Admission to the public affairs program is considered by an Admissions Committee made up of faculty members and second-year students. Admission to the communication studies program is considered by the program’s Graduate Studies Committee. After the student has been admitted to each program, a decision on his or her application to the dual program is made by consultation between the two programs.

FOR MORE INFORMATION

Campus address: Jesse H. Jones Communication Center (Academic) (CMA) A7.114, phone (512) 471-1942, fax (512) 471-3504; campus mail code: A1105

Mailing address: The University of Texas at Austin, Graduate Program, Department of Communication Studies, 1 University Station A1105, Austin TX 78712

E-mail: lbrowning@mail.utexas.edu

URL: http://www.utexas.edu/coc/cms/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Communication Studies: CMS

180E, 280E, 380E, 480E. Conference Course in Communication Studies. Readings in the literature of communication studies designed to expand the graduate student’s opportunity for individual consultation both in research and in informational aspects of the work. One, two, three, or four conference hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing.

081M. Introduction to Graduate Studies in Human Communication. Discussion of communication research, theory, and professional development. One lecture hour a week for one semester. Prerequisite: Admission to the graduate program in communication studies.

383K. Communication Theory. Survey of philosophical and language-based approaches to communication; theory construction, research practices, scholarly writing. Communication Studies 383K and Speech 383K may not both be counted. Prerequisite: Graduate standing. Some sections also require consent of instructor or the graduate adviser; these are identified in the Course Schedule.

383L. Language and Social Interaction. May be repeated for credit when the topics vary. Communication Studies 383L and Speech 383L may not both be counted unless the topics vary. Prerequisite: Graduate standing. Some sections also require consent of instructor or the graduate adviser; these are identified in the Course Schedule.
**383M. Communication and Culture.** Analysis of the interplay of culture, language, and communication from classical and contemporary perspectives. Examination of meaning systems. Communication Studies 383M and Speech 383M may not both be counted. **Prerequisite:** Graduate standing. Some sections also require consent of instructor or the graduate adviser; these are identified in the **Course Schedule**.

**384K. Communication and Ethnography.** May be repeated for credit when the topics vary. Communication Studies 384K and Speech 384K may not both be counted unless the topics vary. **Prerequisite:** Graduate standing.

**Topic 1:** *Reading the Ethnography of Communication.* Reading of a wide selection of ethnographies of speaking. Students conduct short individual field studies and write a review.

**Topic 2:** *Writing the Ethnography of Communication.* Intense analysis of selected studies, with emphasis on ethnographic writing. Students conduct group fieldwork and develop their writing skills.

**Topic 3:** *Microethnography of Interaction.* Introduction to the study of details of human interaction: the moment-by-moment organization of speech and embodied communication; the roles of different media of communication, such as language, gesture, and space; the construction of context; uses of the material environment; and the distribution of information in collaborative work settings.

**386K. Theories of Interpersonal Communication.** May be repeated for credit when the topics vary. Communication Studies 386K and Speech 386K may not both be counted unless the topics vary. **Prerequisite:** Graduate standing. Some sections also require consent of instructor or the graduate adviser; these are identified in the **Course Schedule**.

**Topic 1:** *Interpersonal Communication Theory.* Exploration of theoretical perspectives such as general systems theory; symbolic interactionism; rules theory; theories of language and nonverbal coding; theories of meaning; theories of information processing; and theories of persuasion. Theories pertinent to interpersonal, group, and mass interaction.

**Topic 2:** *Applied Interpersonal Communication.* The application of interpersonal communication theory and research in personal and professional settings and to practical problems in those settings.

**Topic 3:** *Current Perspectives in Interpersonal Communication.* Recent advances in theory and research in interpersonal communication.

**386L. Communication in Small Groups.** May be repeated for credit when the topics vary. Communication Studies 386L and Speech 386L may not both be counted unless the topics vary. **Prerequisite:** Graduate standing. Some sections also require consent of instructor or the graduate adviser; these are identified in the **Course Schedule**.

**Topic 1:** *Group Communication Processes.* Study of theory and research in the dynamics of small groups, with emphasis on the interaction of message variables with other variables such as leadership, affiliation, cohesiveness, and social power.

**Topic 2:** *Communication Networks in Groups and Organizations.* Theory and research on social networks in intraorganizational and interorganizational contexts. Students design and conduct a network study.

**386M. Persuasion Theory.** Analysis of current theories and research in social influence and attitudinal and behavioral change. Communication Studies 386M and Speech 386M may not both be counted. **Prerequisite:** Graduate standing.

**386N. Research in Communication Studies.** May be repeated for credit when the topics vary. Communication Studies 386N and Speech 386N may not both be counted unless the topics vary. **Prerequisite:** Graduate standing. Some sections also require consent of instructor or the graduate adviser; these are identified in the **Course Schedule**.

**Topic 1:** *Quantitative Research Methods.* Broad coverage of social scientific techniques for collecting and analyzing communication data: includes measurement, design, and other areas. Some sections focus on organizational research.

**Topic 2:** *Qualitative Research Methods.* The use of observational and interviewing research techniques for studying human communication.

**386P. Seminar in Analysis of Communication Interaction.** May be repeated for credit when the topics vary. Communication Studies 386P and Speech 386P may not both be counted unless the topics vary. **Prerequisite:** Graduate standing. Some sections also require consent of instructor or the graduate adviser; these are identified in the **Course Schedule**.
Topic 1: **Nonverbal Communication.** Current theory and research in such areas as involvement and intimacy, gender, touch, space, environment, nonverbal behavior in children, appearance, and lying. Various methods and measurement techniques for assessing eye gaze, body motion, facial actions, vocal signals, and multichannel events.

Topic 2: **Interaction Analysis.** Common methods of discourse and interaction analysis; methodological arguments and theoretical questions often asked of message analysts.

Topic 3: **Analysis of Videotaped Interaction.** The production and analysis of videotaped interaction in ethnographic research.

Topic 4: **Conversation Analysis.** Message description of naturally occurring interaction: transcription, analytic induction, field methods.

### 386R. Issues in Relational Communication.
May be repeated for credit when the topics vary. Communication Studies 386R and Speech 386R may not both be counted unless the topics vary. **Prerequisite:** Graduate standing. Some sections also require consent of instructor or the graduate adviser; these are identified in the Course Schedule.

**Topic 1:** Communication in Relationships. Theories of development and change; research methods; relationship types; gender and roles; emotion; self-disclosure; secrets; lying; compliments; conflict; complaints; persuasion; dissolution processes; rejuvenating, repairing, and maintaining relationships.

**Topic 2:** Family Communication. Communication and attraction, courtship, marriage, the role of children in the marital relationship, sibling relationships, the effect of spouses' occupations on the family, and dysfunctional families.

### 386S. Communication, Cognition, and Emotion.
The cognitive elements involved in social interaction, such as memory, comprehension, plans, decision making, and schemas. Communication Studies 386S and Speech 386S may not both be counted. **Prerequisite:** Graduate standing. Some sections also require consent of instructor or the graduate adviser; these are identified in the Course Schedule.

### 090F. Research Internship.
Participation in faculty-supervised research during the second full year of doctoral study. The equivalent of one lecture hour a week for one semester. **Prerequisite:** Graduate standing and eighteen semester hours of graduate credit at the doctoral level.

### 380J. Seminar in Philosophy and Rhetoric.
Topics in rhetorical theory, including such areas as philosophy of argument, rhetoric and epistemology, and ethics of rhetoric. Communication Studies 380J and Speech 380J may not both be counted. **Prerequisite:** Graduate standing. Some sections also require consent of instructor or the graduate adviser; these are identified in the Course Schedule.

### 380N. Political Discourse.
May be repeated for credit when the topics vary. Communication Studies 380N and Speech 380N may not both be counted unless the topics vary. **Prerequisite:** Graduate standing. Some sections also require consent of instructor or the graduate adviser; these are identified in the Course Schedule.

**Topic 1:** Rhetoric and Political Theory. Survey of theoretical approaches to political discourse. Consideration of the ways the political penetrates public affairs, popular culture, high culture, and everyday social commerce.

**Topic 2:** Rhetoric of Social Movements. Philosophies, strategies, and effects of modern socio-political and religious movements designed to produce change.

### 390P. Rhetorical Theory.
May be repeated for credit when the topics vary. Communication Studies 390P and Speech 390P may not both be counted unless the topics vary. **Prerequisite:** Graduate standing. Some sections also require consent of instructor or the graduate adviser; these are identified in the Course Schedule.

**Topic 1:** Contemporary Rhetorical Theory. Investigation of recent definitions, issues, and trends in rhetorical theory, with emphasis on the philosophical bases of rhetoric and the relationship of rhetoric to other disciplines.

**Topic 2:** Contemporary Critical Theory I. A survey of the leading schools of contemporary cultural and literary theory, such as neo-Marxism, postmodernism, and phenomenology, with special attention to their implications for rhetoric in particular and for academic work in general.

**Topic 3:** Contemporary Critical Theory II. The relationships among literary and rhetorical theory and literature, with special attention to the fiction and drama of Pirandello, Brecht, Beckett, Ibsen, Koestler, Camus, and Le Guin.

### 390R. Seminar in Rhetorical Criticism.
May be repeated for credit when the topics vary. Communication Studies 390R and Speech 390R may not both be counted unless the topics vary. **Prerequisite:** Graduate standing. Some sections also require consent of instructor or the graduate adviser; these are identified in the Course Schedule.
Topic 1: Basic Rhetorical Criticism. Elementary methods of analyzing public discourse, including the ways and the reasons that rhetorical analysis is attempted.

Topic 2: Advanced Rhetorical Criticism. Survey of six popular schools of thought, including dramatism, Marxism, and structuralism, and their implications for textual analysis.

Topic 3: Feminist Theory and Rhetorical Criticism. In-depth consideration of the premises underlying American and European feminism and the effects of such premises on critical experience. Special attention to the ways contemporary texts become gendered.

Topic 4: Rhetoric and Popular Culture. Survey of the ways film, television, popular literature, and consumer culture influence our attitudes and values. Consideration of a wide variety of contemporary theorists as well as experience in analyzing contemporary textual artifacts.

Topic 5: Rhetoric and Literature. Survey of the major genres of popular fiction—melodrama, romance, mystery, science fiction, and adventure—with special attention to the sources and strategies of their rhetorical appeal for diverse audiences.

390S. Seminar in Organizational Communication. May be repeated for credit when the topics vary. Communication Studies 390S and Speech 390S may not both be counted unless the topics vary. Prerequisite: Graduate standing. Some sections also require consent of instructor or the graduate adviser; these are identified in the Course Schedule.

Topic 1: Narrative Communication in Organizations. Current theories of narrative and their applications to organizations. Topics include gossip, day-to-day news, and dramatic enactments of organizational communication.

Topic 2: Power and Politics in Organizational Communication. The communication implications of sociological and managerial approaches to the study of power and politics, with emphasis on ideas about structure, culture, ideology, information, conformity, voice, and dissent.

Topic 3: Communication and Organizational Change. A survey of theory and research on organizational life cycles, focusing on organizational renewal and the management of change in organizations through transformational leadership.

Topic 4: Research Design in Organizational Communication. Topics include determining what to study, the design of field and laboratory research with multiple research methods, ways of bridging conceptualization and operationalization of variables, methods of data analysis, and the process of drawing inferences from data.

390T. Organizational Communication Theory. May be repeated for credit when the topics vary. Communication Studies 390T and Speech 390T may not both be counted unless the topics vary. Prerequisite: Graduate standing. Some sections also require consent of instructor or the graduate adviser; these are identified in the Course Schedule.

Topic 1: Organizational Communication: Micro. A survey of research and theory in organizational communication, with emphasis on communication as an assimilating and role-defining experience.

Topic 2: Organizational Communication: Macro. An introduction to selected macro-level or systemic variables in organizations, such as structure, technology, and environments, and to the ways these variables relate to organizational communication processes.

Topic 3: Postmodern Organizational Communication Theory. An attempt to integrate the concern in cultural studies for structure with the stream of organizational theory that focuses on chaos. Readings include Clifford and Markus, Clifford, Deleuze and Guattari, March and Olsen, Weick.

390U. Consultation in Organizations. A review of social science literature and its application to problem solving and organizational development in field settings. Communication Studies 390U and Speech 390U may not both be counted. Prerequisite: Graduate standing. Some sections also require consent of instructor or the graduate adviser; these are identified in the Course Schedule.

392P. Seminar in Communication Technology. May be repeated for credit when the topics vary. Communication Studies 392P and Speech 392P may not both be counted unless the topics vary. Prerequisite: Graduate standing. Some sections also require consent of instructor or the graduate adviser; these are identified in the Course Schedule.

Topic 1: Communication Technology and Behavior. Review of contemporary social and information science research into the adoption, implementation, regulation, and evaluation of communication technologies. Review of applications in topical areas of students’ choice. Qualitative and quantitative research methods.

Topic 2: Research in Communication Technologies. Development of research skills through projects in the uses of communication technologies. Review of research methods and analysis strategies.
698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Communication Studies 698A and Speech 698A may not both be counted; Communication Studies 698B and Speech 698B may not both be counted. Prerequisite: For 698A, graduate standing in communication studies and consent of the graduate adviser; for 698B, Communication Studies 698A (or Speech 698A).

398R. Master's Report. Preparation of a report to fulfill the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Communication Studies 398R and Speech 398R may not both be counted. Prerequisite: Graduate standing in communication studies and consent of the graduate adviser.

398T. Supervised Teaching in Communication Studies. Teaching communication studies under supervision. Offered on the letter-grade basis only. Communication Studies 398T and Speech 398T may not both be counted. Prerequisite: Graduate standing.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.


JOURNALISM

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

As the state capital, Austin offers excellent opportunities for studying major news sources and primary resources of public data. Professional associations in fields of journalism are cooperative in the planning and conduct of research by University graduate students.

AREAS OF STUDY

There are two tracks leading to the Master of Arts in journalism: the research and theory track and the professional track. The research and theory track requires thirty semester hours of coursework, including a thesis. The professional track requires thirty-three semester hours of coursework, including a report. There is also a twelve-hour concentration in public opinion that can be taken within either track. The Doctor of Philosophy degree is a research degree in mass communication.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Rosental Alves
Lorraine E. Branham
Gene A. Burd
Dennis Darling
Donna De Cesare
Mercedes Lynn de Uriarte
Dustin M. Harp
Don Heider
Bob Jensen
Dominic L. Lasorsa
Maxwell E. McCombs
Shawn McKinney
Marvin N. Olasky
Paula M. Poindexter
Stephen D. Reese
Maggie Rivas-Rodriguez
George Sylvie
Russell G. Todd
Mark W. Tremayne
Kristopher M. Wilson
ADMISSION REQUIREMENTS
Entering students must hold a bachelor’s degree from an accredited institution. An applicant with fewer than twelve semester hours of upper-division coursework in journalism or other areas related to mass communications may be required to complete additional undergraduate coursework, to be determined after consideration of the applicant’s college transcript and professional experience.

DEGREE REQUIREMENTS
In addition to the general University requirements for the master’s degree, an additional set of specific journalism skills, theory, and/or issues courses are required. The courses are determined by the student’s chosen track.

DUAL DEGREE PROGRAMS
Master of Arts/Master of Arts with a Major in Latin American Studies
This dual degree program allows students to study the relationships between the theories and processes of communication and issues pertinent to an understanding of the histories and current policies of the societies and cultures of Latin America. It is designed to meet the need for specialists with multidisciplinary knowledge of Latin American affairs and mastery of the principles and techniques of communication. The student must complete thirty-three semester hours of coursework in journalism and thirty hours of coursework in Latin American studies, including a summer internship in Latin America and a thesis on a topic involving both fields. The journalism program may require additional background work. To be admitted to the dual degree program, the student must pass a language proficiency examination in either Spanish or Portuguese. A joint committee composed of faculty members from the School of Journalism and the Teresa Lozano Long Institute of Latin American Studies selects students for admission. Students must be accepted by both programs before admission to the dual program.

Master of Arts/Master of Arts with a Major in Middle Eastern Studies
This dual degree program responds to a need in both the public and the private sector for communication specialists with a thorough understanding of the cultures, economies, geography, history, and politics of the Middle East and North Africa. The student must complete a total of sixty-three semester hours of coursework in the School of Journalism and the Center for Middle Eastern Studies, including a summer internship and a thesis based on original research and co-supervised by a journalism and a Middle Eastern studies faculty member. Upon completion of the program, students must have proficiency in Arabic, Hebrew, Persian, or Turkish equal to that shown by completion of two years of coursework. This requirement may be met either through formal language study or by passing a proficiency examination administered by a University faculty member. Students are encouraged to achieve the required level of proficiency as early as possible. Those with no previous knowledge of a Middle Eastern language are advised to enroll in intensive language courses during the summer before they begin the dual degree program. Students who are native speakers of a Middle Eastern language must demonstrate proficiency in a second Middle Eastern language. A joint committee composed of faculty members from the School of Journalism and the Center for Middle Eastern Studies selects students for admission. Students must be accepted by both programs before admission to the dual program.
**Master of Arts/Master of Business Administration**

This dual degree program is designed to develop leaders for an increasingly complex world. The program exposes students both to the issues and principles involved in communication and business and to the skills and techniques needed for efficient and effective management. The student must complete a total of sixty-nine semester hours of coursework in the School of Journalism and the McCombs School of Business. The journalism program may require additional hours of background work.

A joint committee composed of faculty members from both the School of Journalism and the McCombs School of Business selects students for admission. Students must be accepted by both programs before admission to the dual program.

Upon admission to the dual degree program, the student must pay a nonrefundable enrollment deposit to indicate that he or she accepts the offer of admission. The deposit serves to confirm the student’s intention of enrolling in both programs and is applied to the payment of fees when the student enrolls. Students who demonstrate financial need may qualify for assistance to cover the deposit.

**Master of Arts/Master of Public Affairs**

The purpose of this dual degree program is to allow students to study the relationships among the theories and processes of communication and a variety of public policy issues. It is designed to meet the need for public policy analysts with an understanding of the principles and techniques of communication and to equip communication specialists with an understanding of the public policy process. Students are expected to complete a total of sixty-nine semester hours of coursework in the School of Journalism and the Lyndon B. Johnson School of Public Affairs, including a master’s report and a summer internship.

Admission to the public affairs program is considered by an Admissions Committee made up of faculty members and second-year students. Admission to the School of Journalism is considered by the program’s Graduate Studies Committee. After the student has been admitted to each program, a decision on his or her application to the dual program is made by consultation between the two programs.

**FOR MORE INFORMATION**

*Campus address:* Jesse H. Jones Communication Center (Academic) (CMA) A6.144, phone (512) 471-5933, fax (512) 471-7979; campus mail code: A1000

*Mailing address:* The University of Texas at Austin, Graduate Program, School of Journalism, 1 University Station A1000, Austin TX 78712

*E-mail:* jgrad@ccwf.cc.utexas.edu

*URL:* http://journalism.utexas.edu/graduate/gradhome.html
**GRADUATE COURSES**

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the *Course Schedule* to determine which courses and topics will be offered during a particular semester or summer session. The *Course Schedule* may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

**Journalism:**

380. *Introduction to Research Methods.* Survey of research areas, bibliography, role of theory, conceptual models, research methods. Required of all candidates for the Master of Arts degree with a major in journalism. *Prerequisite:* Graduate standing.

380M. *Advanced Projects in Photography.* Advanced projects to demonstrate professional competence. Three lecture hours and four laboratory hours a week for one semester. May be taken twice for credit. *Prerequisite:* Graduate standing, Journalism 380 and 384, and consent of instructor and the graduate adviser.

380N. *Advanced Projects in Journalism.* Designed to prepare students to write the master's report. Students develop professional projects to demonstrate their competence in specialized skills; students present, discuss, and critique their own and other students' work. *Prerequisite:* Graduate standing, Journalism 380 and 384, and consent of the graduate adviser. May be taken concurrently with Journalism 398R.

380W. *Writing and Reporting.* Three lecture hours and five laboratory hours a week for one semester. Journalism 321L and 380W may not both be counted. Required of all first-year students in the Master of Arts in journalism program, professional track. *Prerequisite:* Graduate standing in journalism.

381. *Research Methods Seminar.* Research techniques for investigating the control, content, audience, and effects of mass media. May be repeated for credit when the topics vary. One topic is required of all candidates for the Master of Arts degree with a major in journalism. *Prerequisite:* Graduate standing, Journalism 380 and 384, and consent of the graduate adviser.

382. *Seminar in Mass Communication.* Readings, research, analyses in mass communications; oral and written reports in an area approved by the instructor. May be repeated for credit when the topics vary. *Prerequisite:* Graduate standing, Journalism 380 and 384, and consent of the graduate adviser.

383. *International Communication Seminar.* Role of the press in a democracy, under a dictatorship, in a revolution; the mass media in England, France, the former Soviet Union, Latin America, and other areas; flow of international communication and obstacles to clear interpretation. *Prerequisite:* Graduate standing.

384. *Mass Communication Theory.* Study of the processes and effects of mass communication. Required of all candidates for the Master of Arts degree with a major in journalism. *Prerequisite:* Graduate standing and consent of the graduate adviser.

385. *Social Functions and Role of the Mass Media.* Contemporary issues and problems of the mass media in the United States. *Prerequisite:* Graduate standing, Journalism 380 and 384, and consent of the graduate adviser.

386. *Public Relations Seminar.* Readings, research, analyses in public relations. Examination of the role of public relations in social, economic, and political campaigns. May be repeated for credit when the topics vary. *Prerequisite:* Graduate standing, Journalism 380 and 384, and consent of the graduate adviser.

388. **Seminar in Photographic Criticism.** Study of the basis for photographic styles and of their manifestations in the history of photography or in the student’s own work. *Prerequisite:* Graduate standing, Journalism 380 and 384, and consent of instructor and the graduate adviser.

289, 389, 489. **Problems in Specialized Fields.** Research project chosen from area of student’s major interests; written report required. Independent study. May be repeated for credit when the topics vary. *Prerequisite:* Graduate standing, Journalism 380 and 384, and consent of the graduate adviser. Students must complete the Journalism Research/Problems Course form before registering.

Topic 1: *Photojournalism.*

189P. **Independent Research: Photojournalism.** May be repeated for credit. *Prerequisite:* Graduate standing, Journalism 380 and 384, and consent of instructor and the graduate adviser.

390. **Seminar in Journalism History.** Research projects in the history of communication media; examination of the social, economic, and political relationships of the media within historical environments. *Prerequisite:* Graduate standing, a course in the history of the media or consent of instructor, Journalism 380 and 384, and consent of the graduate adviser.

391. **Urban Communication.** Civic images, media dilemmas on urban growth, decentralization; new telecommunications technology, the future “mediapolis” of postindustrial cities. *Prerequisite:* Graduate standing, Journalism 380 and 384, and consent of instructor and the graduate adviser.

392. **Seminar in Media Law.** Research in selected areas of social and legal responsibilities of the media. May be repeated for credit when the topics vary. *Prerequisite:* Graduate standing, Journalism 380 and 384, an undergraduate course in social and legal responsibilities or consent of instructor, and consent of the graduate adviser.

Topic 1: *Constitutional Issues in Media Law.*

Topic 2: *Studies in Regulation of the Mass Media.*

395. **Topics in Journalism.** Contemporary social, professional, and intellectual concerns with the practice of journalism. Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. *Prerequisite:* Graduate standing.

Topic 1: *Professional Writing for Journalists.*

Topic 2: *Advanced Photo Editing and Design.* Advanced training in photo editing and publication design.

Topic 3: *Documentary Video.* Production and editing of video for television and online newspapers. Three lecture hours and four laboratory hours a week for one semester.

Topic 4: *Documentary Tradition of Latin America.* Study of still photographic and video documentary work by Latin Americans about Latin America. Production of photographic essays on Latin American culture. Three lecture hours and four laboratory hours a week for one semester.

Topic 5: *Advanced Visual Design.* Advanced exploration of visual design, including design principles, visual perception, typography, imagemaking, uses of color, printing techniques, and publication design. Three lecture hours and three laboratory hours a week for one semester.

Topic 6: *Interactive Multimedia Research.* Survey of research methods and theories related to new media, with a focus on emerging technologies of mass communication.

Topic 7: *Business Journalism.* Practical training and experience in business and financial reporting and writing.

Topic 8: *Editorial Column Writing.* Hands-on work in column writing.

Topic 9: *International Reporting.* Designed to provide students with skills in foreign reporting and an understanding of international news production processes, with special emphasis on Latin America.

Topic 10: *Multimedia Journalism.* Review of online reporting techniques, advanced multimedia skills, and current issues in new media. Three lecture hours and three laboratory hours a week for one semester.

698. **Thesis.** The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. *Prerequisite:* For 698A, graduate standing in journalism and consent of the graduate adviser; for 698B, Journalism 698A.

398R. **Master’s Report.** Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing in journalism and consent of the graduate adviser.

398T. **Supervised Teaching in Journalism.** Teaching under the close supervision of the course instructor; weekly group meetings with the instructor, individual consultations, and reports required throughout the teaching period. Offered on the letter-grade basis only. *Prerequisite:* Graduate standing, appointment as a teaching assistant, and consent of the graduate adviser.
399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree and written consent of the graduate adviser received prior to registering.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Journalism 399R, 699R, or 999R, and written consent of the graduate adviser received prior to registering.

**RADIO-TELEVISION-FILM**

**Master of Arts**

**Master of Fine Arts**

**Doctor of Philosophy**

**FACILITIES FOR GRADUATE WORK**

The extensive production facilities of the Jesse H. Jones Communication Center are available to graduate students in radio-television-film, as are the services of Information Technology Services. Research in media history, criticism, and theory is supported by the resources of the University Libraries, the Research and Collections Division of the Center for American History, and the Harry Ransom Humanities Research Center, a major collection of primary materials in literature, film, and the arts. Students in international communication have available to them the nationally recognized resources of the Benson Latin American Collection. Facilities and projects supported by the Telecommunications and Information Policy Institute are available to students in the policy and technology programs. The UT Film Institute sponsors opportunities for research projects and internships.

**AREAS OF STUDY**

Students seeking the Master of Arts or the Doctor of Philosophy pursue work in a number of concentrations, including ethnic and minority issues and the media; gender and sexuality issues and the media; international communication issues; media, culture, and society; critical and cultural studies; and technology, culture, and society. Students seeking the Master of Fine Arts study film, video, and digital media production; or writing for film and television.

**GRADUATE STUDIES COMMITTEE**

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Robert Foshko                      Nancy Schiesari
Andrew S. Garrison                Andrew B. Shea
Don W. Howard                     Nikhil Sinha
Michael S. Kackman                Cauleen Smith
Mary Celeste Kearney              Ellen Spiro
Stuart Kelban                     Janet Staiger
Samantha H. Krukowski             Laura L. Stein
Richard Lewis                     Paul J. Stekler
Monika Mehta                      Allucquere Rosanne Stone
Mitko Panov                       Joseph D. Straubhaar
David J. Phillips                 Sharon L. Strover
Charles E. Ramirez-Berg           Kathleen Tyner
América Rodriguez                 Samuel Craig Watkins
Thomas G. Schatz                  Karin Wilkins
DEGREE REQUIREMENTS

The student is normally expected to begin coursework in the fall semester.

Master of Arts. The Master of Arts with thesis requires thirty semester hours of coursework, including six hours in Radio-Television-Film 395; the student must take this course in the fall and spring semesters of the first year. The Master of Arts with thesis is recommended for students who plan to continue their graduate work after receiving the master’s degree. The Master of Arts with report requires thirty-three hours of coursework.

Master of Fine Arts. This degree is available in film, video, and digital media production; or writing for film and television. It is designed for the student with a demonstrated commitment to production or screenwriting as a professional, artistic, or academic pursuit. Production students complete a three-year, sixty-semester-hour program that allows them to develop a foundation of production skills by creating works in both traditional and nontraditional forms. Students must pass annual reviews of their work and must produce a final thesis project for public exhibition during the third year. Writing students complete forty-five hours of coursework in a program that allows them to explore writing for film and television. Students write original screenplays as well as those adapted from other material. Both production and writing students must write a report.

Doctor of Philosophy. The Master of Arts or an equivalent degree is required for admission to the doctoral degree program. The program requires completion of at least forty-eight semester hours of coursework beyond the master's degree; among these hours must be at least twelve hours in research-tools courses and twenty-one hours in the student's area of specialization, including Radio-Television-Film 395, taken twice. The student works with a faculty adviser to plan specific course requirements in the area of specialization. In addition to this coursework, the student must pass comprehensive examinations in three academic areas. After successful completion of the comprehensive examinations, the student files an application for candidacy and writes the dissertation.

Upon admission to the graduate program, students must pay a nonrefundable enrollment deposit to indicate that they accept the offer of admission. The deposit is applied to the payment of fees when the student enrolls.

DUAL DEGREE PROGRAMS

Master of Arts/Master of Arts with a Major in Latin American Studies

This dual degree program allows students to study the relationships between the theories and processes of communication and issues pertinent to an understanding of the histories and current policies of the societies and cultures of Latin America. It is designed to meet the need for specialists with multidisciplinary knowledge of Latin American affairs and mastery of the principles and techniques of communication. The student must complete thirty-three semester hours of coursework in radio-television-film and thirty hours of coursework in Latin American studies, including a summer internship in Latin America and a thesis on a topic involving both fields. The radio-television-film program may require additional background work.

To be admitted to the dual degree program, the student must pass a language proficiency examination in either Spanish or Portuguese. Students must be accepted by both programs before admission to the dual degree program. Upon admission to the graduate program in the Department of Radio-Television-Film, the student must pay
a nonrefundable enrollment deposit to indicate that he or she accepts the offer of admission. The deposit serves to confirm the student’s intention of enrolling and is applied to the payment of fees when the student enrolls.

Master of Arts/Master of Arts with a Major in Middle Eastern Studies
This dual degree program responds to the need in both the public and the private sector for communication specialists with a thorough understanding of the cultures, economies, geography, history, and politics of the Middle East and North Africa.

The student must complete a total of sixty-three semester hours of coursework in the Department of Radio-Television-Film and the Center for Middle Eastern Studies, including a summer internship and a thesis based on original research and co-supervised by a radio-televisio-n-film and a Middle Eastern studies faculty member.

Upon completion of the program, students must have proficiency in Arabic, Hebrew, Persian, or Turkish equal to that shown by completion of two years of coursework. This requirement may be met either through formal language study or by passing a proficiency examination administered by a University faculty member. Students are encouraged to achieve the required level of proficiency as early as possible. Those with no previous knowledge of a Middle Eastern language are advised to enroll in intensive language courses during the summer before they begin the dual degree program. Students who are native speakers of a Middle Eastern language must demonstrate proficiency in a second Middle Eastern language.

Students must be accepted by both programs before admission to the dual degree program. Upon admission to the graduate program in the Department of Radio-Television-Film, the student must pay a nonrefundable enrollment deposit to indicate that he or she accepts the offer of admission. The deposit serves to confirm the student’s intention of enrolling and is applied to the payment of fees when the student enrolls.

Master of Arts/Master of Arts with a Major in Russian, East European, and Eurasian Studies
This dual degree program responds to the need in both the public and the private sector for communication specialists with a thorough understanding of the cultures, economies, geography, history, and politics of the former Soviet Union and Eastern Europe.

The student must complete a total of sixty-three semester hours of coursework in the Department of Radio-Television-Film and the Center for Russian, East European, and Eurasian Studies, including a summer internship and a thesis based on original research and co-supervised by a radio-televisio-n-film and a Russian, East European, and Eurasian studies faculty member.

Students must have proficiency in a language of the area, normally Russian, Czech, Polish, or Serbian/Croatian, equal to that shown by completion of three years of coursework. This requirement may be met either through formal language study or by passing a proficiency examination administered by a University faculty member. Students are encouraged to achieve the required level of proficiency as early as possible. Those with no previous knowledge of a Slavic, East European, or central Asian language are advised to enroll in intensive language courses during the summer before they begin the dual degree program. Students who are native speakers of an area language must learn a second area language.

The program is administered by the graduate advisers for Russian, East European, and Eurasian studies and radio-televisio-n-film. Students must be accepted by both programs before admission to the dual program.
Upon admission to the graduate program in the Department of Radio-Television-Film, the student must pay a nonrefundable enrollment deposit to indicate that he or she accepts the offer of admission. The deposit serves to confirm the student’s intention of enrolling and is applied to the payment of fees when the student enrolls.

**Master of Arts/Master of Business Administration**

This dual degree program is designed to develop leaders for an increasingly complex world. The program exposes students both to the issues and principles involved in communication and business and to the skills and techniques needed for efficient and effective management. The student must complete a total of sixty-nine semester hours of coursework in the Department of Radio-Television-Film and the McCombs School of Business. The radio-television-film program may require additional hours of background work.

Students must be accepted by both programs before admission to the dual degree program.

Upon admission to the dual degree program, the student must pay a nonrefundable enrollment deposit to indicate that he or she accepts the offer of admission. The deposit serves to confirm the student’s intention of enrolling in both programs and is applied to the payment of fees when the student enrolls.

**Master of Arts/Master of Public Affairs**

The purpose of this dual degree program is to allow students to study the relationships among the theories and processes of communication and a variety of public policy issues. It is designed to meet the need for public policy analysts with an understanding of the principles and techniques of communication and to equip communication specialists with an understanding of the public policy process. Students are expected to complete a total of sixty-nine semester hours of coursework in the Department of Radio-Television-Film and the Lyndon B. Johnson School of Public Affairs, including a master’s report and a summer internship.

Admission to the public affairs program is considered by an Admissions Committee made up of faculty members and second-year students. Admission to the radio-television-film program is considered by the program’s Graduate Studies Committee.

Upon admission to the graduate program in the Department of Radio-Television-Film, the student must pay a nonrefundable enrollment deposit to indicate that he or she accepts the offer of admission. The deposit serves to confirm the student’s intention of enrolling and is applied to the payment of fees when the student enrolls.

**FOR MORE INFORMATION**

*Campus address*: Jesse H. Jones Communication Center (Academic) (CMA) A6.116, phone (512) 471-3532, fax (512) 471-4077; campus mail code: A0800

*Mailing address*: The University of Texas at Austin, Graduate Program, Department of Radio-Television-Film, 1 University Station A0800, Austin TX 78712

*URL*: [http://www.utexas.edu/coc/rtf/graduate/](http://www.utexas.edu/coc/rtf/graduate/)
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Radio-Television-Film: RTF

380. Research Theory and Design. Introduction to research theory and design. Designed to help students develop skills in understanding and critiquing current research, and in designing and proposing research projects. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

380C. Introduction to Writing for Film and Television. Introduction to the study and practice of writing for film and television. Required of all production students. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

380G. Research Practices. Introduction to research implementation. Designed to help students develop skills in conducting a variety of research approaches. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

380J. Theory and Principles of Dramatic Writing. Introduction to theory and practice in narrative writing for film and electronic media. May be repeated for credit when the topics vary. Required of students in the screenwriting area. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

380M. Writing for Film and Electronic Media. Creation and development of written work for film and television production. Students will develop a major work, such as a full-length screenplay, and several shorter pieces. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

380N. Practicum in Writing. Creation and realization of professional materials for film and television. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, Radio-Television-Film 380M or the equivalent, and consent of instructor and the graduate adviser.

384. Communication Theory. A broad introduction to selected topics in communication theories. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

384C. Seminar: Communication Theory. An intensive investigation of selected topics in communication theories. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

384N. Internship in Film and Electronic Media. Practical working involvement with participating media production and research agencies. The equivalent of ten class hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of the graduate adviser.

385K. History of Film. Survey of the history of the motion picture. Lectures and readings; screenings are required for some topics. Three lecture hours a week for one semester, with one two-hour film screening a week if required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

385L. Seminar in Film History. Advanced study and research in major directors, genres, periods, and movements of film history. Three lecture hours a week for one semester, with one two-hour film screening a week if required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.
386. Analysis and Criticism of Film and Electronic Media. Analysis and explication of representative critics, critical systems, genres, and artists. Three lecture hours a week for one semester, with one two-hour film screening a week if required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

386C. Seminar: Media Theory and Criticism. Advanced study in film and television theory and criticism. Three lecture hours a week for one semester, with one two-hour film screening a week if required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

387C. Global Media. Study of global media systems, theories, and processes. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

387D. Communication for Development and Social Change. Study of how development institutions use communication strategies for social change, and how development discourse communicates assumptions about social change. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

387F. Comparative Media Systems. Study of media systems across cultural and political boundaries. Three lecture hours a week for one semester, with one two-hour film screening a week if required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

387G. International Communication. Study of international communication issues. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

387S. Topics in International Communication. Study of issues in international communication, supplemented by film screenings. Three lecture hours and one two-hour film screening a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

288, 388, 488. Research Problems in Specialized Fields of Radio-Television-Film. Research project chosen from area of student’s major interests. The equivalent of two, three, or four class hours a week for one semester. May be repeated for credit when the topics vary. Credit earned depends on the nature of the research project. Some sections are offered on the letter-grade basis only, while others are offered on the credit/no credit basis only; these sections are identified in the Course Schedule. Prerequisite: Graduate standing and consent of the graduate adviser.

288C, 388C, 488C. Research Problems: Comprehensive Exam Preparation. Research and reading in preparation for comprehensive examinations. The equivalent of two, three, or four class hours a week for one semester. May be repeated for credit when the topics vary. Credit earned depends on the nature of the research project. Some sections are offered on the letter-grade basis only, while others are offered on the credit/no credit basis only; these sections are identified in the Course Schedule. Prerequisite: Graduate standing in radio-television-film and consent of the graduate adviser.

388M, 488M. Practicum in Film and Television Production. Production of projects in film and video. Production costs borne by the student. Three or four lecture hours a week for one semester, with studio hours to be arranged. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

388P. Topics in Film and Video Production. Production costs borne by the student. Three lecture hours and three laboratory hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

388R. Project in a Specialized Field of Radio-Television-Film. Completion of a research or creative project required for the report option of the master’s degree. The equivalent of three class hours a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in radio-television-film and consent of the graduate adviser.

388S. Research Problems in Specialized Fields of Radio-Television-Film: Production. The equivalent of at least three class hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.
388T. Producing Film and Television. Comprehensive consideration of the production process from the standpoint of fiscal and creative management; preproduction and production planning using computer budgeting and scheduling. Software costs borne by the student. Three lecture hours a week for one semester, with studio hours to be arranged. Radio-Television-Film 388P (Topic: Producing Film and Television) and 388T may not both be counted. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

389. Media and Society. Study of selected issues related to media and society. Three lecture hours a week for one semester, with one two-hour film screening a week if required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

389K. History of Broadcasting. Principal eras of broadcast development, audience patterns, legal and industrial precedents of broadcast practices, contemporary industrial and institutional perspectives in radio and television. Three lecture hours a week for one semester, with one two-hour film screening a week if required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

390C. Introduction to Editing Processes. Study and practice in electronic editing and postproduction, with emphasis on computerized videotape editing. Software costs borne by the student. Three or four lecture hours a week for one semester, with studio hours to be arranged. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

390E. Advanced Video Postproduction: Audio. Theory and application of multitrack audio for video productions. Three lecture hours a week for one semester, with studio hours to be arranged. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

390F. Topics in Production Crafts. Professional-level experiences in various topics in the production crafts. Three lecture hours a week for one semester, with additional laboratory hours to be arranged. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in radio-television-film and consent of the graduate adviser.

390G. Introduction to Media Aesthetics and Techniques. Introduction to physical and aesthetic aspects of sound, light, and image and to the science and technologies that record and reproduce them. Three lecture hours and two studio hours a week for one semester, with additional studio hours to be arranged. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

390N. Issues in New Media. Issues in new media theory and practice. Three lecture hours a week for one semester, with one screening or studio session of at least two hours a week to be arranged. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

393C. Telecommunication Information Systems. Study of the converging technologies of broadcasting, interactive telecommunications, and information processing. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

393D. Cable Television and New Video Technology. Survey of cable television and other video technologies; analysis of regulation, policy, economics, and industry practices. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

393N. Telecommunication and Information Policy. Analysis of major domestic and international policy issues related to new communications technology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

393P. Special Topics in New Communications Technology. Applications and effects of new communication and information technology. Three lecture hours a week for one semester, with studio hours to be arranged if required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

393Q. Special Topics in Digital Media. Applications and effects of digital media technologies. Three lecture hours a week for one semester; additional hours may be required for some topics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.
395. **Theory and Literature.** Advanced seminar surveying the literature of media and communication theories. May be repeated for credit when the topics vary. Some sections are required of all doctoral students in radio-television-film or all master’s students in radio-television-film; these are identified in the Course Schedule. **Prerequisite:** Graduate standing and consent of instructor and the graduate adviser.

   Topic 1: *Theory and Literature: Social Science Approaches.* Surveys the literature of social science approaches to communication study.
   
   Topic 2: *Theory and Literature: Historical, Critical, and Cultural Approaches.* Surveys the literature of historical and critical approaches to communication study.

196, 296, 396, 496. **Portfolio in Media Production.**
The equivalent of one, two, three, or four lecture hours a week for one semester. **Prerequisite:** Graduate standing in radio-television-film and consent of the graduate adviser.

698. **Thesis.** The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. **Prerequisite:** For 698A, graduate standing in radio-television-film and consent of the graduate adviser; for 698B, Radio-Television-Film 698A.

398R. **Master’s Report.** Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. **Prerequisite:** Graduate standing in radio-television-film and consent of the graduate adviser.

398T. **Supervised Teaching in Radio-Television-Film.**
Study of the teaching/learning process; practice in classroom presentation. Offered on the letter-grade basis only. Required for appointment as an assistant instructor in radio-television-film; may be taken before or during the first semester of appointment. **Prerequisite:** Graduate standing and consent of the graduate adviser.

399R, 699R, 999R. **Dissertation.** Offered on the credit/no credit basis only. **Prerequisite:** Admission to candidacy for the doctoral degree and consent of the graduate adviser.

399W, 699W, 999W. **Dissertation.** Offered on the credit/no credit basis only. **Prerequisite:** Radio-Television-Film 399R, 699R, or 999R, and consent of the graduate adviser.
EDUCATION

Master of Arts
Master of Education
Doctor of Philosophy
Doctor of Education

AREAS OF STUDY

The College of Education offers graduate degree programs in the following areas: curriculum and instruction, educational administration, educational psychology, foreign language education, health education, kinesiology, mathematics education, science education, and special education.

DEGREE REQUIREMENTS

Master of Arts

In addition to fulfilling the general requirements for all master’s degrees, the student must complete twelve semester hours of advanced course preparation appropriate to the proposed area of concentration. Graduate advisers can provide information about these requirements and any others prescribed by the Graduate Studies Committees. Before a student is admitted to candidacy, the Program of Work must be approved by the graduate adviser of the area of concentration and the graduate dean. Additional requirements and optional plans open to students in the areas of concentration in education are listed under the appropriate area headings or are available from the area graduate advisers.

Master of Education

In addition to fulfilling the general requirements for all master’s degrees, the student must complete twelve semester hours of advanced course preparation appropriate to the proposed area of concentration. Graduate advisers can provide information about these requirements and any others prescribed by the Graduate Studies Committees. Of the total number of semester hours required, at least eighteen must be in a particular area of concentration, which may be interdepartmental in scope and not necessarily confined to the College of Education.

Before the student is admitted to candidacy, the Program of Work must be approved by the graduate adviser of the area of concentration and the graduate dean. Additional requirements and optional plans open to students in the areas of concentration in education are listed under the appropriate area headings or are available from the area graduate advisers.
Doctor of Philosophy
The Doctor of Philosophy is a research degree. The student's Program of Work includes courses in the field of specialization and supporting work outside the major. To be admitted to candidacy, the student is expected to pass a qualifying examination, written or oral or both, and to meet additional requirements established by the Graduate Studies Committee. Admission to candidacy must be approved by the Graduate Studies Committee and the graduate dean.
Additional requirements, if any, are given in the following sections.

Doctor of Education
The Doctor of Education is a professional degree. Program requirements vary, but each must focus predominantly on the application of knowledge. The program normally entails an internship. The requirements for admission to candidacy and course requirements are similar to those for the Doctor of Philosophy degree.
Additional requirements, if any, are given in the following sections.

CURRICULUM AND INSTRUCTION
Master of Arts
Master of Education
Doctor of Philosophy
Doctor of Education

FACILITIES FOR GRADUATE WORK
The Perry-Castañeda Library offers an extensive collection of material on education, including the Curriculum and Textbook Collection. Students also have access to an array of electronic databases, journals, and books related to curriculum and instruction through the University Libraries Web site, http://www.lib.utexas.edu/. The College of Education’s Learning Technology Center includes facilities for television, laboratory teaching, and photography, a graphics laboratory, and a computer laboratory. Other campus facilities, including the UT Learning Center and the laboratories and systems of Information Technology Services, are used extensively, and ongoing research and instructional activities are carried out in local schools.

AREAS OF STUDY
Graduate study is offered in the following areas of specialization: curriculum studies, instructional technology, language and literacy studies, early childhood education, social studies education, multilingual studies: bilingual education, and multilingual studies: cultural studies. Requirements for concentrations in foreign language education, science education, and mathematics education are given elsewhere in this catalog.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee during the spring semester 2004–2005.

Lawrence D. Abraham
James P. Barufaldi
Lowell J. Bethel
George M. Blanco
Randy Bomer

Christopher P. Brown
Guadalupe Carmona
Lisa J. Cary
Ozro Luke Davis Jr.
Joel Dowrin
DEGREE REQUIREMENTS

Master of Arts
General requirements are those for the master’s degree that begin on page 23, except that students may count no more than six semester hours of upper-division coursework toward the degree. For specific requirements and optional plans, consult the graduate adviser.

Master of Education
In addition to the general requirements for all master’s degrees, students must present evidence of appropriate teaching or related experience. A thirty-six-semester-hour option, without thesis or report, is available. For specific requirements and optional plans, consult the graduate adviser.

Doctor of Philosophy
Students seeking the degree of Doctor of Philosophy must show evidence of related academic and professional experience, including a master’s degree or the equivalent.

Program Requirements
Each student must complete at least eighteen semester hours of organized coursework in the Department of Curriculum and Instruction. The faculty in each specialization has established a minimum number of hours of coursework required for that program.

Core courses. All students must complete nine hours in core courses that form the theoretical foundation for the study of curriculum and instruction. Courses must be taken in learning and instructional theory, curriculum theory and development, and cultural foundations of education.

Research methodology. At least twelve hours in research methodology are required, consisting of three hours in each of the following: philosophical foundations of research, qualitative methods, quantitative methods, and an advanced course in either qualitative or quantitative research methods.

Directed research. Twelve hours in directed research are required. This requirement may be fulfilled with organized coursework that has a substantial research component and requires a research project, or through faculty-guided research studies.
**Specialization courses.** This coursework is defined by the faculty in the area of specialization.

**Review and Examination Requirements**

**First review.** When the student has completed approximately one year in residence, or about eighteen hours of coursework, the faculty will assess his or her progress and likelihood of finishing the program based on performance in coursework and progress in research.

**Midprogram review.** The area faculty conducts a midprogram review when the student has completed between twenty-seven and thirty-six semester hours of coursework, including some of the required hours of directed research. Depending on the specific area of specialization, the student submits for faculty review a written report of research either conducted or proposed, usually developed as part of Curriculum and Instruction 396T. A favorable review results in the student’s continuation in the program.

**Qualifying examination.** To be admitted to candidacy for the degree, the student must pass a qualifying examination developed by the faculty in the area of specialization.

**Dissertation.** The quality and significance of the dissertation must conform to the guidelines of the Graduate School. The PhD dissertation should make a significant contribution to knowledge and educational theory.

**Doctor of Education**

The Doctor of Education is a professional degree. The degree program differs from that leading to the Doctor of Philosophy in its predominant focus on the application of knowledge and in the nature of the dissertation. At least three years of related professional experience and a master’s degree or the equivalent are required for admission to this degree program.

**Program Requirements**

Each student must complete at least eighteen semester hours of organized coursework in the Department of Curriculum and Instruction. The faculty in each specialization has established a minimum number of hours of coursework required for that program.

**Core courses.** All students must complete twelve hours in core courses that form the theoretical foundation for the study of curriculum and instruction. Courses must be taken in learning theory, instructional theory, curriculum theory, and cultural foundations of education.

**Research methodology.** At least six hours in research methodology are required.

**Field research/internship.** At least six hours in field research are required, completed over at least two semesters. This research is most often conducted in a school setting and may be done during an internship. It need not be done as part of an organized course but must be directed by a faculty member.

**Specialization courses.** This coursework is defined by the faculty in the area of specialization.

**Review and Examination Requirements**

**First review.** When the student has completed approximately one year in residence, or about eighteen hours of coursework, the faculty will assess his or her progress and likelihood of finishing the program as shown by performance in coursework.
Midprogram review. After two semesters of field research or about two years in the program, the student submits for faculty review a written report of the research project. A favorable review results in the student’s continuation in the program.

Qualifying examination. To be admitted to candidacy for the degree, the student must pass a qualifying examination developed according to guidelines established by the faculty in the area of specialization.

Dissertation. The quality and significance of the dissertation must conform to the guidelines of the Graduate School. In general, the EdD dissertation should make a significant contribution to knowledge about educational practice.

FOR MORE INFORMATION

Campus address: George I. Sánchez Building (SZB) 406, phone (512) 471-5942, fax (512) 471-8460; campus mail code: DS700

Mailing address: The University of Texas at Austin, Graduate Program, Department of Curriculum and Instruction, 1 University Station DS700, Austin TX 78712

E-mail: cigrad@uts.cc.utexas.edu

URL: http://www.edb.utexas.edu/ci/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Curriculum and Instruction: EDC

380G. Anthropology of Education. Same as Anthropology 388K (Topic 2: Anthropology of Education). A study of social life in contemporary American schools from an anthropological perspective. Prerequisite: Graduate standing, and twelve semester hours of upper-division coursework in education or consent of instructor.

381J. Curriculum Organization. Designed for master’s degree students with majors outside curriculum and instruction and for doctoral students needing to update preparation. An overview of theories, principles, and issues in curriculum construction for modern education. The equivalent of three lecture hours a week for one semester. Prerequisite: Graduate standing and consent of instructor.

381M. Designs for Instruction. Examination of the instructional design process at one of the following levels: elementary school, secondary school, higher education, all-level. Emphasis on promising practices and current efforts toward improvement. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, twelve semester hours of upper-division coursework in education, and teaching experience.

382E. Teaching Elementary School Subjects. Examination of the discipline of the subject-field selected, coupled with intensive study of research findings, publications of learned societies, and advanced experimentation with the improvement of instruction. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, twelve semester hours of upper-division coursework in education, an undergraduate course in the subject-field selected (if appropriate), and teaching experience or consent of the graduate adviser.

Topic 1: Reading. Additional prerequisite: Curriculum and Instruction 370E (Topic 19: Reading/Language Arts) or the equivalent.

Topic 2: Language Arts.

Topic 3: Science.

Topic 4: Social Studies.

Topic 5: Mathematics.

Topic 6: Foreign Language. Additional prerequisite: Twelve semester hours of upper-division coursework in foreign language or consent of instructor.
Topic 7: The Humanities. An examination of personal values and such areas in the humanities as philosophy, music, art, drama, dance, and literature to provide richer educational experiences.

Topic 8: English as a Second Language. Additional prerequisite: Consent of instructor.

Topic 9: Early Childhood Education.

Topic 10: Bilingual Education. Additional prerequisite: Knowledge of Spanish.

382S. Teaching Secondary School Subjects. Examination of the discipline of the subject-field selected, coupled with intensive study of research findings, publications of learned societies, and advanced experimentation with the improvement of instruction. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, twelve semester hours of upper-division education, twelve semester hours of upper-division coursework in the subject-field of the topic or consent of instructor, and teaching experience or consent of the graduate adviser.

Topic 1: Reading.

Topic 2: English.

Topic 3: Science.

Topic 4: Mathematics.

Topic 5: Social Studies.

Topic 6: Foreign Language.

Topic 7: English as a Second Language.

Topic 8: Instructional Technology.

382T. Problems of College Teaching. Methods and procedures for teaching in specific fields selected by participants; major emphasis on successful classroom practices. Prerequisite: Graduate standing and an interest in teaching at the college level.

383C. Bibliography in Teaching and Curriculum. Survey of the scholarly literature in teaching and curriculum, with emphasis on bibliographic sources and techniques. Prerequisite: Graduate standing.

383N. Curriculum Theory. General survey of curriculum theory, with particular emphasis on determination of curricular ends and means. Prerequisite: Graduate standing.

383T. Instructional Theory. Identification and analysis of the major types of contemporary instructional theory. Prerequisite: Graduate standing.

384P, 684P. Institute in Instruction. Includes courses undertaken for the analysis and improvement of instruction at one of the following levels: elementary school, secondary school, higher education, all-level. For 384P, three lecture hours a week for one semester; for 684P, three lecture hours a week for two semesters. May be repeated for credit when the topics vary. Some sections are offered on the credit/no credit basis only and some sections are offered on the letter-grade basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing, twelve semester hours of upper-division coursework in education approved by instructor, and teaching experience or consent of instructor.

Topic 1: Reading.

Topic 2: Language Arts/English.

Topic 3: Science.

Topic 4: Social Studies.

Topic 5: Mathematics.

Topic 6: Foreign Language. Additional prerequisite: Consent of instructor.

Topic 8: English as a Second Language. Additional prerequisite: Consent of instructor.

Topic 9: Bilingual Education.

Topic 10: Leadership in Technology and Education.

Topic 14: Educational Research and Design.

Topic 15: Research Design and Analysis I.

Topic 16: Research Design and Analysis II.

Topic 17: Measurement of Teaching. Methods for measuring and analyzing teaching, including both quantitative and qualitative measurement. Issues of reliability and validity; use of measurement techniques for research on teaching and assessment of teaching.


Topic 19: Statistical Inference.

Topic 20: Computer-Aided Instruction Design and Languages.


Topic 22: Research in Organizations.

185G, 385G. Seminar: Program Development and Research. Advanced investigations of selected topics and problems in curriculum theory, program design, and research design at one of the following levels: elementary school, secondary school, higher education, all-level. The equivalent of one or three lecture hours a week for one semester. May be repeated for credit when the topics vary. Some topics are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing and consent of instructor.
Topic 3: Major Developmental Theories.
Topic 4: Second Language Acquisition.
Topic 5: The Second Language Learner. Additional prerequisite: Curriculum and Instruction 385G (Topic 4) or consent of instructor.
Topic 6: Linguistics and Language Teaching. Curriculum and Instruction 385G (Topic 6) is same as Linguistics 387. Designed primarily for participants in international education exchange programs. Application of the findings of linguistics to the teaching of language.
Topic 7: Language and Politics in Language Planning. Curriculum and Instruction 385G (Topic 7) is same as Middle Eastern Studies 381 (Topic 30: Language and Politics in Language Planning). Only one of the following may be counted: Curriculum and Instruction 385G (Topic 7), Linguistics 396 (Topic 5: Language and Politics in Language Planning), Middle Eastern Languages and Cultures 395 (Topic 4: Language and Politics in Language Planning).
Topic 8: Adult Learning and Development.
Topic 10: Program Planning and Evaluation.
Topic 12: Collection and Analysis of Organizational Data. Using their own organizations as laboratories, participants learn how to define a useful focus for data gathering, identify appropriate sources of data, and analyze and present data efficiently and in ways that are useful to others in the organization. Students practice interviewing and observation, analysis of documents, development of questionnaires, and other strategies for data collection and analysis.
Topic 13: Consultation Skills.
Topic 14: Career Development.
Topic 15: Small Groups and Facilitation.
Topic 16: Facilitating Adult Learning.
Topic 17: Culture, Gender, and Race in Organizations.
Topic 18: Implementing Organizational Change.
Topic 20: Organizational Behavior.
Topic 21: Training and Development.
Topic 22: Organizational Development.
Topic 24: Qualitative Research: Mixed-Method Investigation. Additional prerequisite: Completion of one qualitative research methods course.

Topic 25: Life History Research.
Topic 26: Whole Systems Thinking.
Topic 27: Qualitative Research: Naturalistic Inquiry.
Topic 28: Multimedia Authoring.
Topic 29: Interactive Multimedia Design and Production.

385H. Cultural Transmissions in America. Analysis of contemporary social, political, and economic trends in national and international life from the standpoint of educational implications. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, twelve semester hours of upper-division coursework in social science, and twelve semester hours of upper-division coursework in education.

385K. General Foundations of Education. Designed for curriculum and instruction doctoral students preparing for qualifying examinations and other master's or doctoral degree students without previous work in foundations of education. General survey of basic concepts, topics, and policy issues in the foundations of education. Prerequisite: Graduate standing.

392L. Philosophical Foundations of Education. Designed for master's degree students without previous graduate work in philosophy or philosophy of education and for doctoral students who need to update preparation. A systematic overview of the field of philosophy of education. Prerequisite: Graduate standing, and either twelve semester hours of upper-division education or consent of instructor.

196, 396. Doctoral Seminar. Research projects and creative investigations in a selected subject-field and developments in instructional practices and in research findings and methodologies. Offered at the following levels: elementary school, secondary school, higher education, all-level. The equivalent of one or three lecture hours a week for one semester. May be repeated for credit when the topics vary. Curriculum and Instruction 196 is offered on the credit/no credit basis only. Prerequisite: Graduate standing, and admission to candidacy for the doctoral degree or consent of instructor.

Topic 1: Foreign Language. Offered on the credit/no credit basis only.
196T, 296T, 396T. Directed Research in Curriculum and Instruction. Investigation of assigned problems under direction of a Graduate Studies Committee member; development and demonstration of competence in research design and execution; production of acceptably written reports of technical character. The equivalent of one, two, or three lecture hours a week for one semester. May be repeated for credit by doctoral students. **Prerequisite:** Graduate standing.

196V, 396V. Independent Study. May involve syntheses of literature, field investigations on selected topics, or other individual research topics. Conference course equivalent to one or three lecture hours a week for one semester. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and twelve semester hours of graduate education.

397P, 697P. Graduate Internship. Supervised practice in a professional position. The equivalent of three or six lecture hours a week for one semester. May be repeated for credit. **Prerequisite:** Graduate standing and admission to approved internship program. Topic 1: Early Childhood Education. Restricted to students in early childhood education. Offered on the credit/no credit basis only.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. **Prerequisite:** For 698A, graduate standing in curriculum and instruction and consent of the supervising professor and the graduate adviser; for 698B, Curriculum and Instruction 698A.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. **Prerequisite:** Graduate standing in curriculum and instruction and consent of the graduate adviser.

398T. Supervised Teaching in Curriculum and Instruction. Supervised college teaching experience. **Prerequisite:** Graduate standing and appointment as a teaching assistant or an assistant instructor.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. **Prerequisite:** Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. **Prerequisite:** Curriculum and Instruction 399R, 699R, or 999R; approved dissertation proposal must be on file with the graduate adviser.

EDUCATIONAL ADMINISTRATION

Master of Education
Doctor of Philosophy
Doctor of Education

FACILITIES FOR GRADUATE WORK

The University and the College of Education provide outstanding computer laboratories, instructional resource centers, and libraries. Students are also encouraged to view the whole intellectual and cultural life of the University as a resource to be explored. The Department of Educational Administration has close working relationships with public and private schools, colleges, and universities that provide clinical sites, field experiences, and research opportunities. Many educational associations and agencies in Austin provide important additional resources for students and faculty members.

AREAS OF SPECIALIZATION

Students may choose from three specializations: community college leadership, higher education leadership, and public school executive leadership. Although each specialization involves unique coursework, a common core of knowledge is required of all students.

The department also offers programs of study leading to state certificates in principalship and superintendency.
GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Norma V. Cantu Norvell W. Northcutt
V. R. Cardozier Martha N. Ovando
Charles T. Clark Pedro Reyes
James P. Duncan John E. Roueche Jr.
Nolan Estes Jay D. Scribner
Benjamin M. Harris Edwin R. Sharpe
Manuel J. Justiz Patricia A. Somers
Marilyn C. Kameen Michael P. Thomas Jr.
William F. Lasher Juanita Garcia Wagstaff
William Moore Jr. James R. Yates

ADMISSION REQUIREMENTS

Admission decisions are based on multiple criteria, including the applicant's academic and professional qualifications. Applicants must submit an official score on the Graduate Record Examinations General Test and must have a grade point average of at least 3.00 in upper-division and graduate coursework. In addition, the applicant must be accepted into one of the areas of specialization listed on page 124. The faculty for the specialization may establish additional admission requirements, such as participation in an assessment center, personal interviews, or other evidence of the student's preparation for graduate work. Information about these requirements is available from the department.

Students entering one of the doctoral programs should hold a master's degree or the equivalent. The master's degree need not be in education, but the applicant is expected to have knowledge of the history or philosophy of education and of human learning.

DEGREE REQUIREMENTS

Master of Education

This is a professional degree offered in two areas of specialization—higher education leadership and public school executive leadership. In the public school executive leadership specialization, the master's degree is part of the state certification program. At least thirty-six semester hours of coursework are required, concentrated in one of the areas of specialization. Both specializations require at least twenty-one hours of approved coursework in the department and a minor of at least six hours outside the department. Of the nine hours of upper-division coursework that may be included in the program, no more than six may be in either the major or the minor.

Doctor of Philosophy

Programs leading to this degree emphasize preparation for a research career in which the graduate will add to the core of knowledge in the fields of educational policy, leadership, and administration. Programs are oriented toward theory development and the development of research skills in a variety of methodologies and include a strong secondary emphasis in a cognate field. To be admitted to candidacy, a student must pass oral and written examinations both in core areas and in the area of specialization.

The student’s program must consist of at least sixty semester hours of coursework at the University in addition to dissertation hours, including at least forty-two hours in the Department of Educational Administration. The student must be in residence as
a full-time student for two consecutive semesters. Students may register for no more than fifteen hours each semester and for no more than six hours each six-week summer term.

All students must complete the following work; additional work may be required in some areas of specialization.

1. Fifteen hours in core areas that form the theoretical foundation for the study of administration. Core areas include educational economics and finance policy, educational politics and policy, ethics and values, organizational design and behavior, and social and cultural contexts of education.

2. Fifteen hours of coursework unique to the specialization.

3. Fifteen hours (the minor) outside the College of Education but in areas supporting the field of educational administration; nine hours must be in a single theme or discipline or must form an integrated sequence.

4. Twelve hours in research methods courses, including Educational Administration 381P, 381Q, and 387Q. Knowledge of basic statistics is prerequisite to some research methodology courses; this knowledge may be demonstrated by coursework (which may not be counted toward the doctoral degree) or by examination.

5. A research apprenticeship individually designed to provide each student with research experience in his or her area of specialization.

6. The candidate must enroll for two consecutive semesters in dissertation courses. The focus of the dissertation must be in-depth, original research that has the possibility of creating new knowledge and understanding of a particular educational construct. In addition, the implications of the dissertation research should be much wider than a specific problem in a specific context.

The student may have one member of his or her dissertation committee who has no affiliation to the University. This individual must have a doctoral degree and may also be required to meet other conditions.

**Doctor of Education**

Programs for this degree emphasize preparation for leadership careers in a variety of educational settings. Programs are oriented toward the application of theory and knowledge to practical problems and toward the development of sophisticated management skills and intelligent, informed leadership. To be admitted to candidacy, a student must pass oral and written examinations both in core areas and in the area of specialization.

The student's program must consist of at least fifty-seven semester hours of coursework at the University in addition to the treatise courses, including at least forty-two hours in the Department of Educational Administration. The student must be in residence as a full-time student for two consecutive semesters or a semester and a summer session. Students may register for no more than fifteen hours each semester and for no more than six hours each six-week summer term.

All students must complete the following work; additional work may be required in some areas of specialization.

1. Twelve hours in core areas that form the theoretical foundation for the study of administration. Core areas include educational economics and finance policy, educational politics and policy, ethics and values, organizational design and behavior, and social and cultural contexts of education.

2. Twenty-four hours of coursework unique to the specialization.
3. Nine hours (the minor) outside the department but in areas supporting the field of educational administration.

4. Six hours in research methods courses, including Educational Administration 387Q and either 381Q or 381P. Knowledge of basic statistics is prerequisite to other research methodology courses. This knowledge may be demonstrated by coursework (which may not be counted toward the doctoral degree) or by examination.

5. One semester in an internship or practicum. The internship is individually designed to provide each student with on-site experience in the practice of educational leadership.

6. The candidate must enroll for two consecutive semesters in treatise courses. The focus of the treatise must be on problems of practice and should address a specific problem or program in a given context. The treatise can examine a particular issue or evaluate a specific program in any educational institution.

The treatise committee must be comprised of five individuals. Two members, including the chair of the committee, must be members of the Graduate Studies Committee in the Department of Educational Administration. The third committee member must be a member of a Graduate Studies Committee from any other department within the University. The other two committee members must have no affiliation with the University. These individuals must each have doctoral degrees and have practical experience directly related to the proposed treatise. They may also be required to meet other conditions.

FOR MORE INFORMATION

Campus address: George I. Sánchez Building (SZB) 310, phone (512) 471-7551, fax (512) 471-5975; campus mail code: D5400

Mailing address: The University of Texas at Austin, Graduate Program, Department of Educational Administration, 1 University Station D5400, Austin TX 78712

URL: http://edadmin.edb.utexas.edu/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Educational Administration: EDA

381K. Systems for Observing and Analyzing Instruction. Provides skill in systematic observation, organized ways of examining teacher/student behavior in the classroom. Incorporates Texas Teacher Assessment Seminar training. Three lecture hours a week for one semester, with laboratory hours to be arranged. Prerequisite: Graduate standing.

381P. Quantitative Research Design and Analysis. Introduction to the knowledge base in measurement theory and quantitative research designs, including research designs appropriate to different research contexts; and analyzing, interpreting, and representing statistical data to scholarly and practitioner audiences. Prerequisite: Graduate standing, Educational Psychology 371 or another introductory course in statistics, and Educational Administration 387Q or the equivalent.
381Q. Qualitative Research Design. Introduction to the utilization of theoretical frames; research questions or focus, and literature reviews; ethical issues; research design; research methods; data analysis; representations of data; interpretation of data; trustworthiness; implications; and strengths and limitations in the conduct of qualitative research. Prerequisite: Graduate standing and Educational Administration 387Q or the equivalent.

381S. Advanced Qualitative Research. Examines in-depth exemplary qualitative studies and considers critical issues that have been raised in qualitative research. Prerequisite: Graduate standing, and Educational Administration 381Q and 387Q or their equivalents.

381T. Interactive Qualitative Analysis. Introduction to a systems theory of qualitative research, Interactive Qualitative Analysis (IQA), and direct experience in an integrated approach to research design, data collection, analysis, representation, and interpretation. Case studies are used with each of the major stages of a qualitative study. Prerequisite: Graduate standing, and Educational Administration 381Q or 387Q or their equivalents.

682G. Foundations in Educational Administration. A fused, multidisciplinary foundational core course covering major task areas, administrative theory and processes, and supporting knowledge from other disciplines. Six lecture hours a week for one semester. May be repeated for credit when the topics vary. Some sections are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing. Admission by application only.

Topic 2: Community College Administration.

682H. Foundations in Educational Administration. A fused, multidisciplinary foundational core course covering major task areas, administrative theory and processes, and supporting knowledge from other disciplines. Six lecture hours a week for one semester. May be repeated for credit when the topics vary. Some sections are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing. Admission by application only.

382M. Organizational Design and Behavior—Core Course. Theories of organization from structuralist, behaviorist, and critical traditions that are useful for diagnosing problems endemic to schools and colleges, and for developing skills necessary for administering complex educational systems. Study of concepts related to bureaucracy, organizational design, decision making, power and control, leadership, motivation, and organizational communication. Only one of the following may be counted: Educational Administration 382M, 382N, 395 (Topic 7: Organizational Behavior and Decision Making). Prerequisite: Graduate standing.

382T. Administration of the Individual School. Organization, direction, management, and leadership for the program of a single school. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and admission to an approved internship program for administrator preparation.

Topic 1: Elementary Schools.
Topic 2: Secondary Schools.

383, 683. Directed Advanced Studies. Group and individual studies of research literature; execution of investigative projects and reports of research. For 383, three lecture hours a week for one semester; for 683, the equivalent of six lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Individual Projects.
Topic 2: School-Community Relations.
Topic 3: Strategies of Educational Planning.
Topic 4: School BusinessManagement.
Topic 5: Community College Programs.
Topic 7: Special Topics in Administration and Supervision.
Topic 9: Special Topics in Educational Finance.
Topic 15: Principalship.

683C. School Restructuring and Renewal. Critical examination of school restructuring, renewal research, and systemic change processes since 1975. Study and evaluation of school restructuring and renewal processes, and their underlying research bases, in conjunction with the influence patterns of teachers, principals, superintendents, school boards, parents, and state and national policy makers on the development and use of such concepts and processes. Six lecture hours a week for one semester. Prerequisite: Graduate standing.
384G. Seminar in Instructional Supervision. Systematic analysis of research and theory related to supervisory behavior in education. Prerequisite: Graduate standing.

384L. Designing In-Service Education Programs. Designing, planning, evaluating, and directing in-service education and training for professional-level personnel. Prerequisite: Graduate standing.

385, 685. Practicum in Instructional Supervision. For each semester hour of credit earned, one class hour a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisite for Educational Administration 385: Enrollment in an approved internship program.

Topic 1: General, Elementary, and Secondary Programs.
Topic 2: Directing Instructional Services Programs.
Topic 3: Student Personnel Administration.
Topic 4: Practicum in Program Development.
Topic 5: Higher Education Administration.

385C. School Improvement: Instructional Leadership and Development. Designed to provide prospective school leaders with the conceptual, technical, and human-interaction skills necessary for school improvement. Focus on knowledge, principles, problems, and issues related to instructional leadership. Examines instructional supervision theory, goals, functions, supervisory models, and strategies that enhance teaching and learning. Prerequisite: Graduate standing.

685D. Instructional Leadership. An integrated, problem-based specialization course covering major instructional task areas. Emphasis on change process theory, innovative school reform, restructuring, and leadership theory and practice. Six lecture hours a week for one semester. Prerequisite: Graduate standing and consent of instructor.

387. The Community College. Evolution, role, and functions of the community college; patterns of organization; purposes and programs; current issues. Prerequisite: Graduate standing.

387Q. Introduction to Systems of Human Inquiry. Designed for doctoral students. Introduction to the range of different epistemological perspectives that are used in the conduct of social science research, including the scientific method/positivism, postpositivism, interpretivism, postmodernism, critical theory, race-based and culture-based perspectives, and feminisms. Prerequisite: Graduate standing.

388E. Educational Economics and Finance Policy—Core Course. Survey of the theoretical and empirical literature related to the economic context of and finance policy within K–12 or higher education institutions. Separate K–12 and higher education sections are taught. Covers a wide range of concepts, processes, and policies, such as patterns of financing educational institutions; federal, state, and local governmental roles; revenue sources; costs; benefits; equity; efficiency; budgeting; and finance policy implementation. Prerequisite: Graduate standing.

388L. School Law. Legal bases for organizing and administering public and private school systems; statutes and court decisions affecting educational functions. Prerequisite: Graduate standing.

388M. Social and Cultural Contexts of Education—Core Course. The relationship of contemporary educational institutions, both public school and higher education, to their social setting. Prerequisite: Graduate standing.

388P. Educational Politics and Policy—Core Course. Survey of theoretical and empirical literature related to educational politics and policy concerning K–12 or higher education institutions, including political systems theory, intergovernmental relations, power and conflict, community relations and intergroup theory, and policies dealing with equity, quality, efficiency, and choice. Prerequisite: Graduate standing.

388V. Ethics and Values in Educational Administration—Core Course. Examination, from the point of view of various ethical systems, of issues of equity, distributive justice, codes of ethics in educational professions, treatment of students, and other issues that face administrators of educational systems. Designed to sensitize prospective educational leaders to the ethical content of educational decisions. Prerequisite: Graduate standing.

391C. Comparative Higher Education. Examination of the higher education systems and institutions of selected countries. Prerequisite: Graduate standing.

391D. Institutional Research and Planning. Study of the ways planning and governance are informed by data collection, analysis, and information-use strategies in order to improve institutions of higher education. Institutional research and planning functions in colleges and universities. Prerequisite: Graduate standing.
391E. The College Student. Study of the student population in contemporary colleges and universities, with emphasis on student development theory and the impact of campus environments on student development. Prerequisite: Graduate standing.

391F. Seminar: Issues in Higher Education and Specialization Qualification. Examines current issues in higher education from a practical and administrative perspective. In-depth examination of issues not covered or not covered in detail in other specialization courses. Students select, prepare, and present an instructional unit. Includes a significant technology-based/interactive component emphasizing independent and shared learning. The final individual project is submitted digitally and includes an oral and "practice teaching" component designed to demonstrate the student's breadth of understanding of higher education. Educational Administration 391F and 391K (Topic 9: Seminar: Policy Issues in Higher Education) may not both be counted. Prerequisite: Graduate standing and completion of all required coursework in the student's doctoral specialization.

391G. Administrative Leadership in Higher Education. Examination of executive leadership in institutions of higher education. Includes consideration of roles, responsibilities, styles, and differences in more than one organizational context. Some consideration given to selection, replacement, training, guidance, development, and evaluation of leaders. Educational Administration 391G and 391K (Topic 2: Administrative Leadership in Higher Education) may not both be counted. Prerequisite: Graduate standing and completion of at least two semesters of doctoral coursework in educational administration or consent of instructor.

391J. Policy and Policy Development in Higher Education. Designed to enhance the student's understanding of policy as a concept, policy responsibilities of leadership, and policy development in higher education through formulating and refining institutional policy responses to select issues. Strong focus on critical thinking and policy writing skills. Educational Administration 391J and 391K (Topic 12: Policy and Policy Development in Higher Education) may not both be counted. Prerequisite: Graduate standing, and admission to the doctoral program in educational administration or consent of instructor. Educational Administration 388P is recommended but not required.

391K. Administration in Institutions of Higher Education. Administrative organization, functions, and practices within colleges and universities; roles of the administrator and principles of effective administrative practice; intensive study in selected areas of college operation. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Community Colleges.

Topic 11: Curriculum Planning and Administration in Higher Education.


Topic 14: The American Professorate and Academic Administration.

391P. College Student Personnel Administration. An examination of the rationale for student personnel programs and the various administrative units involved in carrying out their mission. Prerequisite: Graduate standing.

391Q. Higher Education Business Management. An examination of the nature, goals, and basic principles of the business management functions in colleges and universities. Prerequisite: Graduate standing.

391R. Organization and Administration of Higher Education. Introduction to the study of higher education. Analysis of all elements of higher education institutions, with particular attention to structure and governance. Educational Administration 391K (Topic 5: Organization and Administration of Higher Education) and 391R may not both be counted. Prerequisite: Graduate standing.

391S. History of Higher Education. The development of higher education since the Middle Ages, with emphasis on the development of higher education in the United States. Educational Administration 383 (Topic 10: History of Higher Education) and 391S may not both be counted. Prerequisite: Graduate standing.

391T. Higher Education Law. Legal principles relevant to postsecondary institutions. Emphasis on statutes and cases applicable to both public and private institutions; interpretation and compliance. Prerequisite: Graduate standing.

393D. Law and Disabilities. Issues of law and policy associated with serving people with disabilities, with emphasis on federal legislation. Prerequisite: Graduate standing.
393E. Education Futures. Technological forecasting methods as a basis for long-range planning in school organizations. The effects of demographic trends and alternative future scenarios on educational objectives and strategies. Prerequisite: Graduate standing.

394P. Personnel Administration: Managing Instructional Resources. Functions of school personnel offices. Topics include development of personnel administration; job descriptions; planning for personnel needs; recruitment, selection, and evaluation of personnel; and management of the personnel office. Prerequisite: Graduate standing.

195, 395, 695. Topical Seminar. For each semester hour of credit earned, the equivalent of one class hour a week for one semester. May be repeated for credit when the topics vary. Educational Administration 195 is offered on the credit/no credit basis only, but is recommended for all degree seekers. Prerequisite: Graduate standing.


395D. Special Populations. Designed to provide students with knowledge and skills needed to address the “equal opportunity to learn” needs of special populations and the programs that serve them. Also addresses what educational leaders need to know in order to be effective advocates for appropriate services to special populations. Prerequisite: Graduate standing.

395E. Class, Gender, and Race in Schools. The problem of the public educational system’s delivery of unequal academic results to students of different classes, genders, and races. Focus on a comprehensive, research-based understanding of educational inequities and on methods to develop schools that give all students an equal opportunity for academic achievement. Prerequisite: Graduate standing.

196, 296, 396. Research Apprenticeship. For doctoral students. Group and individual projects in research design, research methodologies, and research execution. One, two, or three lecture hours a week for one semester. Prerequisite: Graduate standing, preparation satisfactory to instructor, and consent of the graduate adviser.

396R. Dissertation Seminar. Intensive examination of selected dissertation topics, issues of framing research problems, methodology of educational inquiry, and application of theoretical perspectives. Student reports on current research and panel discussions on significant issues in the study of education. Prerequisite: Graduate standing and consent of instructor.

396T. Directed Research in Educational Administration. Investigation of assigned problems under direction of a Graduate Studies Committee member; development and demonstration of competence in research design and execution; production of acceptably written reports of technical character. Conference course. May be repeated for credit by doctoral students. Prerequisite: Graduate standing and consent of the graduate adviser.

397P, 697P, 997P. Graduate Internship. Supervised practice in a professional position; the number of hours required varies with the student’s program. With consent of the graduate adviser, may be repeated for credit when the positions vary. Some sections are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing and admission by internship committee.

399K, 699K, 999K. Treatise. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree. Prior to registering, students must obtain University of Texas at Austin Institutional Review Board approval for research involving human subjects.

399L, 699L, 999L. Treatise. Offered on the credit/no credit basis only. Prerequisite: Educational Administration 399K, 699K, or 999K.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree. Prior to registering, students must obtain University of Texas at Austin Institutional Review Board approval for research involving human subjects.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Educational Administration 399R, 699R, or 999R.
EDUCATIONAL PSYCHOLOGY

Master of Arts
Master of Education
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

Facilities for graduate study include an extensive library developed specifically for
education and psychology, the laboratories of Information Technology Services, and
the College of Education’s Learning Technology Center. The Measurement and Evalu-
ation Center, the Educational Psychology Training and Research Area, the Counseling
and Mental Health Center, and state and community institutions and agencies in
Austin can also be used for training and research.

AREAS OF STUDY

Professional training in educational psychology relates human behavior to the edu-
cational process as it occurs in the home, in peer groups, in nursery school through
graduate school, in business and industry, in the military, in institutions for those
with physical or mental disabilities, and in other settings. In so doing, it includes
study in the following areas: the biological bases of behavior; history and systems of
psychology and of education; the psychology of learning, motivation, cognition, and
instruction; human development and education (developmental, social, and person-
ality psychology); psychological and educational measurement, statistics, evaluation,
and research methodology; the professional areas of school psychology and coun-
seling psychology, including clinical training in those areas; and general academic
educational psychology. Special interests include computer applications to learning
and instruction, psychometrics, self-regulated and strategic learning, and the process-
ing and analysis of data in psychological and educational research.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the

Ricardo C. Ainslie
S. Natasha Beretvas
Gary D. Borich
Cindy I. Carlson
Hua-Hua Chang
Barbara G. Dodd
David J. Drum
Edmund T. Emmer
Toni L. Falbo
Lucía A. Gilbert
Vanessa Green
Michele R. Guzman
Timothy Z. Keith
William R. Koch
Guy J. Manaster
Christopher J. McCarthy
Kristin D. Neff
Keenan Pituch
Frank C. Richardson
Daniel H. Robinson
Aaron B. Rochlen
Stephanie S. Rude
Janay B. Sander
Diane L. Schallert
Margaret E. Semrud-Clikeman
Alissa Sherry
Laura M. Stapleton
Kevin D. Stark
Marie-Anne P. Suizzo
Marilla D. Svinicki
Deborah J. Tharinger
Richard R. Valencia
Claire Ellen Weinstein
Frank W. Wicker
DEGREE REQUIREMENTS

Master of Arts
The Master of Arts degree in educational psychology is available to students enrolled in the Doctor of Philosophy degree program who wish to complete a master's degree on the way to the doctorate or who are allowed by the Graduate Studies Committee to elect a terminal master's degree. It is also available to students in the academic educational psychology degree program.

A minimum of twelve semester hours of upper-division coursework in psychology or educational psychology, or an appropriate equivalent, is a prerequisite for the degree. Further information about requirements and optional plans is available from the graduate adviser.

Master of Education
This degree is offered for those fulfilling the requirements for a certificate as a school counselor, for which prior teacher certification or an equivalent approved by the Graduate Studies Committee in educational psychology is required; and for students intending to be counselors in postsecondary education settings. It is also available to students in the academic educational psychology degree program. A minimum of twelve semester hours of upper-division coursework in psychology or educational psychology, or an appropriate equivalent, is a prerequisite for the degree. Further information about requirements and optional plans is available from the graduate adviser.

Doctor of Philosophy
The student applying for admission to candidacy must follow the course requirements that have been set by the Graduate Studies Committee and must pass such oral and written examinations as the committee may specify. To advance to candidacy, the student must present acceptable scores on such required tests as the Graduate Record Examinations Psychology Test, taken within the past five years. Before advancement to candidacy, the student must also submit evidence of competence in a modern foreign language or a computer language, or a substitute approved by the Graduate Studies Committee.

Most students require at least four years beyond the bachelor's degree to complete the program, including internship; many take five years or more. A significant proportion of students in programs not requiring an internship can complete the program in three to five years, including summer sessions. Further information about requirements is available from the graduate adviser in educational psychology.

FOR MORE INFORMATION

Campus address: George I. Sánchez Building (SZB) 504, phone (512) 471-4155, fax (512) 471-1288; campus mail code: D5800

Mailing address: The University of Texas at Austin, Graduate Program, Department of Educational Psychology, 1 University Station D5800, Austin TX 78712

E-mail: edpsych@teachnet.edb.utexas.edu

URL: http://edpsych.edb.utexas.edu/
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Educational Psychology: EDP

180E, 280E, 380E. Intermediate Discipline. Designed for students accepted in the doctoral program in educational psychology who need additional preparation in the areas covered by the topics. One, two, or three lecture hours a week for one semester. With consent of the graduate adviser, may be repeated for credit when the topics vary. Prerequisite: For educational psychology students, graduate standing, admission to the doctoral program in educational psychology, and consent of the graduate adviser in educational psychology; for others, graduate standing, admission to a doctoral program, an appropriate score on the departmental proficiency examination or consent of instructor, and consent of the graduate adviser in educational psychology.

Topic 1: Fundamental Statistics.
Topic 2: Selected Topics.

380G. General Discipline. Designed for master's degree students with majors outside educational psychology and for doctoral students who need to update preparation. Advanced synthesis of basic literature, research approaches, and foundational knowledge in educational psychology and the behavioral sciences bearing on education. With consent of the graduate adviser, may be repeated for credit when the topics vary. Prerequisite: Graduate standing, twelve semester hours of upper-division coursework in educational psychology or other behavioral sciences, and consent of the graduate adviser in educational psychology.

Topic 1: Psychological Foundations of Education.
Topic 3: Selected Topics.

180P, 280P, 380P, 480P. Psychometrics. Group and individual tests of abilities and performances, their theoretical and statistical bases; construction, administration, and interpretation of instruments; evaluation theory and practice. One, two, three, or four lecture hours a week for one semester. With consent of the graduate adviser, may be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser in educational psychology.

Topic 1: Measurement and Evaluation. Additional prerequisite: Twelve semester hours of upper-division coursework in education, psychology, or other behavioral sciences.
Topic 2: Theory and Methods. Additional prerequisite: Educational Psychology 371 and 380P (Topic 1), or the equivalent and consent of instructor.
Topic 3: Individual Testing. Additional prerequisite: Educational Psychology 380P (Topic 1), or the equivalent and consent of instructor.
Topic 4: Evaluation Models and Techniques. Additional prerequisite: Educational Psychology 380P (Topic 2) and 482K (Topic 1: Experimental Design and Statistical Inference), or the equivalent. Restricted enrollment; contact the department to register for this topic.
Topic 5: Advanced Psychoeducational Assessment and Evaluation. Additional prerequisite: Educational Psychology 380P (Topic 1) and consent of instructor.
Topic 6: Item Response Theory. Additional prerequisite: Educational Psychology 380P (Topic 2), or the equivalent and consent of instructor.
Topic 7: Multidimensional Scaling. Additional prerequisite: Educational Psychology 380P (Topic 2), or the equivalent and consent of instructor.
Topic 8: Test and Scale Construction. Additional prerequisite: Educational Psychology 380P (Topic 2), or the equivalent and consent of instructor.
Topic 9: Advanced Psychometrics. Additional prerequisite: Educational Psychology 380P (Topic 2), or the equivalent and consent of instructor.
Topic 10: Practicum in Evaluation. Additional prerequisite: Educational Psychology 380P (Topic 4) and consent of instructor.
Topic 11: Practicum in Psychometrics. Additional prerequisite: Educational Psychology 380P (Topic 2) and consent of instructor.
Topic 12: Practicum in Research and Evaluation Methodology. Additional prerequisite: Educational Psychology 380P (Topic 4) and consent of instructor.
Topic 15: Advanced Psychometrics Research.
Topic 16: Selected Topics.

381, 481. Psychological Counseling. Advanced study of the theories and processes of vocational, educational, and personal counseling at elementary school and secondary school levels, in colleges, and in the community. Three or four lecture hours a week for one semester. With consent of the graduate adviser, may be repeated for credit when the topics vary. Prerequisite: Graduate standing; twelve semester hours of upper-division coursework in education or psychology, including a course in measurement; and consent of instructor and the graduate adviser in educational psychology.

Topic 1: Counseling Theory and Procedure.
Topic 2: Theories of Counseling Psychology.
Topic 3: Seminar in Guidance.
Topic 4: Career Development. Additional prerequisite: Educational Psychology 381 (Topic 3) or the equivalent.
Topic 5: Psychology of Career Counseling. Additional prerequisite: Educational Psychology 381 (Topic 4) or the equivalent.
Topic 6: Assessment in Counseling Psychology.
Topic 7: Psychotherapeutic Group Processes.
Topic 8: Counseling Skills and Procedures. Additional prerequisite: Educational Psychology 381 (Topic 2) or the equivalent.
Topic 10: Rorschach and Thematic Apperception Test Interpretation.
Topic 11: Gender Issues in Psychotherapy.
Topic 12: Psychology of Women and Gender.
Topic 13: Practicum in Counseling: MEd. May be repeated for credit.
Topic 14: Practicum in Counseling: Advanced MEd. May be repeated for credit.
Topic 15: Practicum in Counseling: PhD. May be repeated for credit.
Topic 16: Practicum in Counseling Seminar: Professional and Ethical Issues. May be repeated for credit.
Topic 17: Practicum in Counseling: Group.
Topic 18: Selected Topics: Theories and Techniques of Counseling. Topics include experiential psychotherapy, Gestalt psychotherapy, cognitive-behavioral psychotherapy, and cross-cultural therapy.

Topic 19: Ethics in Counseling and Psychotherapy.
Topic 20: Critical Perspectives in Psychology.
Topic 21: Selected Topics.
Topic 24: Substance Abuse Counseling and Theories.

381M. Social Psychology and Behavioral Sciences in Education. Examination of issues, theories, and research in selected areas of social psychology and other behavioral sciences that have implications for education and higher education policies, programs, and practices. With consent of the graduate adviser, may be repeated for credit when the topics vary. Prerequisite: Graduate standing, twelve semester hours of upper-division coursework in education or behavioral science, and consent of instructor and the graduate adviser in educational psychology.

Topic 1: The Individual in Society.
Topic 2: Seminar in Social Psychology.
Topic 5: Theories in Social Psychology.
Topic 6: Families and Education in Three Cultures.
Asian Studies 390 (Topic 4: Families and Education in Three Cultures) and Educational Psychology 381M (Topic 6) may not both be counted.
Topic 7: Selected Topics.

182, 282, 382. Graduate Seminar. Discussion of critical issues in a field, and their implications for education; review of historical background and critique of current literature; development of theories, models, research proposals. One, two, or three lecture hours a week for one semester. With consent of the graduate adviser, may be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Consultation Theory and Procedure.
Topic 2: Law, Education, and Psychology.
Topic 3: Organizational and Group Behavior.
Topic 5: Psychology of Teachers and Teaching.
Topic 6: Understanding Minority Group Children.
Topic 7: Child Abuse: Issues and Research.
Topic 9: Interpretive Social Science.
Topic 10: Selected Topics.
Topic 11: Reality Therapy.
182K, 282K, 382K, 482K. Quantitative Methods. Theories, models, and methods for the analysis of quantitative data. One, two, three, or four lecture hours a week for one semester. With consent of the graduate adviser, may be repeated for credit when the topics vary. Prerequisite: Graduate standing; six semester hours of coursework in mathematics; twelve semester hours of upper-division coursework in education, psychology, or other behavioral sciences, including Educational Psychology 371 or the equivalent; additional preparation satisfactory to instructor; and consent of the graduate adviser in educational psychology.

Topic 1: Experimental Design and Statistical Inference.
Topic 2: Correlation and Regression Methods.
Topic 3: Factor Analysis.
Topic 4: Survey of Multivariate Methods.
Topic 5: Analysis of Categorical Data.
Topic 6: Structural Equation Modeling.
Topic 7: Quasi-Experimental Design.
Topic 8: Selected Topics.

382L. Learning and Motivation. History and systems of psychology applied to education; modern theories and current research in learning and human motivation, especially in relation to new educational media and to the educative process. With consent of the graduate adviser, may be repeated for credit when the topics vary. Prerequisite: Graduate standing, twelve semester hours of upper-division coursework in educational psychology and/or psychology, and consent of the graduate adviser in educational psychology.

Topic 1: Psychology of Learning.
Topic 2: Motivation and Emotion.
Topic 3: Instructional Psychology. Additional prerequisite: Educational Psychology 380G (Topic: Psychology of Human Learning), 382L (Topic 1), or consent of instructor.
Topic 4: Cognition and Behavior.
Topic 5: Psycholinguistics.
Topic 6: Current Topics in Cognition. Additional prerequisite: Educational Psychology 382L (Topic 1).
Topic 7: Contemporary Theories of Discourse Comprehension. Additional prerequisite: Educational Psychology 382L (Topic 1) or consent of instructor.

Topic 8: Theory and Practice of Writing. Additional prerequisite: Educational Psychology 382L (Topic 1) or consent of instructor.
Topic 9: Biological Bases of Behavior.
Topic 11: Selected Topics.

184, 284, 384. Research Methodology. Theories and models, design of laboratory and natural experiments, population sampling, and research operations in the study of human behavior and the educative process. One, two, or three lecture hours a week for one semester. With consent of the graduate adviser, may be repeated for credit when the topics vary. Prerequisite: Graduate standing; twelve semester hours of upper-division coursework in education or behavioral science, including an adequate background in statistics; and consent of instructor and the graduate adviser in educational psychology.

Topic 2: Introduction to Linear Statistical Models.
Topic 3: Intermediate Topics in Linear Statistical Models. Additional prerequisite: Educational Psychology 384 (Topic 2) or the equivalent.
Topic 4: Introduction to Survey Research.
Topic 5: Practicum in Research Methodology.
Topic 6: Data Analysis Using SAS.
Topic 7: Meta-analysis.
Topic 8: Qualitative Research Methods.
Topic 9: Data Analysis Using SPSS.
Topic 10: Selected Topics.

385. Human Development. Biological, cultural, and psychological theories; interrelationships in the study of individual personality; group behavior; and the educative process. With consent of the graduate adviser, may be repeated for credit when the topics vary. Prerequisite: Graduate standing; twelve semester hours of upper-division coursework in education, psychology, or other behavioral sciences or consent of instructor; and consent of the graduate adviser in educational psychology.

Topic 1: The Individual through the Life Cycle.
Topic 3: Human Development Practicum.
Topic 4: Field Experience: Developmental, Social, Personality Psychology.
Topic 5: Practicum in Research: Developmental, Social, Personality Psychology.
Topic 6: Selected Topics.
386N. Personality Psychology. Advanced investigations in personality dynamics and role expectations and the explanation and prediction of individual and group behavior; projective instruments and their analysis; synthesis through interview, self report, psychometrics, and sociometric data. With consent of the graduate adviser, may be repeated for credit when the topics vary. Prerequisite: Graduate standing; twelve semester hours of upper-division coursework in education, psychology, or other behavioral sciences; and consent of instructor and the graduate adviser in educational psychology.

Topic 1: Seminar in Personality Psychology.
Topic 2: Theoretical Approaches to Personality.
Topic 3: Adlerian Theory and Diagnostics.
Topic 4: Object Relations Theory.
Topic 5: Selected Topics.

189H, 289H, 389H, 489H. School Psychology. Study and application of theories, concepts, and techniques related to school psychology. For 189H, 289H, and 389H, one lecture hour a week for one semester for each semester hour of credit earned; for 489H, three lecture hours and two laboratory hours a week for one semester. With consent of the graduate adviser, may be repeated for credit when the topics vary. Prerequisite: Graduate standing; twelve semester hours of upper-division coursework in educational psychology and/or psychology and other behavioral sciences; and consent of instructor and the graduate adviser in educational psychology.

Topic 1: Professional Issues, Law, and Ethics.
Topic 4: Practicum in Affective Assessment and Intervention with Children and Adolescents. Additional prerequisite: Educational Psychology 389H (Topic 3: Affective Assessment of Children and Adolescents) or the equivalent.
Topic 5: Family and School Systems.
Topic 7: Neuropsychological Assessment. Additional prerequisite: Educational Psychology 480P (Topic 3: Individual Testing) or the equivalent.
Topic 9: Behavioral-Cognitive Assessment and Intervention.
Topic 11: School Consultation Theory and Practice.
Topic 15: Infant and Preschool Assessment.
Topic 16: Practicum in Psychological Assessment.
Topic 17: The Rorschach Child.

391, 691. Child Development. Theory and research on the psychological development of young children; early stimulation and education; methodology and assessment techniques in research with children. Three or six lecture hours a week for one semester. With consent of the graduate adviser, may be repeated for credit when the topics vary. Prerequisite: Graduate standing, and consent of instructor or the graduate adviser in educational psychology.

Topic 1: Child Development in Education.
Topic 2: Selected Topics.

193, 293, 393. Field Experience. Observation and/or practice in an applied setting. The equivalent of one, two, or three lecture hours a week for one semester. With consent of the graduate adviser, may be repeated for credit when the topics vary. Offered on the credit/no credit basis only. Prerequisite: Graduate standing, admission to the doctoral program in educational psychology, and consent of instructor and the graduate adviser in educational psychology.

Topic 1: Affective Assessment and Intervention with Children and Adolescents.
Topic 2: Behavioral-Cognitive Assessment and Intervention.
Topic 3: Assessment in Counseling.
Topic 4: Family Intervention.
Topic 5: Neuropsychological Assessment.
Topic 7: School Consultation.
Topic 8: Selected Topics.
194K, 394K, 694K. Internship. Required for doctoral students in accredited training programs in counseling psychology and school psychology. Predoctoral or postdoctoral internship in counseling psychology, mental health, school psychology, educational research, or college teaching in educational psychology. Part-time or full-time internship for one semester. With consent of the graduate adviser, may be repeated for credit when the topics vary. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for, or possession of, a doctoral degree; acceptance as an intern; and consent of instructor and the graduate adviser in educational psychology.

Topic 1: Counseling Psychology.
Topic 2: Intervention in Human Development.
Topic 4: Applied Behavior Analysis.
Topic 5: Research.
Topic 7: Research in Learning, Motivation, and Cognition.
Topic 8: School-Based Psychology.

395. Research. Individual research planned, carried out, and reported under the supervision of a Graduate Studies Committee member. The equivalent of three lecture hours a week for one semester. With consent of the graduate adviser, may be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Admission to an approved program of graduate study and consent of instructor and the graduate adviser in educational psychology.

196. Colloquium. Presentation and discussion of issues related to graduate study in educational psychology, including research proposals and developments in the field, by advanced graduate students, members of the faculty, and visiting lecturers. One lecture hour a week for one semester. With consent of the graduate adviser, may be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of the graduate adviser in educational psychology.

Topic 1: Departmental Colloquium. Required of all doctoral students in educational psychology.
Topic 2: Doctoral Research. Required of all doctoral students in educational psychology.

396T. Directed Research. Investigation of assigned problems under direction of a Graduate Studies Committee member; development and demonstration of competence in research design and execution; production of an acceptably written research report. The equivalent of three lecture hours a week for one semester. With consent of the graduate adviser, may be repeated for credit by doctoral students. Offered on the credit/no credit basis only. Prerequisite: Graduate standing, twelve semester hours of upper-division educational psychology or psychology, and consent of instructor and the graduate adviser in educational psychology.

Topic 1: Educational Psychology.
Topic 2: Counseling Psychology.
Topic 3: School Psychology.
Topic 4: Selected Topics.

397. Psychopathology. Recognition of psychopathology; its symptomatology and methods of dealing with it, including etiology and dynamics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, admission to a doctoral program, and consent of instructor and the graduate adviser in educational psychology.

Topic 1: Psychopathology.
Topic 2: Child Psychopathology.
Topic 3: Child and Adolescent Depression and Suicide.
Topic 4: Selected Topics.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in educational psychology and consent of the graduate adviser; for 698B, Educational Psychology 698A.
398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in educational psychology and consent of the graduate adviser.

398T. College Teaching Methodology. Supervised college teaching experience. With consent of the graduate adviser, may be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser in educational psychology.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree and consent of the graduate adviser in educational psychology.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Educational Psychology 399R, 699R, or 999R; and consent of the graduate adviser in educational psychology.

FOREIGN LANGUAGE EDUCATION

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

Students in foreign language education have access to research facilities in a large number of academic departments in the liberal arts, communication, and education. The Department of Asian Studies, the Department of Middle Eastern Studies, and the Teresa Lozano Long Institute of Latin American Studies provide opportunities for advanced instruction and research in a variety of areas.

Students have access to extensive print and online resources in the Perry-Castañeda Library and in specialized libraries. In addition to textbooks and pedagogical material, the collection includes titles in most classical and modern languages, translations of many important works, and secondary literature on the works and their social and literary contexts.

Other research sites include language laboratories, the Phonetics Laboratory, the Linguistics Research Center, ESL Services, and the Learning Technology Center Media Laboratory.

AREAS OF STUDY

The foreign language education program offers specializations leading to the Master of Arts and the Doctor of Philosophy degrees in applied linguistics, teaching English as a foreign or a second language, and the teaching of modern and classical foreign languages, including Asian languages. At the master’s degree level, the specialization in applied linguistics is limited to translation studies. Each student’s degree program includes courses from relevant disciplines such as anthropology, education, linguistics, philosophy, psychology, sociology, communication studies, theatre, music, and comparative literature, as well as language and literature. It may be concerned with foreign language teacher training, research in language teaching and language acquisition, technology in language teaching, and theory and techniques of language materials production. Individual courses of study are arranged within these areas in accordance with the student’s abilities, interests, and career goals.
GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Peter F. Abboud
Zsuzsanna I. Abrams
Aaron Bar-Adon
Carl S. Blyth
Hans C. Boas
Hua-Hua Chang
Frank E. Donahue
Colleen M. Fairbanks
Thomas J. Garza
Mohammad Ghanoonparvar
Lisa J. Green
Ian F. Hancock
Jacqueline M. Henkel
Frederick G. Hensey
Michael C. Hillmann
Elaine K. Horwitz
Orlando Rene Kelm
Sara E. Kimball
Robert D. King
Dale April Koike
Liu, Min

Carol Hanbery MacKay
Mohammad A. Mohammad
Zena T. Moore
Thomas J. O’Hare
Diane L. Schallert
David Schwarzer
Joel Sherzer
Carlos A. Solé
Jürgen K. Streeck
Harvey M. Sussman
Marilla D. Svinicki
Janet Swaffar
Gary N. Underwood
Anita L. Vangelisti
Herman H. van Olphen
Sofia Villenas
Keith Walters
John M. Weinstock
Frank W. Wicker
Helena Woodard

DEGREE REQUIREMENTS

Master of Arts

The program leading to the Master of Arts degree may consist of either thirty semester hours of coursework, including a six-hour thesis course, or thirty-three semester hours of coursework, including a three-hour course in which the student must produce a substantial report. Theses and reports are written under the guidance of a supervising professor and a reader. Further information is available from the graduate adviser.

Doctor of Philosophy

The student is expected to achieve admission to candidacy by following the course requirements that have been set by the Graduate Studies Committee in foreign language education and passing such oral and written examinations as the committee specifies. Entering students are assigned to program advisers who assist in planning the program of work and the dissertation topic. Most students require three years, including summer sessions, beyond the bachelor’s degree to complete the program; a significant proportion, however, require a longer period of time. Further information is available from the graduate adviser.
FOR MORE INFORMATION

Campus address: George I. Sánchez Building (SZB) 528, phone (512) 471-4078; campus mail code: D6500

Mailing address: The University of Texas at Austin, Graduate Program in Foreign Language Education, 1 University Station D6500, Austin TX 78712

URL: http://www.edb.utexas.edu/coe/depts/ci/fle/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Foreign Language Education: FLE

196V, 296V, 396V. Conference Course. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in foreign language education and consent of the graduate adviser.

397P. Internship. Internship in teaching English as a second or foreign language. Offered on the credit/no credit basis only. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in foreign language education and consent of the graduate adviser.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in foreign language education, admission to a field of specialization, completion of nine semester hours of coursework toward the degree, and consent of the graduate adviser; for 698B, Foreign Language Education 698A.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in foreign language education, completion of nine semester hours of coursework to be counted toward the degree, and admission to a field of specialization.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Foreign Language Education 399R, 699R, or 999R.
KINESIOLOGY AND HEALTH EDUCATION

Master of Arts
Master of Education
Doctor of Philosophy
Doctor of Education

FACILITIES FOR GRADUATE WORK

Excellent teaching and research laboratories are available to graduate students in kinesiology and health education. Special classrooms and computer facilities are available, as well as teaching laboratories for human anatomy, biomechanics, exercise physiology, exercise and sport psychology, motor control and learning, physical development and aging, and athletic training. Research laboratories are available for both basic and applied research with whole-body and subcellular investigations. Also available for field research are various schools, institutions, and agencies in Austin and surrounding communities.

AREAS OF STUDY

Most students major in either health education or kinesiology. Students may also pursue a general program, leading to the Master of Education, that allows for specialization in either health education or kinesiology but includes coursework in both areas.

Health Education

The programs leading to the Master of Arts, Master of Education, and Doctor of Education degrees with a major in health education emphasize a biobehavioral, developmental, and research-based approach to health promotion across the life span. Students in the PhD program specialize in either health promotion or behavioral health. All the health education degree programs provide students with a solid background in the social and behavioral foundations of health. Students have the opportunity to design a course of study suited to their interests and the research interests of the faculty. The program prepares students for academic, research, and applied careers in health promotion.

Kinesiology

Students in kinesiology specialize in exercise physiology, movement science, or sport management; doctoral students may also specialize in interdisciplinary sport studies. Within exercise physiology, master's degree students follow a general course of study or focus their work on clinical exercise physiology, sport sciences and nutrition, or exercise and sport psychology; doctoral students focus on human performance or exercise biochemistry. Students in movement science focus their work on biomechanics, motor control and learning, developmental science: pediatrics and aging, clinical movement science, or sport movement science.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Lawrence D. Abraham
John Bartholomew
Laurence H. Chalip
Carla A. Costa

Edward F. Coyle
Jonathan B. Dingwell
Marlene A. Dixon
Elizabeth W. Edmundson
ADMISSION REQUIREMENTS

A student who lacks the prerequisite coursework described below may be admitted to the Graduate School, but he or she must then complete coursework in the appropriate areas in addition to degree requirements.

Health Education

Health education. To be admitted to the general Master of Education program, the applicant must have completed an undergraduate major or at least twelve semester hours of upper-division coursework in physical education, kinesiology, and/or health education.

Health promotion. An applicant to the Master of Arts or Master of Education degree program with specialization in health promotion must have completed an undergraduate major in health education or a related discipline; the applicant must have completed at least three semester hours of coursework in each of the following areas: theory and methods of health education and/or health promotion, biological sciences, behavioral sciences, and statistics.

Doctoral degree programs. An undergraduate major in health education or a related discipline is required; the student must hold a master’s degree or the equivalent and must have completed at least three semester hours of coursework in each of the following areas: biological sciences, behavioral sciences, theory and methods of health education and/or health promotion, and statistics. The applicant must also be sponsored by a member of the Graduate Studies Committee. Applicants to the PhD program must demonstrate the ability to conduct independent research.

Kinesiology

Kinesiology. To be admitted to the general Master of Education program, the applicant must have completed an undergraduate major or at least twelve semester hours of upper-division coursework in physical education, kinesiology, and/or health education.

Exercise physiology. An applicant to the master’s or doctoral degree program with specialization in exercise physiology must have an undergraduate major in kinesiology or a related discipline and must have completed coursework in human anatomy, exercise physiology, and biomechanics. Applicants who plan to focus on exercise and sport psychology must also have completed coursework in sport psychology; all other applicants to the exercise physiology specialization must have completed coursework in vertebrate physiology. Doctoral applicants must also be sponsored by a member of the Graduate Studies Committee and must demonstrate the ability to conduct independent research.

Movement science. An applicant to the master’s or doctoral degree program with specialization in movement science must have an undergraduate major in kinesiology or a related discipline and must have completed coursework in human anatomy,
exercise physiology, biomechanics, and motor control and learning. Doctoral applicants must also be sponsored by a member of the Graduate Studies Committee and must demonstrate the ability to conduct independent research.

**Sport management.** For admission to the master's or doctoral degree program with specialization in sport management, an undergraduate major in kinesiology or a related discipline is required; the student must have completed coursework in management and marketing and in two of the following areas: sport ethics/philosophy, sport history, sport law, and sport sociology. Doctoral applicants must also be sponsored by a member of the Graduate Studies Committee and must demonstrate the ability to conduct independent research.

**DEGREE REQUIREMENTS**

**Master of Arts**

*Master of Arts with thesis.* Within the kinesiology degree program, the specializations in exercise physiology and movement science consist of at least thirty semester hours of graduate study; the sport management specialization consists of at least thirty-six hours. The health education program consists of at least thirty-six semester hours of graduate study. All students seeking the MA concentrate coursework and research in an area of departmental specialization. Of the nine semester hours of upper-division coursework allowed in the program, no more than six hours may be included in either the major or the minor. The minor field consists of six semester hours taken outside the department. A statistics course, a research methods course, and the thesis course are required.

*Master of Arts with report.* This option is available only in kinesiology. The specializations in exercise physiology and movement science consist of at least thirty-three semester hours of graduate study, and the specialization in sport management consists of at least thirty-six hours. Students concentrate coursework and research in an area of departmental specialization. Of the nine semester hours of upper-division coursework allowed in the program, no more than six hours may be included in either the major or the minor. The minor field consists of six semester hours taken outside the department. A statistics course, a course in research methods, and the report course are required.

**Master of Education**

This degree program consists of at least thirty-six semester hours of graduate study. Students concentrate coursework in an area of departmental specialization or pursue a general program in either kinesiology or health education. Of the nine semester hours of upper-division coursework allowed in the program, no more than six hours may be included in either the major or the minor. All specializations require at least twenty-one semester hours of approved coursework within the department and six hours outside the department. To complete any of the specializations, satisfactory performance in an approved culminating experience is required.

**Doctor of Philosophy**

The Doctor of Philosophy is a research degree designed to prepare students as scholars in a designated area of specialization.

During the student's first year in the program, the student and the adviser form a committee that includes two other faculty members chosen on the basis of the student's research interests. This advisory committee supervises the student's program of study, which also must be approved by the Graduate Studies Committee.
Prior to admission to candidacy for the doctoral degree, the student must successfully complete the comprehensive examination covering the area of specialization. The student must present the dissertation proposal to the Graduate Studies Committee. The dissertation must represent an independent scholarly investigation of a problem pertinent to the field of kinesiology or health education. It deals with basic questions in the area of specialization and must constitute a scholarly contribution to the body of knowledge in the profession.

The PhD programs in health education and kinesiology are outlined below. More detailed descriptions and requirements for each of the specializations are available from the graduate adviser.

Health Education
The Doctor of Philosophy with a major in health education provides a specialization in either health promotion or behavioral health. Each student designs a program appropriate to his or her research interests. The program with a specialization in health promotion must include at least eighteen semester hours of core coursework in health education and a twenty-four-hour area concentration. The area concentration must consist of twelve hours of organized coursework taken within and twelve hours taken outside the department. In addition, the student must complete nine hours of graduate coursework in statistics and research methods. The program with a specialization in behavioral health must include at least twenty-one semester hours of core coursework in health education and a twenty-one-hour area concentration. The area concentration must consist of nine hours of organized coursework taken within and twelve hours taken outside the department. In addition, the student must complete twelve hours of graduate coursework in statistics and research methods. Students in both specializations must complete research experience that includes at least six hours of independent study and eighteen hours in the dissertation courses.

Kinesiology
The Doctor of Philosophy with a major in kinesiology involves specialization in exercise physiology, movement science, sport management, or interdisciplinary sport studies. Exercise physiology involves in-depth study in human performance or exercise biochemistry. Movement science students concentrate in biomechanics, motor control and learning, developmental science: pediatrics and aging, clinical movement science, or sport movement science. Sport management involves training students to undertake research in the management and marketing of sport organizations and enterprises. Interdisciplinary sport studies involves coursework in at least one academic department on campus other than the Department of Kinesiology and Health Education; the curriculum includes sport history, exercise history, sport and gender, and other sociocultural aspects of sport.

Each student completes coursework in preparation for a comprehensive examination in one of these specializations. The program also includes a departmental elective taken outside the area of specialization; six semester hours of graduate coursework in statistics, biometry, or an appropriate area of mathematics; nine hours of supporting work outside the department; research experience that includes at least six hours of independent study; and eighteen hours in the dissertation courses.

Doctor of Education
The Doctor of Education is a professional degree program that emphasizes preparation for the highest levels of educational practice.
Health Education

Students pursuing the Doctor of Education with a major in health education may specialize in either health promotion or behavioral health. The program is designed to prepare students for leadership roles in educational institutions, community health care settings, business and industry, government agencies, and voluntary health agencies. Minimum requirements are eighteen semester hours of core courses in health education; nine hours of applied research; a twenty-four-hour concentration of organized coursework that includes twelve hours in the Department of Kinesiology and Health Education and twelve hours (the minor) in one of the following: administration, curriculum and program design, health communications, program evaluation, public affairs, and human development; and eighteen hours in the dissertation courses. The program normally includes a three- to nine-hour internship in an operational setting that is distinct from previous or concurrent work experience.

During the student’s first year in the program, the student and the adviser form a committee that includes two other faculty members chosen on the basis of the student’s research interests. This advisory committee supervises the student’s program of study, which must also be approved by the Graduate Studies Committee. Prior to admission to candidacy for the degree, the student must successfully complete the comprehensive examination covering the area of specialization. The student must present the dissertation proposal to the Graduate Studies Committee. The dissertation must represent an independent scholarly investigation of a problem pertinent to the field of health education. It must be an original contribution to scholarship based on an investigation of problems associated with professional practice.

More detailed program descriptions and requirements for each of the specializations are available from the graduate adviser.

Kinesiology

The University also has approval to offer the Doctor of Education degree with a major in kinesiology. For information about the status of this program, contact the Department of Kinesiology and Health Education.

FOR MORE INFORMATION

Campus address: L. Theo Bellmont Hall (BEL) 222, phone (512) 471-1273, fax (512) 471-8914; campus mail code: D3700

Mailing address: The University of Texas at Austin, Graduate Program, Department of Kinesiology and Health Education, 1 University Station D3700, Austin TX 78712

E-mail: khegradinfo@teachnet.edb.utexas.edu

URL: http://www.utexas.edu/education/kinesiology/gradprograms.html
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Health Education: HED

386. Research Methodologies. Disciplines of research methods, research design, data-producing techniques, treatment and interpretation of data, reporting on research. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Research Methods: Proposal Writing. Additional prerequisite: Educational Psychology 371 or an equivalent introductory statistics course with a grade of at least C.


395. Advanced Topical Studies. Group and individual studies of advanced topics; critique and synthesis of research findings and of literature. The equivalent of three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Foundations of Health Promotion.

Topic 2: Work Site Health Promotion.

Topic 4: Intervention Mapping: Health Promotion Program Development.


Topic 6: Theories of Health Behavior.


Topic 8: Theories of Substance Abuse.

Topic 11: Human Sexuality.

Topic 12: Child and Adolescent Health Psychology.

Topic 16: Organizational and Social Change for Health Promotion.

Topic 17: Mind/Body Health. The scientific basis for mind/body health; overview of clinically tested mind/body interventions in each dimension of health: emotional, psychological, physical, spiritual, intellectual, and social.


Topic 19: Public Health Communication: Case Studies. Introduction to applications of social cognitive learning theory and innovation diffusion theory in the design of campaigns to change health behaviors.


Topic 21: Risk and Resilience in Children and Adolescents. An introduction to the theories and methods of child and adolescent risk and resilience. Examines resilience processes in populations at elevated risk for negative outcomes and explores how the empirical research of the past two decades has contributed to the development of preventive intervention programs aimed at strengthening resilience in at-risk youth.

Topic 22: Politics of Health and Long-Term Care Reform.

Topic 23: Health Issues in Gerontology. An introduction to physical, psychological, and social perspectives on aging, with an emphasis on health and health care of older adults. Explores the impact of an aging society on socioeconomic, political, and health care systems.


Topic 25: Politics and Policies in an Aging Population. The impact of an aging population on social institutions; the utility of different approaches to the social welfare demands of an ethnically and racially diverse population.

196, 396. Doctoral Seminar. Individual or shared project research with reports evaluated by seminar participants and the instructor. The equivalent of one or three lecture hours a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and written consent form.
396T. Directed Research in Health Education. Investigation of assigned problems under the direction of a Graduate Studies Committee member; development and demonstration of competence in research design and execution; production of an acceptably written research report. The equivalent of three lecture hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing and written consent form.

197, 397. Research Problems. Individual or group research in a specialized area of health education. The equivalent of one or three lecture hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing and written consent form.

397P, 697P. Graduate Internship. Supervised practice in a professional organization or institution. The equivalent of nine or eighteen laboratory hours a week for one semester. May be repeated for credit by doctoral students. Prerequisite: Graduate standing and admission by internship committee.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in health education and written consent of the graduate adviser; for 698B, Health Education 698A and written consent of the graduate adviser.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree and written consent form.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Health Education 399R, 699R, or 999R; and written consent form.

Kinesiology: KIN

382. Conference-Laboratory. Laboratory or workshop-type instruction dealing with selected problems in specialization areas of kinesiology. Conference course. May be repeated for credit when the topics vary. Only one of the following may be counted unless the topics vary: Kinesiology 182, 382, Physical Education 382. Prerequisite: Graduate standing.

Topic 4: Biomechanics Laboratory. Additional prerequisite: Kinesiology 395 (Topic 36: Biomechanics of Human Movement), two semesters of calculus, and one semester of college physics (mechanics); or consent of instructor.

382T. Principles of Neuroscience: Cellular and Molecular Neuroscience. A proseminar covering the core material on essential topics in neuroscience from the molecular to the systems level. Only one of the following may be counted: Biology 381C, Kinesiology 382T, Neuroscience 382T, Pharmacy 382T, Psychology 382T, Zoology 382T. Prerequisite: Graduate standing, consent of instructor, and concurrent enrollment in Neuroscience 185.

383T. Principles of Neuroscience: Systems and Behavioral Neuroscience. A proseminar covering the core material on essential topics in neuroscience from the molecular to the systems level. Only one of the following may be counted: Biology 381D, Kinesiology 383T, Neuroscience 383T, Pharmacy 383T, Psychology 383T, Zoology 383T. Prerequisite: Graduate standing, consent of instructor, and concurrent enrollment in Neuroscience 186.

386. Research Methodologies. Disciplines of research methods, research design, data-producing techniques, treatment and interpretation of data, reporting on research. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.
Topic 1: Research Methods: Proposal Writing. Required of all candidates for the master's degree in kinesiology with thesis or report. Additional prerequisite: Educational Psychology 371 or an equivalent introductory statistics course with a grade of at least C.


395. Advanced Topical Studies. Graduate seminar in topics related to specialization areas. Additional hours may be required for some topics; these topics are identified in the Course Schedule. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Ergogenic Aids for Exercise. Additional prerequisite: Kinesiology 325K or consent of instructor.

Topic 2: Cardiac Metabolism. Additional prerequisite: Kinesiology 395 (Topic 46), and Chemistry 339 or consent of instructor.


Topic 4: Biomechanics of Sport. Additional prerequisite: Kinesiology 324K and 326K.

Topic 5: Exercise and Preventive Medicine. Additional prerequisite: Kinesiology 325K.

Topic 8: Motor Control: Neuromuscular Bases. Additional prerequisite: Kinesiology 336 or consent of instructor.

Topic 9: Motor Control: Performance and Learning. Additional prerequisite: Kinesiology 315 (or 335) or consent of instructor.

Topic 10: Neural Control of Posture and Locomotion. Additional prerequisite: Kinesiology 336 or consent of instructor.

Topic 12: Muscle Physiology and Plasticity. Additional prerequisite: Kinesiology 395 (Topic 46) or consent of instructor.


Topic 15: Conditioning for Competitive Athletes. Additional prerequisite: Kinesiology 325K or consent of instructor.

Topic 16: Cardiovascular Response to Exercise. Additional prerequisite: Kinesiology 325K or consent of instructor.


Topic 21: Children's Exercise and Activity. Physiological bases for changes in exercise and sports performance and in exercise capacity throughout childhood and adolescence. Includes aspects of cardiovascular, respiratory, and metabolic changes and issues related to thermoregulation, training, gender, and health and fitness. Additional prerequisite: Kinesiology 321M and 325K, or consent of instructor.


Topic 25: Fat Metabolism during Exercise. Additional prerequisite: Kinesiology 395 (Topic 46), or 325K and consent of instructor.

Topic 26: Legal Issues in Sport.

Topic 27: Athletics Administration.


Topic 29: Ethics in Sport.

Topic 32: Sport Marketing. Additional prerequisite: An introductory undergraduate or graduate survey course in marketing.

Topic 33: Musculoskeletal Biomechanics. Synthesis of properties of the musculotendon and skeletal systems to construct detailed computer models that quantify human performance and muscular coordination. Additional prerequisite for kinesiology students: Mathematics 341 (or 311), Kinesiology 395 (Topic 36), and consent of instructor.

Topic 36: Biomechanics of Human Movement. Same as Biomedical Engineering 383J (Topic 4: Biomechanics of Human Movement). Additional prerequisite: Kinesiology 326K, two semesters of calculus, one semester of college physics (mechanics), and consent of instructor.

Topic 38: Carbohydrate Metabolism during Exercise.


Topic 43: Exercise and Mental Health. The benefits of exercise in moderating negative psychological states such as anxiety, stress reactivity, and depression. Additional prerequisite: Kinesiology 325K.

Topic 44: Sport Finance. Designed to reinforce students' understanding of finance and its role in sport and health promotion programs, and to provide students with the knowledge and skills needed in the administration of sport and health promotion programs.

Topic 45: Pediatric Motor Development. Additional prerequisite: Kinesiology 321M or consent of instructor; Kinesiology 336 is recommended.

Topic 46: Advanced Exercise Physiology I. Designed to provide students with the essential graduate background for the application and practice of exercise physiology. The integration of the nervous, skeletal muscle, and cardiovascular systems from the subcellular level to the whole-organism level. Additional prerequisite: Kinesiology 325K.
Topic 47: Advanced Exercise Physiology II. The physiological and metabolic response to exercise, with emphasis on integrating the whole-body and cellular responses. In a variety of topics, students review basic physiology, focus on responses during exercise, and apply their findings to situations in the clinical and sporting environments. Additional prerequisite: Kinesiology 395 (Topic 46).

Topic 48: Social Psychology of Sport and Physical Activity. The theoretical structure that underlies social psychology as it has been applied to sport. Emphasis on the psychological concerns that confront coaches in their interactions with individual athletes and teams. Additional prerequisite: Kinesiology 311K or consent of instructor.

Topic 49: Sports Nutrition. The nutritional needs of people whose physical activity ranges from recreational to elite competitive athletics. Development of practical dietary strategies that recognize the unique nature of sport and the role of diet in promoting optimal physiological adaptation to training. Three lecture hours and one and one-half discussion hours a week for one semester. Additional prerequisite: Kinesiology 325K or consent of instructor.

Topic 50: Sport Psychology. The general field of experimental sport psychology, with emphasis on the psychological components of individual performance. Designed to prepare students to discuss the important questions, methodology, and experimental literature in selected areas of sport psychology. Additional prerequisite: Kinesiology 311K or consent of instructor.


Topic 52: Organizational Behavior in Sport. Determinants and consequences of individual motivation and attitudes in organizations generally and in sport organizations specifically. Theory related to the individual often responsible for motivating people toward organizational goals, the leader. Additional prerequisite: For students in the College of Education, Management 320F or the equivalent; for others, Management 320F or the equivalent, and consent of instructor.

Topic 53: Sport Public Relations and Sales. Detailed study of the relationship between the media, corporate sponsorship, and sport. Focus on various media techniques utilized by sport managers and sport sponsorship basics. Additional prerequisite: Kinesiology 395 (Topic 32) or the equivalent or consent of instructor.

Topic 54: The Biology of Aging.

Topic 55: Assessment of Physical Function in Older Adults. Introduction to the goals, issues, and procedures that relate to the clinical assessment of physical function in the elderly (sixty-five and older).

Topic 56: Sport and Special Event Management. Introduction to key considerations when planning, implementing, and evaluating an event. Considers the organization of the events industry worldwide and examines how events link to other sectors of the economy. Specialized skills for the management and marketing of events. Students have the opportunity for hands-on practice in the use of the necessary tools for planning, programming, administering, and evaluating an event.

Topic 57: Strategic Management for Sport Organizations. The strategic management process and the problems and possibilities encountered when assessing, formulating, implementing, and evaluating an organization’s strategic effort. Students analyze case studies and simulate running a sport business, setting corporate strategies while applying strategic concepts and techniques within a practical decision-making framework. Additional prerequisite: Kinesiology 395 (Topic 32) or 395 (Topic 44) or 395 (Topic 52) or consent of instructor.

Topic 58: Sport Consumer Behavior. An examination of contemporary theory and research on the subject of sport consumer behavior.

Topic 59: Biomechanics in Clinical Settings. Designed to provide students with the basic biomechanical competence required to understand how normal human movements are generated, how movements are altered by injury or pathology, and how clinical intervention can improve performance. Additional prerequisite: Kinesiology 324K and 326K, or the equivalent.

Topic 60: Sport Policy. The formulation and analysis of sport policies: the uses of policy analysis in sport settings; environmental, economic, and sociopolitical impacts of sport, including policy implications.

Topic 61: Central Questions in Biomechanics and Motor Control. Designed to allow students to explore specific topics of current interest in biomechanics and/or motor control; to learn to evaluate the scientific literature in areas of current debate or controversy; and to develop scientifically sound, relevant, and experimentally testable research hypotheses. Additional prerequisite: Kinesiology 382 (Topic 4: Biomechanics Laboratory), and Kinesiology 395 (Topic 36) or written consent of instructor.
Topic 62: Aging and Cardiovascular Function and Disease Risks. Cardiovascular changes associated with aging; scientific issues and hypotheses in the area of aging and cardiovascular function and disease risks; and presenting critical analyses of these issues. Additional prerequisite: An upper-division course in human or vertebrate physiology.


Topic 64: Neuromuscular Aspects of Fatigue and Training. The role of the central nervous system during muscular fatigue and exercise training. Additional prerequisite: Consent of instructor.

196, 396. Doctoral Seminar. Individual or shared project research, reports evaluated by seminar participants and the instructor. The equivalent of one or three lecture hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing and written consent form.

296T, 396T. Directed Research. Investigation of assigned problems under direction of a Graduate Studies Committee member; development and demonstration of competence in research design and execution; production of an acceptably written research report. Conference course. May be repeated for credit. Prerequisite: Graduate standing and written consent form.

197, 397. Research Problems. Individual or group research topics in a specialization area of kinesiology. One or three conference or lecture hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing and written consent form. Some sections also require consent of instructor; these are identified in the Course Schedule.

197P, 397P, 697P. Graduate Internship. Supervised practice in a professional organization, business, or institution. The equivalent of three, nine, or eighteen laboratory hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing, a University grade point average of at least 3.00 and a grade point average in the major department of at least 3.00, and written consent form.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in kinesiology and written consent of the graduate adviser; for 698B, Kinesiology 698A and written consent of the graduate adviser.

398R. Master's Report. Preparation of a report to fulfill the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in kinesiology and written consent of the graduate adviser.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree and written consent form.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Kinesiology 399R, 699R, or 999R; and written consent form.
SCIENCE EDUCATION
MATHEMATICS EDUCATION

Master of Arts
Master of Education
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

Facilities for graduate work include state-of-the-art computer, multimedia, and videoconferencing laboratories, laboratories for science and mathematics research, field-based sites for implementation studies in local school districts, and numerous federal- and state-funded research and development projects in science and mathematics education. The University Libraries contain more than eight million volumes and provide access to a wide variety of print-based and electronic research tools, the latter through their Web site, http://www.lib.utexas.edu/. Library units serving mathematics and the sciences include the Kuehne Physics Mathematics Astronomy Library, the Mallet Chemistry Library, the Walter Geology Library, the Life Science Library, and the McKinney Engineering Library.

AREAS OF STUDY

Graduate study in science and mathematics education is offered through an interdisciplinary program that combines content preparation with educational research and scholarship, in a setting that fosters and supports tight links to educational practice. The program is anchored by a set of core courses addressing learning, instruction, curriculum, technology, equity, policy, and systemic reform in science and mathematics education, at the elementary, secondary, and postsecondary levels. Students may choose to specialize in science education, mathematics education, or a combination of the two. Coursework is chosen from departments in the College of Education and the College of Natural Sciences, as well as other appropriate University colleges.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Lawrence D. Abraham
Efraim Pacillas Armendariz
James P. Barufaldi
Lowell J. Bethel
Guadalupe Carmona
Charles B. Chiu
Susan B. Empson
John E. Gilbert
Austin M. Gleeson
William T. Guy Jr.
Brent L. Iverson
Denis A. Kohl
Joseph J. Lagowski
David A. Laude Jr.
Julie Luft
Michael P. Marder

Jill A. Marshall
H. Taylor Martin
Edward W. Odell
Bruce P. Palka
Shelley M. Payne
Anthony J. Petrosino
Richard Harvey Richardson
Stanley J. Roux Jr.
David J. Saltman
Jennifer C. Smith
Martha K. Smith
Michael Starbird
Walter M. Stroup Jr.
P. Uri Treisman
Jack S. Turner

152 Fields of Study
DEGREE REQUIREMENTS

Master’s Degrees

Prerequisites for admission to each master’s degree program are a baccalaureate degree and coursework in education and in science and mathematics.

Master of Arts. The program consists of thirty-five semester hours, with at least twenty-one hours at the graduate level. The major field is composed of eighteen hours in education, including nine hours in the science and mathematics education core-course sequence, three hours of research methodology, and six hours for researching and writing the thesis. The minor field consists of twelve hours in science and/or mathematics. An additional five hours may be drawn from coursework chosen by the student in conjunction with the graduate adviser.

Master of Education. The program is the same as the program for the Master of Arts described above, with one exception: In addition to the requirements for a Master of Arts, students must be certified to teach at the elementary or secondary level. Students may earn certification to teach through additional coursework while enrolled in the Master of Education program.

Summer Option for Master’s Degrees. Some students may be able to pursue either master’s degree by enrolling in the summer option. Under this option, the required coursework is completed in three consecutive summer terms, with some additional coursework completed online during the fall and spring semesters. The summer option consists of thirty-three semester hours composed of nine hours in education, fifteen hours in mathematics and science content courses, two hours of research methodology, and four hours of related coursework. The option requires a report instead of a thesis, completed in a three-hour report course.

To qualify for the Master of Arts summer option, students must have experience teaching mathematics and/or science. To qualify for the Master of Education summer option, students must be certified to teach at the elementary or secondary level. More information on the summer option can be found at the program’s Web site.

Doctor of Philosophy

Students seeking the degree of Doctor of Philosophy must show evidence of related professional and academic experience, including a master’s degree or the equivalent in a science or mathematics content area.

Program Requirements

Core courses. Students must complete the fifteen-semester-hour core course sequence in science education and mathematics education through the Department of Curriculum and Instruction. A description of the sequence is available from the graduate program. It is highly recommended that students enroll each semester in Curriculum and Instruction 185G (Topic: Mathematics and Science Education Forum).

Research methodology. Students must complete at least six hours of coursework in research methodology.

Content courses. Students must have demonstrated competence equivalent to that required for a master’s degree in science and/or mathematics. This requirement may be met by completion of fifteen semester hours of coursework in science or mathematics.
**Related courses.** Students are expected to broaden and deepen their program of work by taking a variety of related coursework consonant with their scholarly interests. This coursework must be chosen in consultation with the graduate adviser; a list of possible courses is available from the graduate program.

**FOR MORE INFORMATION**

*Campus address:* George I. Sánchez Building (SZB) 340, phone (512) 471-7354 or 471-3747, fax (512) 471-8466; campus mail code: D5705

*Mailing address:* The University of Texas at Austin, Graduate Program in Science Education/Mathematics Education, 1 University Station D5705, Austin TX 78712

*E-mail:* jamesb@mail.utexas.edu or lbethel@mail.utexas.edu

*URL:* http://www.edb.utexas.edu/sme/

**GRADUATE COURSES**

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007. Students should consult the *Course Schedule* for information about courses to be offered during a particular semester or summer session. The *Course Schedule* may also reflect changes made to the course inventory after the publication of this catalog.

**Science-Mathematics Education: SME**

**698. Thesis.** The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. *Prerequisite:* For 698A, graduate standing in science or mathematics education and consent of the graduate adviser; for 698B, Science-Mathematics Education 698A.

**398R. Master's Report.** Preparation of a report to fulfill the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing in science or mathematics education and consent of the graduate adviser.

**399R, 699R, 999R. Dissertation.** Original research and writing of dissertation for the Doctor of Philosophy. Offered on the credit/no credit basis only. *Prerequisite:* Admission to candidacy for the doctoral degree and consent of the graduate adviser.

**399W, 699W, 999W. Dissertation.** Offered on the credit/no credit basis only. *Prerequisite:* Science-Mathematics Education 399R, 699R, or 999R.
SPECIAL EDUCATION

Master of Arts
Master of Education
Doctor of Philosophy
Doctor of Education

FACILITIES FOR GRADUATE WORK

A number of facilities at the University and in the community offer outstanding opportunities for observation, research, and study. For example, the Learning Technology Center in the College of Education houses the Assistive and Instructional Technology Laboratory, with a wide array of hardware and software used to prepare students to use assistive and instructional technology in working with individuals with disabilities. It also houses the Advanced Applications Laboratory, with a number of full multimedia and Internet workstations; the Educational Software Preview Center; several distance learning classrooms; and a Collaborative Learning Laboratory. Students may also work with special education faculty members in the Vaughn Gross Center for Reading and Language Arts (VGCRLA) in the College of Education. The center works closely with the Texas Education Agency and school districts throughout Texas and conducts a number of research and professional development projects at the state and national levels. The nearby Perry-Castañeda Library contains extensive holdings in special education and related fields. Students also have access through the University Libraries Web site (http://www.lib.utexas.edu/) to an array of electronic databases, journals, and books related to special education. Practicum and internship opportunities are provided by a number of local schools, state facilities, and community agencies.

AREAS OF STUDY

The Department of Special Education offers master’s and doctoral degrees. Graduate study in special education prepares students for leadership roles in fields that serve children, youth, and adults with exceptionalities. Cultural and linguistic diversity and life span needs are emphasized in all program areas. The graduate faculty encourages the development of students’ knowledge and skills in a variety of fields, including research, teaching, consultation, counseling, assessment, and administration. Graduates have the opportunity to prepare themselves for a variety of positions in public, private, and state schools; clinics, educational centers; government agencies; and universities.

AREAS OF SPECIALIZATION

Early childhood special education focuses on the development of early intervention programs for children from birth through six years of age, reflecting a family-centered philosophy and application of the most recent theoretical concepts in natural and inclusive settings.

Learning disabilities/behavioral disorders provides advanced coursework in learning disabilities and behavioral disorders, instructional design, and assistive technology, and field-based experiences to prepare students for leadership roles.

Multicultural special education focuses on critical issues, knowledge, and skills related to the complex relationships among culture, race and ethnicity, language, and disability. This specialization is designed to prepare students for leadership roles in the provision of culturally and linguistically responsive educational services for exceptional children and youth from diverse backgrounds.
Autism and developmental disabilities provides opportunities for students to develop skills in designing, implementing, and evaluating educational interventions for people with autism and developmental disabilities.

Rehabilitation counselor education is designed to prepare students to counsel youth and adults with disabilities who are experiencing difficulties related to personal and vocational adjustment.

Special education administration offers students advanced training appropriate to general and special education administrative positions, creating an interface between general education administration and special education. This specialization is available only to doctoral students.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Diane Pedrotty Bryant   Herbert J. Rieth
Carolyn Denton          James L. Schaller
Shernaz Bhathena Garcia Jeff Sigafoos
Sylvia Linari-Thompson  Benjamin W. Smith
Melissa L. Olive         Audrey McCray Sorrells
Mark O’Reilly            Keith D. Turner
Alba A. Ortiz            Sharon Vaughn
Randall M. Parker        James R. Yates

DEGREE REQUIREMENTS

Master of Arts. The Master of Arts degree is offered in all concentrations except special education administration. The Master of Arts requires at least thirty-three semester hours of coursework, including six hours for researching and writing a thesis. The general requirements for the master's degree set a minimum standard. Information about additional requirements is available from the graduate coordinator.

Master of Education. Two Master of Education degree plans are available in each concentration except special education administration. The Master of Education degree with report requires at least thirty-three semester hours of coursework, including three hours for preparing the report. The Master of Education degree without thesis or report requires at least thirty-six semester hours of coursework. The general requirements for the master's degree set a minimum standard. Information about additional requirements is available from the graduate coordinator.

Doctor of Philosophy. The Doctor of Philosophy degree program emphasizes research and professional development along with college teaching. The student must demonstrate competence in areas determined by the Graduate Studies Committee by producing a literature synthesis that receives the committee's approval and by earning a grade of at least B in the doctoral core courses. In addition, the student must fulfill requirements in the area of research design and data analysis.

Doctor of Education. The Doctor of Education degree program focuses on preparing students for predominantly nonresearch positions. Programs are designed to prepare professionals to apply theory and research in various settings. Professionals completing the program of study are expected to be prepared to assist individuals with disabilities to function independently and productively in society. The requirements for admission to candidacy and course requirements are similar to those for the Doctor of Philosophy degree.
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Special Education: SED

380. Multicultural Special Education. Study of critical issues in culture, language, and disability. May be repeated for credit when the topics vary. Special Education 380 and 393 may not both be counted unless the topics vary; Special Education 380 and 395 may not both be counted unless the topics vary. Prerequisite: Graduate standing; twelve semester hours of upper-division coursework in education, psychology, sociology, or other behavioral sciences; and consent of instructor. Additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Language Acquisition and Assessment in Multicultural Special Education. Language acquisition among culturally and linguistically diverse learners in general and special education, with emphasis on effective assessment and instruction.

Topic 4: Assessment in Multicultural Special Education. Cultural and linguistic factors related to the assessment of language-minority students; the best practices in psychoeducational procedures.

Topic 6: Advanced Research Topics in Multicultural Special Education. Current and emerging research on individuals with disabilities who are from culturally and linguistically diverse backgrounds. Provides students with opportunities to review research literature on topics of interest to them, and to explore their writing skills. A process approach to writing is used to familiarize students with the APA guidelines for preparing scholarly manuscripts.

Topic 7: Cross-Cultural Interactions in Multicultural Special Education. Introduction to principles of intercultural communication for educators. Emphasis on strategies for effective cross-cultural communication in a variety of educational settings, including general and special education.

Topic 8: School-Community Relations in Multicultural Special Education. Traditional methods of parent and school relations; emerging and innovative models for communication between the school and the community; the intent of the course is to explore school-community interactions in the context of the dynamics of culture, race, language, politics, history, economics, and religion.

Topic 9: Developing Personnel Preparation Programs in Multicultural Special Education. Designed to prepare students who plan to become faculty members at multifaceted institutions of higher education. Specific emphasis on issues that confront minority educators.

Topic 10: Cultural and Linguistic Diversity in Special Education and Rehabilitation Counselor Education. An overview of issues, problems, and emerging practices related to culturally and linguistically diverse students served in special education.

Topic 11: Educational Planning for Multicultural Special Education.

Topic 12: Educational Leadership in Multicultural Special Education.

Topic 13: Sociocultural Foundations of Special Education.

Topic 14: Cultural and Linguistic Diversity in Special Education and Rehabilitation Counselor Education. An overview of issues, problems, and emerging practices related to culturally and linguistically diverse students served in special education. Web-based instruction. No class meetings.
383. Learning Disabilities. Nature and concomitant results of minimal brain damage as it affects the characteristics and learning behavior of children; assessment and appraisal instruments; activities and materials for stimulation of learning. May be repeated for credit when the topics vary. 

Prerequisite: Graduate standing; twelve semester hours of upper-division coursework in education, psychology, or other behavioral sciences, including a course in special education; and consent of instructor. Additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Introduction to Learning Disabilities. Basic terms and definitions, the nature of specific learning disorders, theoretical models, and empirical classification systems.

Topic 6: Teaching Students with Dyslexia and Reading Difficulties. Theories and practices associated with dyslexia; terminology, assessment, and remedial strategies are emphasized.

Topic 7: Assessment in Special Education. The basic concepts related to the assessment of exceptional individuals.

Topic 8: Instructional Adaptations I. Design, implementation, and evaluation of instruction for elementary- and secondary-level students with mild to moderate disabilities who receive special education services. Special Education 383 (Topic 8) and 393 (Topic 15: Instructional Adaptations I) may not both be counted.

Topic 9: Instructional Adaptations II. Issues in the education of students with mild to moderate disabilities, including assessing students, evaluating instruction and instructional materials, and adapting and implementing instruction. Special Education 383 (Topic 9) and 393 (Topic 16: Instructional Adaptations II) may not both be counted.

384. Early Childhood Special Education. Education variables related to educational services and research for young children are investigated in terms of etiology, assessment, curriculum models, educational settings, and interdisciplinary programming. May be repeated for credit when the topics vary. 

Prerequisite: Graduate standing; twelve semester hours of upper-division coursework in education, psychology, or other behavioral sciences, including a course in special education; and consent of instructor. Additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Overview of Early Childhood Special Education. The educational and emotional needs of young disabled children (birth to six) and the techniques for implementing a “whole child” educational approach to meet the needs of the child and the family.

Topic 2: Current Research in Early Childhood Special Education. Latest ECSED research and theory as related to past, present, and anticipated trends. Emphasis is on writing a program, research proposal, or publishable article. May be repeated for credit.

Topic 3: Parent Education Models. The grief stages of parents; parent involvement models available to promote optimum parent-child and parent-professional relationships.

Topic 4: Introductory Practicum in Early Childhood Special Education. Teaching experience with disabled children in a center setting. Assessment and curriculum procedures are applied in developing an appropriate education for an individual child or small groups of children.

Topic 5: Advanced Practicum in Early Childhood Special Education. Teaching experience with a large group of children in a center setting. Program management and evaluation procedures are applied to a total curriculum, so that the student assumes a lead teacher and/or consultant role during training.


Topic 7: Medical/Educational Overview: Birth to Age Three. Overview of hospital-to-school early intervention techniques for meeting the medical and educational needs of preterm, low-birth-weight, and at-risk children and their parents.

Topic 8: Medical/Educational Parent Education and Involvement: Birth to Age Three. Research, design, and implementation of a functional child-parent program. Students develop their own programs for working with parents of children with specific problems or disabilities.

Topic 9: Medical/Educational Assessment: Birth to Age Three. Experience planning, assessing, and implementing educational programs for at-risk infants and toddlers. Emphasis is on interagency coordination and the use of the transdisciplinary team to meet the family’s and the child’s needs with a minimum of personnel.

Topic 10: Medical/Educational Programming: Birth to Age Three. Medical information on pre-, peri-, and postnatal effects of medical problems and extended hospital stays. Impact of medical intervention on the infant’s and the family’s development.
Topic 11: Medical/Educational Practicum in Early Childhood Special Education. Early intervention in a neonatal intensive care unit or on a follow-up team for medically fragile high-risk children.

Topic 12: Overview of Early Childhood Special Education. The educational and emotional needs of young disabled children (birth to six) and the techniques for implementing a “whole child” educational approach to meet the needs of the child and the family. Web-based instruction. No class meetings.


Topic 16: Medical and Educational Assessment and Intervention. Web-based instruction. No class meetings.


387. Rehabilitation Counseling. Study of rehabilitation counseling: basic orientation, process and procedures; related biomedical, psychological, and community aspects; specialized programs and field experiences. Three lecture hours a week for one semester; or meetings as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; twelve semester hours of upper-division coursework in education, psychology, sociology, or other behavioral sciences; and consent of instructor. Additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Introduction to Rehabilitation Counseling. Orientation to rehabilitation; historical developments, philosophy, disability, legal basis, organizational structure, facilities, and related professions. Field visitations.

Topic 2: Adjustment to Disabling Conditions and Illness. Psychodynamic principles of adjustment to disability, individual perception of illness, and motivation for recovery; including somatopsychological and psychosomatic aspects.

Topic 3: Medical/Paramedical Aspects of Rehabilitation Counseling. Contributions of the medical profession; terminology, etiology, prognosis, therapeutic services, restorative techniques, assessment of limitations and capacities in typical disabilities.

Topic 4: Rehabilitation Counseling Process and Procedures. Systematic study of the rehabilitation counseling process, including required basic counselor skills, techniques, services, community resources, and professional ethics.

Topic 5: Prepracticum in Rehabilitation Counseling. Supervised, field-based observation and experience in rehabilitation counseling. Three lecture hours a week for one semester, with additional hours to be arranged.

Topic 6: Practicum in Rehabilitation Counseling. Individually supervised and systematically organized participation in rehabilitation counseling, case management, and professional skill development. Additional prerequisite: Consent of instructor.

Topic 7: Specialized Problems in Rehabilitation Counseling. Intensive study of specialized problems related to specific disability groups, counseling methods, and concepts in vocational placement.
Topic 8: Supervised Clinical Practice in Rehabilitation Counseling. Supervised clinical experience in rehabilitation settings; integration of theory and practice through supervision of experience, seminars, and individual conferences.

Topic 9: Rehabilitation Counseling Theories. Current rehabilitation counseling theories with specific applications in rehabilitation settings. Current issues in rehabilitation counseling, case management, planning, and service delivery for specific disability groups.

Topic 10: Vocational Assessment and Job Placement. The application of career development and job placement concepts to people with disabilities. Occupational choice, vocational counseling, occupational aspects of disability, pertinent laws and regulations.

Topic 11: Group Counseling in Rehabilitation Counseling. Basic issues and key concepts of the group process. Analysis of the therapeutic process, stages of development, and practices.

Topic 12: Case Management in Rehabilitation Counseling. Management aspects of the rehabilitation counselor's job, including writing job descriptions; applying the selection and appraisal processes; applying civil rights laws that affect services to disabled persons; using the five functions of management; and working in a re-engineered environment.

Topic 13: Rehabilitation Counseling Theories. Web-based instruction. No class meetings.


Topic 15: Vocational Assessment and Job Placement. The application of career development and job placement concepts to people with disabilities. Occupational choice, vocational counseling, occupational aspects of disability, pertinent laws and regulations. Web-based instruction. No class meetings.


Topic 17: Adjustment to Disabling Conditions and Illness. Psychodynamic principles of adjustment to disability, individual perception of illness, and motivation for recovery; including somatopsychological and psychosomatic aspects. Web-based instruction. No class meetings.

Topic 18: Prepracticum in Rehabilitation Counseling. Supervised, field-based observation and experience in rehabilitation counseling. Web-based instruction. No class meetings.

Topic 19: Medical/Paramedical Aspects of Rehabilitation Counseling. Contributions of the medical profession; terminology, etiology, prognosis, therapeutic services, restorative techniques, assessment of limitations and capacities in typical disabilities. Web-based instruction. No class meetings.

Topic 20: Practicum in Rehabilitation Counseling. Individually supervised and systematically organized participation in rehabilitation counseling, case management, and professional skill development. Web-based instruction. No class meetings.

388. Autism and Developmental Disabilities. An intensive study of the psychological, sociological, physiological, and educational factors relating to the assessment, learning styles, and teaching of children with autism and other developmental disabilities. Includes affective, cognitive, and psychomotor development of the physically disabled and those with multiple developmental disabilities. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; twelve semester hours of upper-division coursework in education, psychology, or other behavioral sciences, including a course in special education; and consent of instructor. Additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 3: Teaching Individuals with Autism and Developmental Disabilities. Development of highly specialized skills needed to teach those with developmental disabilities. Emphasis is on the basic principles of learning that underlie effective instructional strategies and on ways to structure the environment to promote learning.

Topic 4: Enhancing Communication Potential in People with Autism and Developmental Disabilities. Communication intervention for those with developmental disabilities. Designed to help students learn to assess communication behavior and to create intervention programs that enhance existing communication skills and teach new skills. Hands-on experience with a variety of augmentative and alternative communication systems.

Topic 5: Educational Implications of Autism and Developmental Disabilities. Introduction to the learning and behavioral characteristics of those with developmental disabilities, including autism and related developmental disorders. Designed to give students an understanding of the educational needs of those with developmental disabilities and of ways to address those needs through special education and related services.
Topic 7: Challenging Behavior and Developmental Disabilities. The nature, assessment, and treatment of the challenging behaviors that are prevalent in individuals with developmental disabilities, such as aggression, self-injury, property destruction, tantrums, and stereotyped movements.

Topic 8: Research on Inclusion for Students with Autism and Developmental Disabilities. Literature relevant to the inclusion of students with developmental disabilities, including classic readings on the history and philosophy of inclusion; analysis of the evidence supporting current best-practice models. Emphasis on critical reading of empirical studies on the efficacy of inclusive education.

Topic 9: Assessment Research in Autism and Developmental Disabilities. Research related to the assessment of students with developmental disabilities, examined in the context of the theoretical orientations that underlie the major assessment strategies. Includes a review of studies related to the development and validation of contemporary assessment instruments and discussion of the scientific process involved in developing and validating assessment tools.

Topic 10: Advances in the Understanding and Treatment of Autism. Review of recent advances in the understanding and treatment of autism and related developmental disorders. The social forces that shape research and scientific understanding and the political forces that influence the delivery of education and related services, as well as implications for effective leadership in special education.

Topic 11: Intervention Research in Autism and Developmental Disabilities. How research is used to develop interventions for those with developmental disabilities. Students consider the role of basic research and theory in the development of interventions and the use of experimental design to demonstrate the effectiveness of an intervention program, explore the development of empirically validated intervention programs, and undertake qualitative and quantitative reviews of intervention research.

Topic 12: Challenging Behavior and Developmental Disabilities. The nature, assessment, and treatment of the challenging behaviors that are prevalent in individuals with severe and multiple disabilities such as aggression, self-injury, property destruction, tantrums, and stereotyped movements. Web-based instruction. No class meetings.
393. **Graduate Seminar in Special Education.** Discussion of critical issues; critiques of literature; development of theories and models regarding disabling conditions. The equivalent of three class hours a week for one semester. May be repeated for credit when the topics vary. Special Education 380 and 393 may not both be counted unless the topics vary. **Prerequisite:** Graduate standing; twelve semester hours of upper-division coursework in education, psychology, or other behavioral sciences; and consent of instructor.

**Topic 5:** *Applied Research in Special Education and Rehabilitation Counseling.*

**Topic 13:** *Issues in Special Education.* Issues and challenges affecting decision-making and practices by special education teachers, general education teachers, assessment personnel, and school administrators in the treatment and education of students with disabilities. The primary goal is to advance students’ understanding of the contributions of history, legislation, policy, research, practice, and recent trends as they apply to the resolution of major issues in special education and programs for students with disabilities.

**Topic 17:** *Instructional Designs Using Assistive Technology.* The design of instruction for students with disabilities by using assistive and instructional technologies.

**Topic 18:** *Collaboration.* Strategies such as collaborative consultation and teamwork models, which are used to improve learning outcomes for students with diverse learning needs.

**Topic 19:** *Applied Research in Special Education and Rehabilitation Counseling.* Web-based instruction. No class meetings.

394, 694. **Practicum in Special Education.** Supervised field placement in specialized settings serving exceptional children and youth. Conference course. May be repeated for credit. **Prerequisite:** Graduate standing and consent of instructor.

395. **Independent Study.** Individual research planned, executed, and reported under supervision. May be repeated for credit when the topics vary. Special Education 380 and 395 may not both be counted unless the topics vary. **Prerequisite:** Admission to an approved program of graduate study or to candidacy for the doctoral degree in education, or graduate standing and consent of instructor. Additional prerequisites vary with the topic and are given in the *Course Schedule.*

**Topic 1:** *Independent Study in Special Education Administration.*

395D. **Doctoral Seminar in Special Education and Rehabilitation Counselor Education.** May be repeated for credit when the topics vary. **Prerequisite:** Admission to an approved program of graduate study or to candidacy for the doctoral degree in education, and consent of instructor. Additional prerequisites vary with the topic and are given in the *Course Schedule.*

**Topic 1:** *Special Education Administration.*

**Topic 2:** *Independent Study in Behavioral Disorders.*

**Topic 4:** *Independent Study in Learning Disabilities.*

**Topic 6:** *Independent Study in Rehabilitation Counseling.*

**Topic 7:** *Independent Study in Early Childhood Special Education.*

**Topic 8:** *Independent Study in Autism and Developmental Disabilities.*

**Topic 15:** *Independent Study in Multicultural Special Education.*

695S. **Professional Seminar.** Forum for students to become familiar with the areas of study, research, and professional practice within special education. Students also refine their professional writing and communication skills, critically evaluate current and emerging research in the field, and examine the historical, legal, philosophical, and theoretical foundations of special education. Three lecture hours a week for two semesters. Required of all doctoral students. **Prerequisite:** For 695SA, graduate standing and admission to the doctoral program in special education; for 695SB, Special Education 695SA.

696. **Research Mentoring.** Designed to develop the knowledge and skills students need in order to conduct research. Under the supervision of a three-member committee, students develop a publishable-quality synthesis of the professional literature on a topic related to their research interests. Conference course. Offered on the credit/no credit basis only. Required of all doctoral students prior to admission to candidacy. **Prerequisite:** For Special Education 696A, graduate standing, completion of specialization core requirements, at least three graduate courses in research methods and data analysis, and consent of the graduate adviser; for Special Education 696B, 696A.
396C. Trends and Issues in Special Education and Rehabilitation Counseling. An examination of current trends and issues in areas within special education and rehabilitation counselor education that influence policies and procedures in the public schools, teacher preparation programs, and community agencies. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; twelve semester hours of upper-division coursework in education, psychology, sociology, or other behavioral sciences; and consent of instructor. Additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Trends and Issues in Early Childhood Special Education.
Topic 2: Trends and Issues in Learning Disabilities/Behavioral Disorders.
Topic 3: Trends and Issues in Multicultural Special Education.
Topic 4: Trends and Issues in Rehabilitation Counselor Education.
Topic 5: Trends and Issues in Special Education Administration.
Topic 6: Research Methodology in Special Education.

396R. Research Methods and Data Analysis. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, twelve semester hours of upper-division coursework in education, and consent of instructor.

Topic 1: Research Methodology in Special Education. Special Education 395 (Topic 9: Research Methodology in Special Education) and 396R (Topic 1) may not both be counted.
Topic 2: Single-Subject Research Design. The use of single-subject research designs to make data-based decisions about program effectiveness and student outcomes; integration of applied research into classroom instruction as part of evidence-based professional practice in educating students with severe and multiple disabilities.
Topic 3: Advanced Data Analysis in Special Education. Special Education 395T (Topic 10: Computer Data Analysis in Special Education) and 396R (Topic 3) may not both be counted.

396T. Directed Research in Special Education. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, twelve semester hours of upper-division coursework in education, and consent of instructor.

Topic 1: Directed Research in Special Education Administration.
Topic 2: Directed Research in Behavioral Disorders.
Topic 4: Directed Research in Learning Disabilities.

397C. Advanced College Teaching. Supervised teaching experience at the college level. The equivalent of three lecture hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing, admission to an approved program of graduate study or admission to candidacy for the doctoral degree in special education, Special Education 398T, and consent of the graduate adviser.

397P, 697P. Graduate Internship. Supervised practice in a professional position. The equivalent of three or six lecture hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing, twelve semester hours of upper-division coursework in education, and consent of instructor.

397S. Supervised Teaching in Special Education. Instruc­tion in the supervision of student teachers and observers at the undergraduate level. Conference course. Prerequisite: Graduate standing, admission to candidacy for the doctoral degree.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in special education and consent of the supervising professor and the graduate adviser; for 698B, Special Education 698A.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in special education and consent of the graduate adviser.

398T. College Teaching in Special Education. Required for teaching assistants and assistant instructors. Prerequisite: Graduate standing.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Special Education 399R, 699R, or 999R.
ENGINEERING

Master of Arts
Master of Science in Engineering
Doctor of Philosophy

FACILITIES

The College of Engineering has outstanding research and teaching facilities on the main campus and at the J. J. Pickle Research Campus. Details are given in the individual program descriptions that follow.

AREAS OF STUDY

Graduate work in engineering may lead to the Master of Science in Engineering or the Doctor of Philosophy in the following majors: aerospace engineering, biomedical engineering, chemical engineering, civil engineering, electrical and computer engineering, engineering mechanics, materials science and engineering, mechanical engineering, operations research and industrial engineering, and petroleum engineering. The Master of Science in Engineering is also offered in architectural engineering and environmental and water resources engineering. Also available are an alternatively scheduled program in engineering management that leads to the Master of Science in Engineering and alternatively scheduled programs in software engineering and engineering circuit design that lead to the Master of Science in Engineering with a major in electrical and computer engineering. The Master of Arts degree is offered in energy and mineral resources. Information about the concentrations offered in each field is given in the program descriptions that follow.

DEGREE REQUIREMENTS

Master of Science in Engineering

This degree is offered in three options: with thesis, with report, and without thesis or report. The thesis option requires at least thirty semester hours of credit; the report option, at least thirty-three hours; and the option without thesis or report, at least thirty-six hours. All three options may not be available in any one field of study; information about the options in each of the fields is given in the program descriptions.

Master of Arts

This interdisciplinary degree is offered only in energy and mineral resources. Candidates must complete at least thirty semester hours of coursework and must write a thesis.

Doctor of Philosophy

The Doctor of Philosophy is a research degree. The student pursues coursework approved by the Graduate Studies Committee in the field of specialization and in supporting work outside the major. Before admission to candidacy, the student
is expected to pass qualifying examinations and to meet additional requirements established by the Graduate Studies Committee. Admission to candidacy must be approved by the committee and the graduate dean. A dissertation that is an original contribution to scholarship and is the result of independent investigation in the major area is required of every candidate.

DUAL DEGREE PROGRAMS

Master of Science in Engineering/Master of Business Administration
The graduate program in mechanical engineering (manufacturing and decision systems engineering) offers a dual degree program with the McCombs School of Business. Information about the program is given on page 238.

Master of Science in Engineering/Master of Public Affairs
The graduate program in civil engineering offers a dual degree program with the Lyndon B. Johnson School of Public Affairs. Information about the program is given on page 195. With the permission of the graduate adviser of the engineering program, students may follow a dual degree program that combines another engineering discipline with public affairs.

INTERCOLLEGIAL PROGRAMS
Graduate engineering study may also be a component of the master’s and doctoral degrees in mathematical and applied mathematics described on pages 536–540.

FOR MORE INFORMATION
Campus address: Ernest Cockrell Jr. Hall (ECJ) 10.326, phone (512) 471-7995; fax (512) 475-6743; campus mail code: C2100
Mailing address: The University of Texas at Austin, Academic Affairs, College of Engineering, 1 University Station C2100, Austin TX 78712
URL: http://www.engr.utexas.edu/

AEROSPACE ENGINEERING
Master of Science in Engineering
Doctor of Philosophy

OBJECTIVES
The aerospace engineering graduate program focuses on teaching and research in analytical, computational, and experimental methods in the areas of aerothermodynamics and fluid mechanics; solids, structures, and materials; structural dynamics; guidance and control; and orbital mechanics. The student may concentrate in any of these five areas. The objectives of the program are to enable the student to attain a deeper understanding of aerospace engineering fundamentals, a knowledge of recent developments, and the ability as a master's degree student to participate in research and as a doctoral degree student to conduct individual research. The goals are accomplished through coursework, seminars, and active research programs.
AREAS OF STUDY AND FACILITIES

Aerothermodynamics and fluid mechanics. This concentration involves study and research in experimental, theoretical, and computational aerodynamics, gas dynamics, turbulence, plasma dynamics, heat transfer, and combustion. Research is presently being conducted in nonequilibrium and rarefied gas flows, turbulence control, shock-boundary layer interactions, thermal and glow-discharge plasmas, turbulent mixing/combustion, and advanced optical diagnostics and sensors. Facilities include Mach 2 and Mach 5 blowdown wind tunnels, a 1.25-second low-gravity drop tower, 5’ × 7’ low-speed wind tunnel, 15” × 20” water channel, laser sensor laboratory, combustion facilities, plasma engineering laboratory, and extensive laser and camera systems for advanced flow diagnostics. The excellent computational facilities include a variety of workstations and access to high-performance computers.

Solids, structures, and materials. This concentration involves study and research in mechanics of composite materials, fracture mechanics, micromechanics of materials, constitutive equations, mechanical behavior at high strain rates, structural analysis, and structural stability. Experimental facilities include equipment for static structural testing; digital data acquisition equipment; uniaxial and biaxial materials-testing machines; custom loading devices; environmental chambers; microscopes; photomechanics facilities; composites processing equipment; facilities for microstructural analysis; and high-speed imaging and high strain rate mechanical testing facilities. Computing facilities include workstations, high-performance computers, and networks of workstations.

Structural dynamics. This concentration involves study and research in theoretical, computational, and experimental structural dynamics. Included are aeroelasticity, linear and nonlinear structural system identification, structural acoustics, and computational techniques for very-large-scale vibration analysis. Computational facilities include numerous computer servers and workstations, and experimental facilities include actuators and sensors and several data-acquisition systems for structural system identification and control. Wind tunnel facilities are available for testing aeroelastic models.

Guidance and control. This concentration involves study and research in system theory, control theory, optimal control theory, approximation theory, time-delay observers, estimation theory, and stochastic control theory and their application to the navigation, guidance, control, and flight mechanics of aerospace vehicles. Research is primarily analytical and numerical in nature. Excellent computational and experimental facilities are available for the study of various guidance and control applications.

Orbital mechanics. This concentration involves study and research in the applications of celestial mechanics, analytical dynamics, geophysics, numerical analysis, optimization theory, estimation theory, and computer technology to model the dynamic behavior of natural and artificial bodies in the solar system. Two areas of interest are satellite applications and spacecraft design.

Satellite applications involve the study of active and passive satellite remote sensing for research in earth, ocean, atmospheric, and planetary science; satellite positioning, primarily using the Global Positioning System (GPS) for earth science research; and satellite tracking and instrumentation, including altimeters, for a variety of geophysical and geodetic studies, including the study of Earth’s gravity field and rotation. Research is supported by a large database of satellite remote sensing measurements, a variety of computer resources, GPS receivers, and image processing equipment.
Spacecraft design involves the application of all disciplines of aerospace engineering to the design of aerospace vehicles, missions, and related systems. Experimental facilities include a satellite laboratory containing high-gain antennas for satellite tracking and a clean room area for fabrication and testing of space flight hardware. Research is primarily applied in nature and involves the synthesis of information from all engineering disciplines, mathematics, the natural sciences, economics, project management, and public policy.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Maruthi R. Akella
Eric B. Becker
Jeffrey K. Bennighof
Robert H. Bishop
Sean M. Buckley
Graham F. Carey
Noel T. Clemens
Clint Dawson
Leszek F. Demkowicz
David S. Dolling
Raynor L. Duncombe
Wallace T. Fowler
David B. Goldstein
Rui Huang
Thomas J. R. Hughes
David G. Hull

Stelios Kyriakides
Kenneth M. Liechti
E. Glenn Lightsey
Hans Mark
Mark E. Mead
Cesar A. Ocampo
J. Tinsley Oden
Laxminarayan L. Raja
Krishnaswa Ravi-Chandar
Gregory J. Rodin
Bob E. Schutz
Ronald O. Stearman
Byron D. Tapley
Philip L. Varghese
Mary F. Wheeler

ADMISSION REQUIREMENTS
The prerequisite for graduate study in aerospace engineering is a bachelor’s or master’s degree in aerospace engineering or in a related field of engineering or science. Graduate study in orbital mechanics is possible for those with degrees in engineering, science, or mathematics.

DEGREE REQUIREMENTS

Master of Science in Engineering. Students seeking the master’s degree have three options. The thesis option requires thirty semester hours of coursework, of which six hours are earned in the thesis course. The report option requires thirty-three semester hours of coursework, of which three hours are earned in the report course. The option without thesis or report requires thirty-six semester hours of coursework. Regardless of the option chosen, a student is required to take six hours of supporting coursework outside the major. Students receiving financial aid through the sponsorship of the department are expected to choose the thesis option; however, those studying aerospace design may choose the report option. Master’s degree students may not count courses taken on the credit/no credit basis toward the degree. They are also limited in the number and level of business-related courses that may be counted.
The following is a template for the student beginning the MSE degree program in a fall semester. A student who follows this schedule will be considered to be making satisfactory progress toward the degree.

1. Take courses during the fall and spring semesters and begin research.
2. Complete research for thesis during the summer.
3. Complete coursework in the second fall semester.
4. Write thesis and graduate within one and one-half years.

**Doctor of Philosophy.** The PhD program consists of coursework, qualifying examinations, and the dissertation. Students who have master’s degrees must complete at least twenty-four hours of coursework; those who enter the graduate program with bachelor’s degrees must complete at least forty-eight hours of coursework.

To be admitted to candidacy for the Doctor of Philosophy degree, the student must pass both a written and an oral examination. The written examination is general in nature and covers subject matter studied through the first year of graduate work. The oral examination is in the student’s specialty area and is conducted by a committee of faculty members whose interests are in that area. Students may not take courses on the credit/no credit basis until they have passed the written qualifying examination.

The following is a template for the student with an MSE degree who begins the doctoral degree program in a fall semester. A student who follows this schedule will be considered to be making satisfactory progress toward the degree.

1. Take courses during the fall and spring semesters and begin research.
2. Pass the written qualifying exam during the summer.
3. Pass the oral qualifying exam soon after the written exam.
4. Apply for candidacy before the end of the second fall semester.
5. Continue research for the next two years.
6. Write the dissertation and graduate within four and one-half years.

**FOR MORE INFORMATION**

_Campus address:_ W.R. Woolrich Laboratories (WRW) 215D, phone (512) 471-7595, fax (512) 471-3788; campus mail code: C0600

_Mailing address:_ The University of Texas at Austin, Graduate Program in Aerospace Engineering, Department of Aerospace Engineering and Engineering Mechanics, 1 University Station C0600, Austin TX 78712

_E-mail:_ ase.grad@mail.ae.utexas.edu

_URL:_ http://www.ae.utexas.edu/
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught on a regular basis. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Aerospace Engineering: ASE

380P. Mathematical Analysis for Aerospace Engineers. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Analytical Methods I. Introduction to modern mathematics, real analysis of functions of one variable, linear algebra, elements of real analysis of functions of many variables, calculus of variations.


381P. System Theory. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Linear Systems Analysis. Linear dynamical systems; controllability and observability; stability; realization theory; state-feedback and observers.

Topic 2: Multivariable Control Systems. Multivariable feedback systems; factorizations and controller parameterization; limitations and trade-offs of feedback; robust stability and performance; robust $H_2$ and $H_\infty$ control methods. Additional prerequisite: Aerospace Engineering 381P (Topic 1) or the equivalent.

Topic 3: Optimal Control Theory. Necessary conditions and sufficient conditions for the parameter optimization and optimal control problems; engineering applications.


Topic 6: Statistical Estimation Theory. Least squares; sequential and batch processors; optimal, linear, recursive, maximum likelihood, and minimum variance estimates; square-root filtering; filter divergence; discrete and continuous Kalman filters.


382Q. Fluid Mechanics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Foundations of Fluid Mechanics. Fundamental equations; constitutive equations for Newtonian fluids; inviscid, incompressible potential flow; viscous flow including exact solutions and boundary layer theory; compressible flow.


382R. Aerodynamics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 3: Hypersonic Aerodynamics. Characteristics and assumptions of hypersonic flow; hypersonic similitude; Newtonian theory; constant density solutions.

Topic 5: Advanced Computational Methods. Development and implementation of numerical methods for solution of transport equations; computational grid generation; applications to fluid flows, including shock waves.


384P. Structural and Solid Mechanics. Three lecture hours or two lecture hours and three laboratory hours a week for one semester, depending on the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.


Topic 4: Finite Element Methods. Same as Computational and Applied Mathematics 394F and Engineering Mechanics 394F. Derivation and implementation of the finite element method; basic coding techniques; application to problems of stress and diffusion.


Topic 7: Reliability Engineering. Introduction to reliability engineering; basic concepts from statistics, the quantification of reliability and its related functions, analysis of reliability data, load-strength, interference, reliability in design and testing.

Topic 8: Selected Topics in Aeroelasticity. Classical and contemporary topics in aeroelasticity; general introduction to aeroelastic phenomena, including flutter, divergence, control reversal, and flexibility effects on stability and control; aeroelastic tailoring; active control concepts; unsteady aerodynamic theories for lifting surfaces and bodies; aeroelastic system identification, including nonlinear systems (theory and laboratory applications).


Topic 12: Experimental Methods in Structural Dynamics. Time-series analysis; time-domain and frequency-domain techniques of structural identification; exciters and sensors. Two lecture hours and three laboratory hours a week for one semester. Additional prerequisite: Aerospace Engineering 384P (Topic 3) or Engineering Mechanics 384L.

387P. Flight Mechanics, Guidance, Navigation, and Control. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 2: Mission Analysis and Design. Mission design and mission constraints, launch windows; rendezvous analysis; orbital design interactions with thermal and structural analysis; design of a typical mission.

Topic 3: Inertial Guidance and Navigation. Review of rigid body dynamics; gyroscopic motion; accelerometers, applications to inertial guidance, error analysis; attitude control.

Topic 6: Optimal Spacecraft Trajectories. Optimal control of spacecraft; primer vector theory; impulsive maneuvers; finite burn high/low thrust maneuvers; solar sails; numerical methods; applications to contemporary trajectory problems using single or multiple spacecraft.

388P. Celestial Mechanics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 2: Celestial Mechanics I. N-body problem; three-body problem; restricted three-body problem; Jacobian integral; zero-velocity curves; equilibrium points; stability; linearized solutions; variational equations; periodic orbits; the two-body problem; variation of parameters; Lagrange's planetary equations; applications to near-earth and deep-space trajectories; numerical methods.
Topic 3: Celestial Mechanics II. Hamiltonian mechanics; dynamical systems; canonical transformations; invariant manifolds; Poincaré surfaces of section; applications to restricted n-body problems; applications to sun-earth-moon or sun-planet-moon particle trajectory problems. Additional prerequisite: Aerospace Engineering 388P (Topic 2).

389P. Satellite Applications. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Determination of Time. Concepts of time; fundamental reference system; polar motion; practical methods in time determination and dissemination; historical and present-day time scales; atomic clocks; time transfer via satellite.

Topic 2: Satellite Geodesy. Representations of planetary gravitational fields; determination of spherical harmonic coefficients; geoids and gravity anomalies; temporal variations in the geopotential; planetary rotational dynamics.

Topic 3: Advanced Topics in Satellite Geodesy. Solid earth and ocean tide models, tidal forces on satellites, surface displacements; nongravitational forces; frames of reference; and geodetic instrumentation. Additional prerequisite: Aerospace Engineering 389P (Topic 2).

Topic 7: The Global Positioning System. Comprehensive review of the theory and applications of the Global Positioning System (GPS), including the space segment, the control segment, the user segment, dilution of precision, GPS time, anti-spoofing, selected availability, differential/kinematic/dynamic techniques, field procedures, and GPS data collection and analysis. Applications of ground-based, aircraft-based, and satellite-based GPS receivers.

Topic 8: Satellite Control Systems. Spacecraft equations of motion; linearization and stability, classical control methods; digital and sampled data systems; multivariable control; attitude determination and control; momentum management; coupled modes; and case studies in satellite control.

Topic 9: Synthetic Aperture Radar: Principles and Applications. Synthetic Aperture Radar (SAR) imaging for Earth remote sensing, including image formation concepts and interpretation, radar interferometry processing and strategies, surface deformation, topographic mapping, and polarimetric applications.

396. Special Topics. The equivalent of three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Space Systems Design.

397. Graduate Seminar. Student, faculty, and visitor presentations of current research topics. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing.

Topic 1: Orbital Mechanics Seminar.
Topic 2: Aeronautics Seminar.
Topic 3: Guidance and Control Seminar.
Topic 5: Structural Dynamics Seminar.

397K, 697K. Research. Three or six hours of research a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Research in Experimental Mechanics.
Topic 2: Research in Fluid Mechanics.
Topic 3: Research in Guidance and Control.
Topic 4: Research in Orbital Mechanics.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in aerospace engineering and consent of the graduate adviser; for 698B, Aerospace Engineering 698A.

398R. Master's Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in aerospace engineering and consent of the graduate adviser.

398T. Supervised Teaching in Aerospace Engineering. Teaching methods and objectives, criteria for evaluating teaching effectiveness, procedural rules and regulations, laboratory teaching. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and appointment as a teaching assistant.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Aerospace Engineering 399R, 699R, or 999R.
ARCHITECTURAL ENGINEERING
Master of Science in Engineering

OBJECTIVES
The objectives of the graduate program in architectural engineering are excellence in engineering education, research, and professional service. The program seeks to educate students to assume leadership positions in engineering practice, research, and education. The program also seeks to advance the state of the art and the practice of architectural engineering at both fundamental and applied levels through extensive research programs, and to disseminate this research through professional and scholarly activities. The architectural engineering program encompasses construction engineering and project management, construction materials, building environmental systems, indoor air quality, building performance, and structural engineering. Students may also take courses in other disciplines, such as environmental and water resources engineering, geotechnical engineering, ocean engineering, mechanical engineering, and transportation engineering, and in interdisciplinary areas.

FACILITIES FOR GRADUATE WORK
The Architecture and Planning Library and the McKinney Engineering Library offer excellent reference facilities. Well-equipped laboratories, including the Phil M. Ferguson Structural Engineering Laboratory, are available in the areas of static and dynamic structural testing of building systems and structural elements of steel, reinforced and prestressed concrete, masonry, timber, and polymers. The structures laboratories, which include both architectural and civil engineering facilities, contain a wide range of loading machines and equipment, environmental chambers, and facilities for model testing. The virtual design laboratory provides state-of-the-art computer workstations. The construction laboratories include a well-equipped computer cluster on the main campus and a high-bay laboratory for construction automation research at the J.J. Pickle Research Campus. The automation laboratory includes a large-scale hydraulic robot test bed, a large rectilinear manipulator, and many computer workstations; at any one time, several full-scale prototyping projects are underway. The concrete-polymer materials laboratory is equipped with facilities for evacuating and pressuring concrete for polymer impregnation and evaluating durability and strength properties of polymer concrete. Also available are the latest computer facilities.

AREAS OF STUDY
Graduate study and research is offered in construction engineering and project management, construction materials, building environmental systems, building performance, indoor air quality, and structural engineering.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Carlos H. Caldas
David W. Fowler
G. Edward Gibson Jr.
Carl T. M. Haas
Howard M. Liljestrand

William J. O’Brien
James T. O’Connor
Jeffrey Siegel
Dan L. Wheat
DEGREE REQUIREMENTS

The following requirements for the Master of Science in Engineering degree with a major in architectural engineering are in addition to the general requirements for the master's degree. The thirty-semester-hour plan, with thesis, requires twenty-four hours in organized courses and six hours in the thesis course. Of the twenty-four hours of organized coursework, six to twelve hours may be in a minor area of concentration; the remaining twelve to eighteen hours must be in the major. The courses must be logically related and the program must be approved by the graduate adviser.

A thirty-three-hour and a thirty-six-hour degree plan are also available. The thirty-three-hour plan includes a report prepared in Architectural Engineering 398R according to procedures set by the Graduate School; the thirty-six-hour plan includes a report prepared in Architectural Engineering 398D according to procedures set by the Graduate Studies Committee. Both plans provide for more coursework in both the major and the minor than does the thirty-hour plan. Coursework in architectural and civil engineering may be used to fulfill major area course requirements.

FOR MORE INFORMATION

Campus address: Ernest Cockrell Jr. Hall (ECJ) 5.200, phone (512) 471-4921, fax (512) 471-0592; campus mail code: C1752
Mailing address: The University of Texas at Austin, Graduate Program in Architectural Engineering, Department of Civil, Architectural, and Environmental Engineering, 1 University Station C1752, Austin TX 78712
E-mail: grad@mail.ce.utexas.edu
URL: http://www.ce.utexas.edu/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Architectural Engineering: ARE

381E. Design of Energy Efficient and Healthy Buildings. Design of buildings for low energy use and optimal indoor air quality. Includes ventilation, energy efficiency, moisture problems, and prevention by design. Prerequisite: Graduate standing in engineering or graduate standing and consent of instructor.

382. Independent Studies in Architectural Engineering. Investigation of problems in building construction, selected by the student with approval of the graduate adviser. The equivalent of three lecture hours a week for one semester. May be repeated for credit when the topics vary. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in architectural engineering and consent of the graduate adviser.

Topic 1: Construction and Project Management.
Topic 2: Structures.
Topic 3: Materials and Methods.
Topic 4: Environmental Engineering.
Topic 5: Design Principles and Procedures.

383. Research Studies in Architectural Engineering. Three lecture hours a week for one semester, or the equivalent in conference hours, or as stated for the topic. May be repeated for credit when the topics vary. Some topics are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Construction and Project Management.
Topic 2: Structures.
Topic 3: Materials and Methods.
Topic 4: Forensic Engineering: Materials and Structures. Same as Civil Engineering 397F. Methods of forensic analysis; role of the expert witness; methods of dispute resolution; case studies; term project. Two lecture hours a week for one semester, with three laboratory hours a week for presentation of case studies.


Topic 6: Design of Wood Members and Systems. Same as Civil Engineering 397 (Topic 1: Design of Wood Members and Systems). Design and behavior of solid wood and glued-laminated wood structural members; light-frame and heavy timber systems, including trusses and arches.


389H. HVAC Design. Design of heating, ventilation, and air-conditioning systems. Prerequisite: Graduate standing and three of the following courses: Architectural Engineering 346N, Civil Engineering 319F, Mechanical Engineering 320, 326, 330, 339.

389T. Indoor Air Quality: Transport and Control. Transport and control of indoor pollutants. Includes particulate removal and pollutant transport into and within indoor environments. Prerequisite: Graduate standing in architectural or civil engineering.

395P. Project Automation. Some topics may require additional hours; these are identified in the Course Schedule. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.


Topic 2: Introduction to Construction Automation. Same as Civil Engineering 395P (Topic 2: Introduction to Construction Automation). Construction automation activities, methods for opportunity identification and financial analysis of automated systems, and tools from several disciplines that are used in construction automation; students prepare a project that synthesizes this information.

395Q. Project Controls. Some topics require two lecture hours and three laboratory hours a week; these are identified in the Course Schedule. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

395R. Project Information Systems. Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 5: Artificial Intelligence for CEPM. Same as Civil Engineering 395R (Topic 5: Artificial Intelligence for CEPM). Introduction to basic concepts in artificial intelligence and LISP programming. Topics include theory and application of expert systems, neural nets, and fuzzy logic to construction engineering and project management. Two lecture hours and two laboratory hours a week for one semester. Additional prerequisite: A course in computer programming.

395S. Project Organization. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 4: Project Management. Same as Civil Engineering 395S (Topic 4: Project Management). Overall aspects of project management from inception to successful operation: establishing product objectives, feasibility analyses, scope definition, contracting methods, project control systems, and project execution planning.

395T. Project Technology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 5: Value Management Processes I. Industry value management processes, including value engineering and LCC, individual value engineering, process simplification, function analysis concept development, design to capacity, constructability, modularization and preassembly, and design effectiveness.
698. **Thesis.** The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. *Prerequisite:* For 698A, graduate standing in architectural engineering and consent of the graduate adviser; for 698B, Architectural Engineering 698A.

398D. **Departmental Report.** Preparation of a report to fulfill the requirement for the Master of Science in Engineering degree under the departmental report option. Individual instruction. Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing in architectural engineering and consent of the supervising professor and the graduate adviser.

398R. **Master's Report.** Preparation of a report to fulfill the requirement for the master's degree under the Graduate School report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing in architectural engineering and consent of the supervising professor and the graduate adviser.

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**BIOMEDICAL ENGINEERING**

**Master of Science in Engineering**

**Doctor of Philosophy**

**OBJECTIVES**

The mission of the graduate program in biomedical engineering is to educate students in the fundamentals of engineering and science as they affect biology and medicine and to perform multidisciplinary, disease-oriented research at the molecular, cellular, organ, and systemic levels. The program aims fully to integrate biology and engineering research and education at the graduate level.

Biomedical engineering students are eligible for the National Science Foundation's IGERT program in optical molecular bioengineering and the National Institutes of Health's Biotechnology Training Grant. Information about these programs is given at http://www.bme.utexas.edu/igert/.

**FACILITIES FOR GRADUATE WORK**

The Department of Biomedical Engineering has offices and laboratories in the Engineering-Science Building and nearby engineering and biology buildings. Research is also conducted at the University of Texas Medical Branch at Galveston (UTMB), the University of Texas Health Science Center at San Antonio, the University of Texas Health Science Center at Houston, and the University of Texas M.D. Anderson Cancer Center. The faculty at each school maintains a laboratory with state-of-the-art equipment. These laboratories include facilities for research in biochemical and protein engineering, cell and tissue engineering, gene therapy, cell-electronic interfaces and nanostructure engineering, cell biomechanics, whole-body biomechanics and gait analysis, thermal engineering, optical spectroscopy and imaging, ultrasound imaging, laser-tissue interactions, image processing, biosignal analysis and computer graphics, protein bioinformatics, and computational disease diagnosis.
In addition to individual research laboratories, a number of core facilities are available for research at the medical school campuses. The following are located on the University of Texas at Austin campus:

**Institute for Cellular and Molecular Biology core facilities.** The Institute for Cellular and Molecular Biology (ICMB) was created by the College of Natural Sciences to foster the growth of modern cell and molecular biology research at the University. The ICMB provides four core user facilities. The **DNA Core Facility** provides automated sequencing and fragment analysis. Two ABI Prism 377 DNA sequencers and an ABI 3700 DNA analyzer are used. The ABI 3700 is a capillary-based sequencer that allows up to six hundred samples to be run daily; the facility currently analyzes more than two thousand samples monthly, with a success rate of about 95 percent. An average run generates readable data between five hundred and seven hundred bases.

The **Protein Microanalysis Facility** provides de-novo N-terminal protein/peptide sequencing, internal sequencing/peptide mapping, amino acid composition analysis, peptide synthesis and mass spectrometry (ESI-MS, LC-MS, and MALDI-TOF-MS). Liquid chromatography, high-pressure liquid chromatography (HPLC), and capillary electrophoresis are available for preparative and analytical runs. Two protein sequencers, an amino acid analyzer, a peptide synthesizer, a capillary electrophoresis system, an analytical HPLC system, an electrospray-mass spectrometer, and a MALDI-TOF mass spectrometer are operated in the facility. The running of gels and electroblotting for sequencing also can be arranged.

The **Microscopy Core Facility** contains a 100kv transmission electron microscope (TEM), a high-resolution 100kv TEM, a scanning electron microscope, a flow cytometer, and a laser scanning confocal microscope. The laser scanning fluorescence confocal microscope features a krypton/argon mixed gas laser, an ultraviolet laser, and DIC optics in an inverted microscope. Three channels can be monitored simultaneously at high resolution.

The **IGERT Microscopy/Spectroscopy User Facility** contains four major pieces of equipment. (a) A deconvolution microscope workstation with full-featured image processing software, coupled with a high-resolution, low-light camera, can computationally reassign (deconvolve) the out-of-focus components of a through-focus series of a specimen using either user-defined theoretical or measured-point spread functions. The image processing software has features for both the quantitation of image sets and extensive three-dimensional reconstruction and volume rendering. (b) A Fourier transform infrared (FTIR) spectrophotometer with added auxiliary experimental module can be used in grazing angle and transmission modes for the characterizations of thin films and monolayers. (c) An ultraviolet/visible diode array spectrophotometer with peltier temperature-controlled cuvette holder collects simultaneous wavelengths in either absorbance or transmittance modes. This ability is required to characterize samples with rapid reaction times and to follow enzyme kinetics. (d) A cuvette-based scanning spectrofluorometer with a laser fluorescence lifetime module is used to study a wide variety of liquid and solid samples in both steady-state and time-resolved fluorescence modes. The intensity-based, time-domain system accurately measures fluorescence decays over multiple time scales; coupled with the dye laser/frequency doubler, it allows accurate measurements of solid samples with low quantum yields or turbid liquid samples with high scattering properties. A user-facility manager is available to provide training and assistance.
Texas Materials Institute and Center for Nano and Molecular Science and Technology core facilities. The Texas Materials Institute (TMI) maintains core facilities in electron microscopy, surface analysis, polymer characterization, and x-ray scattering. The Center for Nano and Molecular Science and Technology (CNM) is a multidisciplinary, collaborative research center focused on several emerging areas of research. A multidepartmental effort of the the Colleges of Natural Sciences and Engineering, CNM houses extensive shared user facilities, including a picosecond fluorescence lifetime spectrometer/microscope; an FTIR spectrometer; a near-field scanning optical microscope; organic thin film fabrication equipment; beam lithography systems; molecular force probe microscope; a transmission electron microscope; and a time-correlated single photon counting facility.

Animal Resources Center facilities. The Animal Resources Center (ARC) is a fourteen-thousand-square-foot state-of-the-art facility in which animal surgical procedures are performed. A separate building houses transgenic and knock-out animals. The facility is fully staffed and equipped in compliance with NIH and AAALAC guidelines for accreditation. Available are animal operating rooms, support staff, equipment for preparing tissue specimens, and veterinary consultation for both animal husbandry and surgery.

Computer and computational facilities. All research groups maintain computers for use by their graduate students, and each academic unit has one or more core computer facilities. The University also has core computer user facilities across campus. In addition, advanced computational facilities are maintained by the Institute for Computational Engineering and Sciences (ICES). Extensive computing facilities are available to faculty members and students, including a scientific visualization lab, a medium-sized massively parallel processing computer, a network of eighteen RS6000s networked by optic fiber, and many X-terminals. Also available are a forty-five-node Intel Paragon and a thirty-two-node Cray J90.

Library facilities. The University has outstanding library facilities, including a general collection of four million volumes in the Perry-Castañeda Library and topical collections in specialized libraries like the Mallet Chemistry Library, the McKinney Engineering Library, and the Life Sciences Library.

AREAS OF STUDY

The biomedical engineering program is interdisciplinary, with a faculty that includes members of the School of Biological Sciences, the Departments of Kinesiology and Health Education, Chemistry and Biochemistry, Psychology, Biomedical Engineering, and several other departments in the College of Engineering, as well as practicing physicians. Several faculty members from the University of Texas Medical Branch at Galveston, the University of Texas Health Science Center at San Antonio, the University of Texas Health Science Center at Houston, and the University of Texas M.D. Anderson Cancer Center serve on the Graduate Studies Committee and supervise biomedical engineering students. Adjunct faculty members at the University of Texas Health Science Center at Houston and the University of Texas M.D. Anderson Cancer Center also serve as co-supervisors.

The current research of this faculty is focused in the following areas: cellular and molecular imaging, cellular and biomolecular engineering, computational biomedical engineering, and instrumentation. Research activities embrace such topics as bioinstrumentation, modeling and control of biological systems, nerve fiber regeneration, biomedical computer and information technology, biomechanics, cell and tissue mechanics, thermal processes, musculoskeletal modeling, acquisition and analysis.
of in vivo and ex vivo spatial human biomechanics data, acquisition of physiological data by noninvasive means, cell and tissue engineering, design and testing of novel fluid and drug delivery systems, effects of laser radiation on biological material, laser applications in medicine, coherence imaging of biological materials, pulsed photothermal tomography, biorheology, visual system instrumentation, computer vision, production and purification of genetically engineered proteins, DNA and drug delivery, cell-electronic interfaces, acquisition and processing of neurological signals, neuroprostheses, applications of finite element modeling in medicine, acoustics and ultrasound, image processing, thermography, and hyperthermia.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005. The names of faculty members at the University of Texas Medical Branch at Galveston are marked with an asterisk; those of faculty members at the University of Texas Health Science Center at San Antonio, with a dagger; those of faculty members at the University of Texas Health Science Center at Houston, with a double dagger; and those of faculty members at the University of Texas M. D. Anderson Cancer Center, with a section mark.

Lawrence D. Abraham
J. K. Aggarwal
C. Mauli Agrawal†
Orly Alter
Chandrajit L. Bajaj
Ronald E. Barr
Adela Ben-Yakar
Akhil Bidani‡
Eric Boerwinkle‡
Alan C. Bovik
Lisa Brannon-Peppas
William L. Buford Jr.*
John Byrne‡
Craig A. Champlin
Shaochen Chen
Su Dharmawardhane
Kenneth R. Diller
Jonathan B. Dingwell
Rena N. D’Souza‡
Andrew Ellington
Stas Emelianov
Benito Fernández
Harvey M. Fishman*
Robert H. Flake
Michele Follen§
Emil J. Freireich§
Wolfgang Frey
Wilson S. Geisler III
George Georgiou
Joydeep Ghosh
Ann M. Gillenwater§
David G. Gorenstein*
Lisa Griffin
Mark F. Hamilton
Linda J. Hayes

George C. Kramer*
J. K. Aggarwal
Orly Alter
Chandrajit L. Bajaj
Ronald E. Barr
Adela Ben-Yakar
Akhil Bidani‡
Eric Boerwinkle‡
Alan C. Bovik
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Wilson S. Geisler III
George Georgiou
Joydeep Ghosh
Ann M. Gillenwater§
David G. Gorenstein*
Lisa Griffin
Mark F. Hamilton
Linda J. Hayes

James F. Leary
Edward M. Marcotte
Mia Markey
Anshu Mathur§
Dianna M. Milewicz‡
Michael Miller§
Thomas E. Milner
Tessie J. Moon
Massoud Motamedi*
Ponnada A. Narayana‡
Richard Neptune
Marcus G. Pandy
Charles Patrick§
John A. Pearce
Nicholas Peppas
Martin Poenie
Rebecca Richards-Kortum
Krishnendu Roy
H. Grady Rylander III
Christine E. Schmidt
Jason B. Shear
Li Shi
Harel Shouval‡
Michael H. Smolensky‡
Konstantin V. Sokolov
Laura J. Suggs
Delbert Tesar
Jonathan W. Valvano
Ashley James Welch
Baxter F. Womack
Bugao Xu
Hao Ying*
Zhiwen Zhang

178 Fields of Study
ADMISSION REQUIREMENTS

The graduate adviser and the Admissions Committee make all admission decisions. Standards for entrance into the program exceed the minimum standards established by the University. Students must have a bachelor’s degree with the following coursework or equivalent knowledge: freshman biology, freshman inorganic chemistry, differential equations, probability and statistics, and calculus-based physics. An applicant with a degree in an area other than engineering must take specified preliminary coursework before applying to the graduate program in biomedical engineering. The coursework does not need to be completed at UT Austin. Information about the admission process is given at http://www.bme.utexas.edu/.

Admission decisions are based on a careful review of all aspects of each applicant’s file, including score on the Test of English as a Foreign Language, if needed, grade point average, Graduate Record Examinations scores, letters of recommendation, personal statement, and previous research or work experience. Only the most qualified applicants are accepted. Admission is not based on test scores and grade point averages alone; other important factors include the applicant’s statement of purpose, reference letters, résumé, and transcripts. The number of students admitted each semester depends on the availability of supervising faculty members to provide research facilities and possible financial support. Most students are admitted for doctoral study, but students interested in the MSE are also considered on a case-by-case basis.

All applicants whose native language is not English must submit a score on the Test of English as a Foreign Language (TOEFL).

DEGREE REQUIREMENTS

The Master of Science in Engineering and the Doctor of Philosophy degree programs include a core curriculum and courses from one or more areas of specialization selected with the approval of the graduate adviser. Specializations are offered in molecular and cellular imaging, molecular-based sensors and devices, computational biomedical engineering and bioinformatics, and instrumentation. The graduate adviser and the Executive Committee of the Graduate Studies Committee must approve deviation from the prescribed curriculum.

Master of Science in Engineering

The master’s degree requires at least thirty semester hours of coursework, including six hours in the thesis course and fifteen hours of biomedical engineering coursework. The remaining nine semester hours should be selected from courses outside the field of biomedical engineering. These additional courses must be logically related to the student’s program and must be approved by the graduate adviser.

A thesis is normally expected; however, with the consent of the graduate adviser, the student may follow a degree plan that includes a report or one with neither thesis nor report. The report option requires thirty-three semester hours of coursework, consisting of six or seven courses in the major, three or four courses in supporting work, and three hours in the report course. The plan without thesis or report requires thirty-six semester hours of coursework, consisting of at least eight courses in the major and up to four courses in supporting work.
Doctor of Philosophy

Doctoral-degree students complete at least twenty-eight semester hours of coursework beyond the baccalaureate degree, in addition to conducting research necessary to write a dissertation under the direction of a faculty supervisor. The twenty-eight hours of coursework must be composed of five biomedical engineering core courses and five other supporting graduate-level courses, two of which must be biomedical engineering courses, that are selected in consultation with the student’s supervisor and/or dissertation committee. Doctoral students are also required to serve as teaching assistants for at least two semesters.

At the end of their third semester in the program, doctoral students must demonstrate that they have completed all five biomedical engineering core courses with a grade of at least B in each and that they have a graduate grade point average of at least 3.50 in order to continue in the program. When these requirements have been met, the student is expected to form a dissertation committee composed of the supervisor and four other faculty members; at least one faculty member outside the biomedical engineering Graduate Studies Committee must participate on the dissertation committee. The student must present a written and oral dissertation proposal to the dissertation committee within two years of enrollment in the program. The written proposal must be formatted according to the guidelines of either the National Science Foundation or the National Institutes of Health, and must be presented at least two weeks prior to the oral proposal date. After the oral examination, the dissertation committee determines if the student should complete additional coursework. When the proposal is approved, the student applies for doctoral candidacy with the Office of Graduate Studies. The final oral defense of the completed dissertation is presented to the dissertation committee for approval and must be submitted to the Office of Graduate Studies by the last class day of the semester in which the student intends to graduate.

DUAL DEGREE PROGRAM

Doctor of Philosophy/Doctor of Medicine

The graduate program in biomedical engineering participates in a dual degree program with the University of Texas Medical Branch at Galveston (UTMB). Admission is restricted to United States citizens and permanent residents. Applicants must apply separately to and be admitted to both the PhD program in biomedical engineering at the University of Texas at Austin and the medical school at UTMB. Students accepted into the dual degree program spend their first two years of study in the medical school at UTMB, followed by three to four years of doctoral work at UT Austin. Students then return to UTMB to complete the MD degree. The degrees are conferred separately by each institution. Additional information may be found at http://www.bme.utexas.edu/.

FOR MORE INFORMATION

Campus address: Engineering-Science Building (ENS) 602, phone (512) 475-8500, fax (512) 471-0616; campus mail code: C0800
Mailing address: The University of Texas at Austin, Graduate Program, Department of Biomedical Engineering, 1 University Station C0800, Austin TX 78712
E-mail: gradbme@engr.utexas.edu
URL: http://www.bme.utexas.edu/
GRADUATE COURSES
The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Biomedical Engineering: BME

180J, 380J. Fundamentals of Biomedical Engineering. One or three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing. Only topic 3 is offered under the number 180J.

Topic 1: Mathematical Modeling in Biomedical Engineering. Conservation of mass, momentum, energy, and charge; first and second laws of thermodynamics; first- and second-order differential equations; nonlinear differential equations; partial differential equations as applied to biomedical engineering problems. Normally offered in the fall semester only.

Topic 2: Quantitative Systems Physiology and Pathophysiology. Modeling of physiological systems from the molecular and cellular levels to the systems level; focus on the neuromuscular and cardiovascular systems. Normally offered in the fall semester only. Additional prerequisite: An undergraduate physiology course or the equivalent, and consent of instructor.

Topic 3: Principles of Biomeasurement. Principles of signal measurement in the biomedical field; survey of transducers used for chemical, mechanical, electrical, and thermal biomedical measurements; analysis of how signals are converted into digital form; analysis of noise; aliasing; data storage. Normally offered in the fall semester only.

Topic 4: Fields, Forces, and Flows in Physiological Systems. Introduction to mathematical models that integrate different energy domains and length scales, with an emphasis on the coupling between them. Normally offered in the spring semester only. Additional prerequisite: Biomedical Engineering 380J (Topic 1) and 380J (Topic 2).

Topic 5: Biostatistics, Study Design, and Research Methodology. Principles for hypothesis testing; confidence limits; regression analysis; correlation; analysis of variance; experimental design and factorial analysis; discriminate analysis; applications of statistics. Normally offered in the spring semester only. Additional prerequisite: An undergraduate probability theory course or the equivalent, and consent of instructor.

381J. Topics in Cell and Molecular Imaging. Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in engineering and consent of instructor. Additional prerequisites may vary with the topic and are given in the Course Schedule.


Topic 2: Laser-Tissue Interaction: Optical. Same as Electrical Engineering 385J (Topic 16: Laser-Tissue Interaction: Optical). The optical behavior of random media such as tissue in interaction with laser irradiation. Approximate transport equation methods to predict the absorption and scattering parameters of laser light inside tissue. Port-wine stain treatment; cancer treatment by photothermotherapy; and cardiovascular applications.

Topic 3: Biomedical Imaging: Signals and Systems. Same as Electrical Engineering 385J (Topic 18: Biomedical Imaging: Signals and Systems). Physical principles and signal processing techniques used in thermographic, ultrasonic, and radiographic imaging, including image reconstruction from projections such as CT scanning, MRI, and millimeter wave determination of temperature profiles. Additional prerequisite: Electrical Engineering 371R.

Topic 5: Therapeutic Heating. Same as Electrical Engineering 385J (Topic 26: Therapeutic Heating). Engineering aspects of electromagnetic fields that have therapeutic applications: diathermy (short wave, microwave, and ultrasound), electrosurgery (thermal damage processes), stimulation of excitable tissue, and electrical safety.

Topic 6: Noninvasive Optical Tomography. Same as Electrical Engineering 385J (Topic 28: Noninvasive Optical Tomography). Basic principles of optical tomographic imaging of biological materials for diagnostic or therapeutic applications. Optical-based tomographic imaging techniques including photothermal, photoacoustic, and coherent methodologies.

382J. Topics in Molecular-Based Sensors and Devices. Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in engineering and consent of instructor.


Topic 2: Introduction to Biochemical Engineering. Microorganisms in chemical and biochemical synthesis; genetic manipulation of cells by classical and recombinant DNA techniques; enzyme technology; design of bioreactors and microbial fermentations; and separations of biological products. Normally offered in the fall semester only.

Topic 3: Molecular Sensors and Nanodevices for Biomedical Engineering Applications. Introduction to a variety of methods used to detect biological molecules with optical and electrical transduction mechanisms. Covers the classical approaches to biosensors for the detection of specific molecules in biological systems.

Topic 4: Advanced Engineering Biomaterials. Overview of biomaterials, including prosthetics, ceramics, metal implants, and polymers, with specific emphasis on properties and applications. The immunology of material-tissue interactions and the issues of biocompatibility.

Topic 5: Structured Surfaces, Fabrication, Characterization, and Application. Introduction to fabrication and characterization techniques used to create and analyze microstructured and nanostructured surfaces for biomedical and biotechnology applications. Focuses on the use of self-assembly processes for the fabrication of biological functionality in surface structures.

384J. Topics in Instrumentation. Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in engineering and consent of instructor. Additional prerequisites may vary with the topic and are given in the Course Schedule.
Topic 1: Biomedical Instrumentation I. Same as Electrical Engineering 385J (Topic 31: Biomedical Instrumentation I). Application of electrical engineering techniques to analysis and instrumentation in biological sciences: pressure, flow, temperature measurement; bioelectrical signals; pacemakers; ultrasonics; electrical safety; electrotherapeutics.


Topic 3: Biosignal Analysis. Same as Electrical Engineering 385J (Topic 15: Biosignal Analysis). Theory and classification of biological signals such as EEG, EKG, and EMG. Data acquisition and analysis procedures for biological signals, including computer applications.

Topic 4: Bioelectric Phenomena. Same as Electrical Engineering 385J (Topic 3: Bioelectric Phenomena). Examines the physiological bases of bioelectricity and the techniques required to record bioelectric phenomena both intracellularly and extracellularly; the representation of bioelectric activity by equivalent dipoles and the volume conductor fields produced.

Topic 5: Projects in Biomedical Engineering. Same as Electrical Engineering 385J (Topic 32: Projects in Biomedical Engineering). An in-depth examination of selected topics, such as optical and thermal properties of laser interaction with tissue; measurement of perfusion in the microvascular system; diagnostic imaging; interaction of living systems with electromagnetic fields; robotic surgical tools; ophthalmic instrumentation; noninvasive cardiovascular measurements. Three lecture hours and six laboratory hours a week for one semester. Additional prerequisite: Biomedical Engineering 384J (Topic 1).


385J. Topics in Biomedical Engineering. Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in engineering and consent of instructor.

Topic 12: Biomedical Heat Transfer. Heat transfer in biological tissue; determination of thermodynamic and transport properties of tissue; thermal effects of blood perfusion; cryobiology; numerical modeling methods; clinical applications. Normally offered in the fall semester only. Additional prerequisite: Mechanical Engineering 339, Chemical Engineering 353, or the equivalent.


386. Seminars in Biomedical Engineering. The equivalent of three class hours a week for one semester. Any number of topics may be taken for credit, and, with consent of instructor, any topic may be repeated for credit. Some topics are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing in biomedical engineering, or graduate standing and consent of instructor. Topic 1: Nanobiotechnology Research. Topic 2: Biomedical Imaging and Informatics Research. Topic 3: Stem Cell Basics.

195S. Graduate Seminar in Biomedical Engineering. The equivalent of one lecture hour a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing.

396. Research Internship. Students participate in research in an industry, clinic, or academic laboratory setting selected with the approval of the faculty adviser. At least twenty hours of fieldwork a week for one semester. May be counted only once toward either the master’s or the doctoral degree. Offered on the credit/no credit basis only. Prerequisite: Graduate standing.

197, 297, 397, 597, 697. Research Problems. Problems selected by the student with approval of the faculty adviser. For each semester hour of credit earned, three laboratory hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in biomedical engineering.

197S. Graduate Seminar in Biomedical Engineering. The equivalent of one lecture hour a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing.
**CHEMICAL ENGINEERING**

Master of Science in Engineering

Doctor of Philosophy

**OBJECTIVES**

The graduate program in chemical engineering is designed to provide students with the opportunity to develop advanced competence in transport phenomena, thermodynamics, and reaction engineering for the application of chemistry to the advancement of society. Through formal coursework and mentoring, each student is expected to acquire the tools to develop and transmit new knowledge and processes in a focused area of chemical engineering. The focused research areas include bioengineering, environmental engineering, interfacial phenomena, electronic materials, nanomaterials, polymers, process modeling and control, separations, and surface science.

**Program Educational Objectives**

Upon graduation, those who earn advanced chemical engineering degrees are expected

1. To apply knowledge of mathematics, chemistry, physics, computing, safety, and engineering to solve problems of analysis, design, optimization, and control of components, systems, and processes important in chemical engineering practice.

2. To demonstrate the skills required to lead and/or participate effectively on interdisciplinary teams.

3. To recognize the importance of lifelong education in meeting professional and personal goals.

4. To demonstrate proficiency in writing and oral presentation skills, and recognition of the importance of effective communication and its many different forms.

5. To articulate and practice professional, ethical, and societal responsibilities.

**FACILITIES FOR GRADUATE WORK**

The Department of Chemical Engineering contains laboratories, offices, and all facilities necessary for research and instruction. Some research in the separations area is conducted at the J.J. Pickle Research Campus. Excellent library facilities include the Mallet Chemistry Library, the McKinney Engineering Library, and the Kuehne Physics Mathematics Astronomy Library.

The extensive computer facilities available for graduate student research include more than one hundred microcomputers and workstations in the Chemical and Petroleum Engineering Building as well as the systems of Information Technology Services.
Computer graphics capabilities are available. State-of-the-art analytical instrumentation, located within the department and in other departments, is available for use by chemical engineering graduate students.

The department enjoys close relations with the chemical, petroleum, and materials processing industries. A number of cooperative research projects are carried out with the support of private companies. A substantial portion of the graduate student research is supported through federal grants and contracts.

**AREAS OF STUDY**

*Biochemical and biomedical engineering.* Protein engineering, fermentations, genetic engineering technology, mammalian tissue culture, biomaterials, biosensors, cell and tissue engineering, virus removal from blood, hemodialysis.

*Chemical engineering fundamentals.* Kinetics and catalysts, thermodynamics, transport phenomena.

*Energy resources.* Secondary and tertiary oil recovery, flow processes in porous media, acid gas treating.

*Environmental engineering.* Air pollution modeling and control, atmospheric chemistry.

*Materials and processes for microelectronics.* Plasma processing, etching, chemical vapor deposition, selective laser sintering, supermolecular self-assembly and organization, colloidal systems, mesoscopic materials.

*Meso- and molecular-scale modeling and simulation.* Statistical and micromechanical modeling and Monte Carlo, Brownian, and molecular dynamics simulations of reactions, complex fluids, polymers, and biological molecules.

*Polymer engineering.* Synthesis; processing; reaction injection molding; properties, with specific emphasis on blends, transport, and thermodynamic behavior; membranes; microelectronics; thin film; composition.

*Process engineering.* Chemical reaction engineering and catalyst development; optimization; process simulation, dynamics, and control; fault detection, rheology and simulation of suspensions.

*Separations.* Membrane separations, distillation, absorption, supercritical extraction.

*Other areas.* Aerosol physics and chemistry, surface phenomena, crystal chemistry and physical properties, electrochemistry, electronic and optical materials, electrical impedance tomography.

**GRADUATE STUDIES COMMITTEE**

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

David T. Allen 
Roger T. Bonnecaze 
Thomas F. Edgar 
John G. Ekerdt 
Benny D. Freeman 
Venkat Ganesan 
George Georgiou 
Peter F. Green 
Gyeong Hwang 
Keith P. Johnston 
Miguel Jose-Yacaman 
Brian A. Korgel 
Douglas R. Lloyd 
Yueh Lin Loo 
Charles B. Mullins 
Donald R. Paul 
Nicholas Peppas 
Si Zhao J. Qin 
Gary T. Rochelle 
Peter J. Rossky
ADMISSION REQUIREMENTS

Students with a Bachelor of Science in Chemical Engineering degree from a school accredited by the AIChE-ECPD usually fulfill the department's requirements for admission. Other students, including those with a bachelor's degree in chemistry, physics, engineering, engineering science, or geology (geochemistry), must have a background that the Graduate Studies Committee considers satisfactory for the study of advanced chemical engineering. Six nonelective undergraduate chemical engineering courses are required as part of the course program in this case.

DEGREE REQUIREMENTS

Master of Science in Engineering

The student's program of coursework is selected with the advice of the graduate advisor and must be approved by the Graduate Studies Committee.

Master of Science in Engineering with thesis. For students electing this option, thirty semester hours of coursework, including six hours in the thesis course, are required. From twelve to eighteen hours of graduate coursework (the major) must be in chemical engineering, and from six to twelve hours (the minor) must be outside chemical engineering. Only graduate courses in chemical engineering count toward the degree, but up to six hours of upper-division coursework outside chemical engineering may be included in the minor.

A thesis problem is selected after the student has consulted members of the Graduate Studies Committee. The thesis research problem should be selected during the first semester and initial research begun at that time. At least one full year is required to complete the master's degree program.

Master of Science in Engineering with report. This option requires thirty-three hours of coursework, including three hours in the report course. At least eighteen hours must be in chemical engineering; six hours must be outside chemical engineering. Up to six hours of upper-division coursework may be counted, including no more than three hours in chemical engineering.

Master of Science in Engineering without thesis or report. For students electing this option, thirty-six semester hours of coursework are required. From eighteen to thirty semester hours must be in chemical engineering, and from six to eighteen hours must be outside chemical engineering in a program approved by the student's supervising committee. Up to nine hours of upper-division coursework may be included, with from three to six of these hours in the minor area. No research is required, but the level of academic performance is the same as that required for the master's degree with thesis. Enrollment in this option must be approved by the Graduate Studies Committee in chemical engineering.

Doctor of Philosophy

A student may choose to pursue the doctoral degree without first obtaining a master's degree. Before admission to candidacy, the student must have a master's degree in chemical engineering or an equivalent amount of graduate credit and a passing grade on a written qualifying examination that covers material normally presented in an accredited undergraduate chemical engineering curriculum. The doctoral candidate must also pass preliminary and final oral examinations covering the research program.
For a student with a Bachelor of Science degree, at least three years are required to complete the Doctor of Philosophy degree program.

FOR MORE INFORMATION

**Campus address:** Chemical and Petroleum Engineering Building (CPE) 4.468, phone (512) 471-6991, fax (512) 475-7824; campus mail code: C0400

**Mailing address:** The University of Texas at Austin, Graduate Program, Department of Chemical Engineering, 1 University Station C0400, Austin TX 78712

**E-mail:** T@che.utexas.edu

**URL:** http://www.che.utexas.edu/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

**Chemical Engineering: CHE**

**180C. Laboratory Safety.** Safe laboratory practice. Training in use of fire extinguishers and first aid. Case studies of laboratory accidents. One lecture hour a week for one semester. **Prerequisite:** Graduate standing in chemical engineering.

**381N. Fluid Flow and Heat Transfer.** Advanced treatment of fluid flow and heat transfer problems in chemical engineering. **Prerequisite:** Graduate standing.

**381P. Advanced Analysis for Chemical Engineers.** Applications of mathematical methods to chemical engineering problems, with emphasis on differential equations, linear analysis and matrices, and real analysis and complex variables. **Prerequisite:** Graduate standing.

**384, 684. Introduction to Research.** The equivalent of three or six class hours a week for one semester. Any number of topics may be taken for credit, and, with consent of instructor, any topic may be repeated for credit. **Prerequisite:** Graduate standing in chemical engineering, or graduate standing and consent of instructor.

Topic 2: College Teaching in Engineering and Science.
Topic 3: Aerosol Science and Technology.
Topic 9: Kinetics and Catalysis.
Topic 10: Biochemical Engineering.
Topic 11: Transport Phenomena.
Topic 12: Advanced Materials.

Topic 17: Biomolecular Recognition.
Topic 18: Chemical Technology.
Topic 19: Design for Environment.
Topic 21: Kinetic Processes in Materials. Examination of the connection between structure and various kinetic processes that occur in different classes of materials, metals, ionic crystals, inorganic glasses, and polymers. Discusses the kinetic theory of gases and Brownian dynamics.
Topic 23: Biomedical Polymer Seminar.

**384K. Applied Kinetics and Chemical Reaction Analysis.** Application of chemical reaction kinetics to the prediction and determination of reaction rates and reaction selectivity. **Prerequisite:** Graduate standing.

**185, 285, 385, 685. Research.** For each semester hour of credit earned, the equivalent of one class hour a week for one semester. May be repeated for credit. **Prerequisite:** Graduate standing in chemical engineering, or graduate standing and consent of instructor.

**385M. Surface Phenomena.** Liquid/fluid interfaces including equilibrium and non-equilibrium phenomena. Topics covered include capillarity, thermodynamics, surface rheology, and streaming potentials. **Prerequisite:** Graduate standing.
386K. **Theory of X-Ray Diffraction.** Application of basic diffraction theory to polycrystalline and single crystal materials. *Prerequisite:* Graduate standing and consent of instructor.

386L. **Laboratory Experiments in X-Ray Diffraction.** Application of x-ray diffraction techniques to the examination of polycrystalline and single crystal materials. Two or three lecture hours and three or four laboratory hours a week for one semester. *Prerequisite:* Graduate standing and consent of instructor.

387K. **Advanced Thermodynamics.** Applications of thermodynamics to chemical engineering processes. *Prerequisite:* Graduate standing in chemical engineering, or graduate standing and consent of instructor.

387M. **Mass Transfer.** Advanced treatment of diffusional mass transfer operations in chemical engineering. *Prerequisite:* Graduate standing.

388K. **Separations Processes.** Advanced treatment of modern chemical engineering separations processes. *Prerequisite:* Graduate standing.

391. **Elements of Modern Control Theory.** Introduction to fundamentals of dynamic optimization and system theory; applications to engineering processes. *Prerequisite:* Graduate standing.

392. **Polymer Science.** Details of polymerization mechanisms; structure-property relationships, fundamentals of processing, and characterization of high polymers. *Prerequisite:* Graduate standing.

395C. **Chemical Processes for Microelectronics.** Introduction to the chemical processes and the manufacturing operations used in microelectronics device fabrication. *Prerequisite:* Graduate standing.

395E. **Polymer Science and Engineering Laboratory.** Training in the preparation and instrumental characterization of polymers, blends, and compounds. Twelve laboratory hours a week for one semester. *Prerequisite:* Graduate standing.

395G. **Chemical Engineering Economics and Business Analysis.** Study of the economic decisions faced by chemical engineers. Discounted cash flow techniques. Personal finance, managerial economics, and other special topics. Only one of the following may be counted: Chemical Engineering 342, 379 (Topic: Chemical Engineering Economics and Business Analysis), 384 (Topic 20: Chemical Engineering Economics and Business Analysis), 395G. *Prerequisite:* Graduate standing in chemical engineering, or graduate standing and consent of instructor.

395J. **Product and Process Development.** Product and process innovation in the process industries; screening criteria; needs-requirements research; evaluation. Only one of the following may be counted: Chemical Engineering 340, 379 (Topic: Product and Process Development), 384 (Topic: Product and Process Development), 395J. *Prerequisite:* Graduate standing in chemical engineering, or graduate standing and consent of instructor.

395K. **Design for Environment.** Overview of environmental assessment tools for chemical processes and products, including life cycle and risk assessments. Overview of design tools for improving environmental performance of chemical processes, including unit operations and flow sheet analysis methods. Only one of the following may be counted: Chemical Engineering 341, 379 (Topic 1: Design for Environment), 384 (Topic 19: Design for Environment), 395K. *Prerequisite:* Graduate standing in chemical engineering, or graduate standing and consent of instructor.

397M. **Graduate Research Internship.** Research associated with enrollment in the Graduate Research Internship Program (GRIP). The equivalent of three lecture hours a week for one semester. *Prerequisite:* Graduate standing in chemical engineering and consent of the graduate adviser; for 698A, Chemical Engineering 698A.

698. **Thesis.** The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. *Prerequisite:* For 698A, graduate standing in chemical engineering and consent of the graduate adviser; for 698B, Chemical Engineering 698A.

398R. **Master's Report.** Preparation of a report to fulfill the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing in chemical engineering and consent of the graduate adviser.

398T. **Supervised Teaching in Chemical Engineering.** Teaching under the close supervision of the instructor for one to four semesters; weekly group meetings; individual consultation; reports. *Prerequisite:* Graduate standing and appointment as a teaching assistant.

399R, 699R, 999R. **Dissertation.** Offered on the credit/no credit basis only. *Prerequisite:* Admission to candidacy for the doctoral degree.

399W, 699W, 999W. **Dissertation.** Offered on the credit/no credit basis only. *Prerequisite:* Chemical Engineering 399R, 699R, or 999R.
CIVIL ENGINEERING

Master of Science in Engineering
Doctor of Philosophy

OBJECTIVES

The objectives of the graduate program in civil engineering are excellence in engineering education, research, and professional service. The program seeks to educate students to assume leadership positions in engineering practice, research, and education. The program also seeks to advance the state of the art and of the practice of civil engineering at both fundamental and applied levels through extensive research programs, and to disseminate this research through professional and scholarly activities. The program encompasses such disciplines of civil engineering as architectural engineering (including construction engineering and project management, construction materials, and structural engineering), environmental and water resources engineering, geotechnical engineering, ocean engineering, and transportation engineering, as well as interdisciplinary areas of study.

FACILITIES FOR GRADUATE WORK

The Department of Civil, Architectural, and Environmental Engineering occupies eight floors in Ernest Cockrell Jr. Hall, which also houses the McKinney Engineering Library and computer facilities for use by civil engineering students. In addition, the facilities of Information Technology Services are available to students working on problems in any of the areas listed below. Laboratories are equipped and staffed to provide for both instruction and research.

Architectural engineering. The program and facilities in architectural engineering are described on pages 172–173.

Construction engineering and project management. The construction laboratories include a well-equipped computer cluster on the main campus and a high-bay laboratory for construction automation research at the J. J. Pickle Research Campus. Software includes three-dimensional computer-assisted drafting and modeling packages, statistical packages, construction project management software, office suites, discrete modeling and simulation packages, advanced communication hardware, and software developed through research. The automation laboratory at the J. J. Pickle Research Campus includes a large-scale hydraulic robot test bed, a large rectilinear manipulator, three-dimensional laser scanning facilities, and many computer workstations.

Several specially developed management programs are employed in graduate courses and for research. The University’s Office of Planning Services conducts field trips to University buildings under construction and assists with graduate student research studies conducted with these sites.

Environmental and water resources engineering. Program. This program is designed to educate engineers who will solve environmental and water resources problems by applying fundamental principles from the natural sciences, mathematics, mechanics, economics, and other underlying disciplines. To achieve this objective, the program offers a breadth of possible research and study areas. The faculty is one of the largest and most diverse in the nation, with expertise ranging from environmental fluid mechanics to water resources planning and from pollutant transport to treatment processes. The major areas of emphasis are treatment process engineering, air resources engineering, environmental remediation, water quality, water resources engineering, and ocean engineering. Because the program
requires no specific courses, each student’s education can be designed to meet his or her goals. The faculty offers a wide variety of courses, and students may choose courses in many other fields. A list of these courses is available from the graduate adviser. Once a student chooses a particular study area, he or she works closely with the faculty member or members conducting research in that area. Each student’s program of study includes a balanced combination of coursework, seminars, and research. Well-equipped research laboratories, state-of-the-art instrumentation, and superb computation facilities support the graduate program, as do cooperation and coordination with research faculties and laboratories in physical, chemical, biological, and social sciences and other engineering disciplines.

**Facilities.** Environmental and water resources engineering laboratories are well-equipped for both basic and applied state-of-the-art research in virtually all environmental and water resources areas. On campus, the program has twenty thousand square feet of space on three floors of Ernest Cockrell Jr. Hall for physical, chemical, and biological analyses and for research on water, wastewater, and hazardous waste treatment processes. Facilities include a clean room for metal or particulate analysis, four laboratories with temperature and humidity control, and numerous hoods for the safe handling of hazardous chemicals. Special equipment may be built in the civil engineering machine shop. Additional analytical equipment is available in other departments on the main campus.

The Computational Hydrodynamics Laboratory in Ernest Cockrell Jr. Hall has a range of personal computers and workstations. These provide the necessary platform for solving nonlinear flow problems about complex geometries (including cavities or free surfaces) and for performing advanced propeller blade design using nonlinear optimization techniques.

The Air Resources Engineering Program maintains five thousand square feet of laboratory space in five laboratories at the Center for Energy and Environmental Resources. These laboratories are equipped for laboratory-scale analysis of biological air filtration systems and other air pollution control devices. The laboratories also include facilities for studying outdoor sources of volatile organic compounds and indoor sources and sinks of volatile chemicals. A wide range of instrumentation is available for field monitoring in both indoor and outdoor environments.

The Center for Research in Water Resources is located at the J. J. Pickle Research Campus. Computational research focuses on applications of geographic information systems using Arc/Info and ArcView, simulation of pollutants in soil and groundwater, and assembly and synthesis of historical water quantity and quality information. There is a Windows NT network supporting eighteen computers, a disk server, regular and large-size printers and plotters, a CD-ROM writing and replicating facility, and two Sun Unix workstations. The experimental research uses scaled physical models, models of innovative wastewater treatment facilities, and field monitoring of water quality. The twenty-four-thousand-square-foot laboratory includes general- and special-purpose fixed and tilting channels and instrumentation and data acquisition systems for laboratory and field studies.

**Geotechnical engineering.** This program is designed to offer students a broad range of activities with a solid basis in the core areas of geotechnical engineering. Graduates have the opportunity to obtain a strong background in the basics that serves as a foundation for a successful engineering career. Moreover, the program includes students in research activities that are at the forefront of developments in the field.
The geotechnical engineering laboratories are located in Ernest Cockrell Jr. Hall. The laboratories provide workstations for conducting all standard geotechnical tests, including index tests, flexible wall permeameter tests, one-dimensional and triaxial consolidation, direct shear tests, and triaxial shear tests.

Specialized equipment used in teaching and research includes a simple shear apparatus, cyclic simple shear, and a servohydraulic cyclic triaxial device. The soil dynamics laboratory has extensive facilities for combined resonant column and torsional shear testing. Large-scale multimode equipment is available for dynamic laboratory testing with specimens up to 0.3 meters in diameter. A large-scale calibration chamber is also available for testing 2.1-m cubical samples under three-dimensional states of stress for dynamic, cyclic, and static conditions. A second calibration chamber is available for testing in situ tools and model foundations. For model studies of offshore foundation systems, two other large test tanks are available. For field testing, the program has a broad array of equipment for measuring in situ stress wave velocities using borehole and surface wave methods, as well as vane, cone, and dilatometer devices. A vibroseis truck, which is capable of applying static, cyclic, and dynamic loads up to fifty thousand pounds, is available for field measurements at geotechnical, foundation, and pavement sites. Three hydraulic shakers, field instrumentation, and teleparticipation equipment are available to the department as a participant in the Network for Earthquake Engineering Simulation (NEES).

The geotechnical engineering group has extensive computer facilities, including a number of data acquisition systems, personal computers, and workstations. A separate computer laboratory is devoted to research in the area of geotechnical reliability.

**Ocean engineering.** Students interested in ocean engineering and in offshore structures may develop an appropriate course of study in consultation with the faculty. These programs are typically interdisciplinary, including work in hydrodynamics, structural analysis and dynamics, steel design, soils and foundations, and numerical methods. Students may also participate in the work of the Offshore Technology Research Center.

**Structural engineering and construction materials.** The graduate program in structural engineering addresses the analysis and design of reinforced and prestressed concrete, timber, steel, masonry, and composite structural systems. Extensive experimental research facilities are available for the observation and study of the behavior of structures under a variety of loadings. Analytical research is conducted in areas such as computational mechanics, numerical techniques, material modeling, nonlinear dynamic response, wave propogation, soil-structure interaction, earthquake engineering, structural response in the offshore environment, fluid-structure interaction, and structural reliability. Several research projects integrate analytical work with experimental studies.

Most of the experimental studies in structural engineering are conducted in the Phil M. Ferguson Structural Engineering Laboratory, located at the J.J. Pickle Research Campus. Ferguson Laboratory is one of the largest, best-equipped structural research facilities in the world. Multistory structures and full-size multigirder bridge structures have been tested. The laboratory contains three test slabs, 40’ × 80’, 40’ × 60’, and 30’ × 60’. One of the test floors surrounds a 600-kip universal test machine that permits testing full-size plate girders. In addition, a unique three-dimensional test facility consisting of a 44’ × 32’ test floor, combined with two perpendicular vertical walls, each nineteen feet high, permits three-dimensional loading. Fatigue testing capabilities permit study of full-size components under random amplitude and frequency to simulate actual service conditions. A number of closed-loop servocontrolled loading systems are available. Cables, such as those used in cable-stayed bridges, can be tested.
in fatigue up to loads of three million pounds in the cable testing facility. A materials-testing facility is also located in Ferguson Laboratory. Data acquisition systems are available that are suitable for static, dynamic, and fatigue loading programs. The systems are controlled by the laboratory's own computer systems. Direct access to the main University computer facility is also available.

The Construction Materials Research Group Laboratory, which includes the Concrete Durability Center and the International Center for Aggregates Research, is located at the J. J. Pickle Research Campus. Excellent facilities are available for proportioning and batching concrete and performing strength and durability tests. A closed-loop servocontrolled loading system, fatigue testing, and other loading facilities are available. The laboratory has the capability to perform a wide range of materials tests, including freezing and thawing, alkali-silica reaction, shrinkage, creep, aggregate characterization, rapid chloride, and corrosion evaluation. Microscopes and x-ray diffraction equipment are available. All equipment required for producing and testing polymer concrete materials is available.

Excellent facilities support computer-based instruction and research in computational mechanics. These include the Civil Engineering Learning Resource Center (LRC), a general-use facility that provides undergraduates and graduate students with one hundred computers, including Alpha-based Unix workstations and single-processor and symmetric multiprocessor Intel-based workstations. The graduate computational laboratory in Ernest Cockrell Jr. Hall is equipped with high-end single-processor and multiprocessor workstations; a similarly equipped graduate computational laboratory is housed at the Ferguson Laboratory. The Texas Advanced Computing Center (TACC), a high-performance computing research center located at the Pickle Campus, houses several vector processing and massively parallel systems, including an IBM Regatta system with an aggregate of 128 gigabytes of shared memory and theoretical peak performance of 1/3 TFlops, and a 272-node CRAY T3E system. TACC also operates an SGI-based immersive visualization system and several high-end visualization stations. The network infrastructure includes wired and wireless segments. The wired segments available to civil engineering facilities support speeds up to one gigabyte per second. Students have access to the wireless network segment that covers the University campus.

Transportation engineering. The University's proximity to the headquarters of governmental transportation agencies provides ready access to the facilities and records of these organizations by graduate students, in planning, behavioral modeling and demand prediction, geometric and structural design, and operation of airports, streets, highways, and transit and nonmotorized transportation systems. The Center for Transportation Research administers an extensive cooperative research program with the Texas Department of Transportation and the United States Department of Transportation, as well as a spectrum of sponsored projects with other agencies.

Equipment for specialized and routine testing of materials used for constructing and maintaining transportation facilities is available. The bituminous materials laboratory includes state-of-the-art asphalt binder and asphalt concrete testing equipment, an environmental control chamber, and mix preparation and aggregate handling facilities. Facilities are provided for studying traffic operations, including traffic volume counters, speed meters, motor-driven movie cameras, video cameras and recorders, projectors, portable delay recorders, and other special measuring and recording equipment.
The University's high-performance computers allow research on the analysis and
design of large-scale transportation networks and urban systems. State-of-the-art
graphics workstations and microcomputers are available for teaching and research in
computer-aided engineering and design. Hardware and software are also available to
support research in simulation and artificial intelligence approaches to transportation
and infrastructure system problems.

**Libraries.** In addition to the Perry-Castañeda Library and libraries in physics and
mathematics, geological sciences, life sciences, and chemistry, a complete library of
books, periodicals, and society proceedings in civil engineering is housed in the McKinney Engineering Library.

**AREAS OF STUDY**

Civil engineering majors may specialize in architectural engineering, construction
engineering and project management, construction materials, environmental and
water resources engineering, geotechnical engineering, ocean engineering, structural
engineering, or transportation engineering. In addition, the Department of Civil,
Architectural, and Environmental Engineering offers the Master of Science in Engi-
neering with a major in environmental and water resources engineering, which is
accredited by the Engineering Accreditation Commission of the Accreditation Board
for Engineering and Technology as an advanced program. This program is described
on pages 189–190. The requirements for both majors (civil engineering and environ-
mental and water resources engineering) are given on page 194.

**GRADUATE STUDIES COMMITTEE**

The following faculty members served on the Graduate Studies Committee in the

David T. Allen                      Howard M. Liljestrand
Neal E. Armstrong                  Randy B. Machemehl
Oguzhan Bayrak                     David R. Maidment
Chandra R. Bhat                    Joseph Francis Malina Jr.
John Edward Breen                  Lance Manuel
Carlos H. Caldas                   Daene C. McKinney
Randall J. Charbeneau              William J. O’Brien
Richard L. Corsi                   James T. O’Connor
Michael D. Engelhardt              Gary A. Pope
Kevin J. Folliard                  Jorge A. Prozzi
David W. Fowler                    Ellen M. Rathje
Karl H. Frank                      Danny D. Reible
G. Edward Gibson Jr.               Jeffrey Siegel
Robert B. Gilbert                  Gerald E. Speitl Jr.
Carl T. M. Haas                    Kenneth H. Stokoe II
Ben R. Hodges                      John L. Tassoulas
James O. Jirsa                      S. Travis Waller
Maria G. Juenger                   C. Michael Walton
Loukas F. Kallivokas               Dan L. Wheat
Lynn E. Katz                       Eric B. Williamson
Spyros Athanasios Kinnas           Sharon L. Wood
Kerry A. Kinney                    Stephen G. Wright
Mary Jo Kirisits                   Joseph A. Yura
Richard E. Klingner                Zhanmin Zhang
Kara M. Kockelman                  Jorge G. Zornberg
Desmond F. Lawler
ADMISSION REQUIREMENTS

A Bachelor of Science degree from a program in engineering accredited by the Accreditation Board for Engineering and Technology is the general prerequisite for admission to a graduate program in civil engineering. An applicant whose training does not meet this prerequisite may be accepted but will be required to pass a sequence of courses stipulated by the Graduate Studies Committee that will make up the deficiencies in undergraduate preparation. A list of the required courses is available from the graduate adviser.

DEGREE REQUIREMENTS

Full-time students, and both teaching and research assistants, are required to register for nine semester hours of coursework during each long-session semester. These nine hours may include special problems, seminar, thesis, and dissertation courses.

Master of Science in Engineering

Students who follow the thirty-semester-hour plan with thesis must complete a major in civil engineering consisting of eighteen to twenty-four semester hours, including the thesis course, and a minor of six to twelve semester hours outside the area of concentration. Included in the major and minor must be at least eighteen semester hours in engineering. The courses must be logically related and the individual program must be approved by the graduate adviser.

A thirty-three-hour and a thirty-six-hour degree plan are also available. The thirty-three-hour plan includes a report prepared in Civil Engineering 398R according to procedures set by the Graduate School; the thirty-six-hour plan includes a report prepared in Civil Engineering 398D according to procedures set by the Graduate Studies Committee. Both plans provide for more coursework in both the major and the minor than does the thirty-hour plan.

Majors for the master's degree may be chosen in any area or combination of areas listed under “Areas of Study” on page 193.

Doctor of Philosophy

To be admitted to candidacy for the doctoral degree, the student must pass a preliminary (qualifying) examination administered by a committee, appointed by the graduate adviser, of at least three members of the civil engineering faculty, two of whom may be in the major area. This examination must be taken before the student registers for the second semester beyond the Master of Science in Engineering degree. The student must also submit a Program of Work that is approved by the chair of the civil engineering Graduate Studies Committee and the graduate dean. All students must demonstrate proficiency in English.

When the student has been admitted to candidacy, a dissertation committee is appointed by the graduate dean. When the student has completed most of his or her coursework, the dissertation committee administers a comprehensive examination in the major.

The defense of the dissertation is the final examination of the Doctor of Philosophy degree program. This examination is scheduled after the members of the dissertation committee have received a final draft of the dissertation that has been approved by the supervising professor.
DUAL DEGREE PROGRAM

Master of Science in Engineering/Master of Public Affairs

The Department of Civil, Architectural, and Environmental Engineering and the Lyndon B. Johnson School of Public Affairs offer a dual program leading to the degrees of Master of Science in Engineering and Master of Public Affairs. The program is designed to prepare qualified students for careers at any level of government and in public policy-related areas of the engineering profession.

The program is structured so that students can earn the degrees simultaneously. Students must complete the core courses in both programs, including at least thirty-three hours to be counted toward the civil engineering major and at least thirty-six hours to be counted toward the major in public affairs. In general, at least three years are required to complete the dual program.

A student seeking admission to the dual degree program must apply through the Graduate and International Admissions Center. He or she must be accepted by each individual program in order to be admitted to the dual program. Like all other graduate applicants, the student is responsible for submitting any additional information required by the Graduate Studies Committee for each program.

FOR MORE INFORMATION

Campus address: Ernest Cockrell Jr. Hall (ECJ) 4.200, phone (512) 471-4921, fax (512) 471-0592; campus mail code: C1700

Mailing address: The University of Texas at Austin, Graduate Program in Civil Engineering, Department of Civil, Architectural, and Environmental Engineering, 1 University Station C1700, Austin TX 78712

E-mail: grad@mail.ce.utexas.edu

URL: http://www.ce.utexas.edu/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Civil Engineering: C E

380P. Ocean Engineering Principles: Theory and Applications. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and Mathematics 427K or an equivalent course in fluid mechanics, or consent of instructor.

Topic 3: Principles of Hydrodynamics. Motion of a viscous or ideal fluid, waves and wave body interactions, lifting surfaces, cavitating flows, computational hydrodynamics.

Topic 4: Boundary Element Methods. Formulation and numerical implementation of boundary element methods; applications to problems in fluid mechanics, structural analysis, and solid mechanics.

380S. Environmental Fluid Mechanics. Fundamentals of fluid mechanics applied in natural systems; analysis of energy; momentum, diffusion, turbulence, and stratification in lakes, rivers, and estuaries. Prerequisite: Graduate standing, and Civil Engineering 319F or consent of instructor.

380T. Computational Environmental Fluid Mechanics. Fundamentals of computational methods and their application to fluid mechanics problems in civil and environmental engineering. Prerequisite: Graduate standing, Civil Engineering 380S or an equivalent graduate course in fluid mechanics, and knowledge of a programming language.
380W. Water Resources Engineering Research Seminar. Presentations and discussions on various topics in water resources engineering. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

381E. Design of Energy Efficient and Healthy Buildings. Design of buildings for low energy use and optimal indoor air quality. Includes ventilation, energy efficiency, moisture problems, and prevention by design. Prerequisite: Graduate standing in engineering or consent of instructor.

381P. Computer Methods in Structural Analysis. Analysis of discrete member systems; displacement and force methods; energy formulation; principle of virtual work; direct stiffness method; large displacements and stability; static and kinematic condensation; substructure analysis. Prerequisite: Graduate standing and consent of instructor.

381R. The Finite Element Method. Introductory concepts; weighted residual methods; strong and weak forms; boundary conditions; global v. local basis functions; error estimates; smooth and nonsmooth problems; one-dimensional second- and fourth-order problems; two-dimensional potential and plate problems; two-dimensional and three-dimensional elasticity; dynamic and eigenvalue problems; numerical, computational, and meshing issues; applications using commercial software. Prerequisite: Graduate standing, and Civil Engineering 381P or consent of instructor.

381T. Numerical Modeling of Physical Systems. Survey of numerical methods; weighted residuals, finite differences, finite elements, boundary elements; applications to equilibrium, eigenvalue, and propagation problems. Prerequisite: Graduate standing.

382L. Plastic Design in Metals. Principles and methods of plastic analyses and design, and their applications to continuous beams, frames, plates, connections, and multistory buildings. Prerequisite: Graduate standing, Civil Engineering 335, and consent of instructor.

382M. Administration of Municipal Public Works. Organization and operation of public works units in municipal government; techniques of administrative practice; personnel and public relations; budgeting; finance; role of the engineer in administration. Prerequisite: Graduate standing and consent of instructor.

382N. Structural Systems. Application of systems engineering principles to planning, design, and construction of building and bridge structures with emphasis on performance requirements and economic factors. Prerequisite: Graduate standing and consent of instructor.

383C. Experimental Methods in Structural Engineering. Survey of experimental methods used in structural engineering, including loading and measurement techniques and systems used in structural research. Two lecture hours and three laboratory hours a week for one semester. Prerequisite: Graduate standing.

383D. Steel Bridge Design. Design of steel highway bridges, including the analysis and design of composite girder, box girder, and cable-stayed bridges. Prerequisite: Graduate standing, and Civil Engineering 362N or the equivalent.

383L. Advanced Reinforced Concrete Members. Behavior of reinforced concrete members; critical review of specifications; limit states; anchorage and development of reinforcement; shear; torsion. Prerequisite: Graduate standing, Civil Engineering 331, and consent of instructor.

383N. Advanced Reinforced Concrete Structures. Behavior of reinforced concrete structures, with emphasis on ductility and detailing of frames, slabs, and braced (shearwall) structures. Detailing for seismic loads. Prerequisite: Graduate standing, Civil Engineering 383L, and consent of instructor.

383P. Prestressed Concrete. Theory, advantages, and limitations; various systems of prestressing: composite construction; continuous span theory. Prerequisite: Graduate standing, Civil Engineering 331, and consent of instructor.

383R. Repair and Strengthening of Reinforced Concrete Structures. Evaluation of condition, strength, serviceability, and ductility of existing structures; criteria for rehabilitation; retrofit techniques for change in function, loading, and seismic forces. Civil Engineering 383R and 397 (Topic: Repair and Strengthening of Reinforced Concrete Structures) may not both be counted. Prerequisite: Graduate standing and consent of instructor.

383S. Bridge Design. Planning, design, and construction of reinforced concrete and prestressed concrete bridges, including arch, frame, girder, and cable stay systems; aesthetics, economy, and durability. Prerequisite: Graduate standing and consent of instructor.
383T. **Plasticity in Structural Concrete.** Application of plasticity theory to structural concrete columns, girders, frames, and joints. Development and application of transparent detailing methods such as truss models, strut-and-tie models, and both strip and yield line methods for slabs. **Prerequisite:** Graduate standing, Civil Engineering 383L, and consent of instructor.

384P. **Dynamic Response of Structures.** Single and multidegree-of-freedom systems; dynamic load factors, response to harmonic excitation; damping; modal analysis; direct integration of equations of motion; analysis in time and frequency domains; application to earthquake, wind, wave, and traffic loadings. **Prerequisite:** Graduate standing, and Civil Engineering 381P or consent of instructor.

384R. **Earthquake Engineering.** Earthquake characteristics; seismic loads; elastic and inelastic response; analysis and design of buildings for earthquakes. **Prerequisite:** Graduate standing, and Civil Engineering 384P or consent of instructor.

384S. **Structural Reliability.** Review of probability theory and statistical techniques; sources of uncertainty and randomness in civil engineering; developing models for load and resistance random variables; deriving load and resistance factors for a reliability-based design code; definition of limit states; first- and second-order reliability methods; Monte Carlo and Latin Hypercube simulation techniques; importance sampling; reliability of systems, including the role of redundancy and load-sharing; fault-tree and event-tree analysis techniques; introduction to random processes and time-variant reliability; introduction to random fields and the stochastic finite element method. **Prerequisite:** Graduate standing and consent of instructor.

385D. **Water Resources Planning and Management.** Application of engineering economics, micro-economic theory, and operations research to the planning and management of water systems; major topics include flood control, hydroelectric power, water supply, multiobjective planning, and urban water resource management. **Prerequisite:** Graduate standing.

385J. **Hazardous Waste Management.** Legal and technological approaches to control of hazardous wastes, studied through problem evaluation and solution. **Prerequisite:** Graduate standing, and Civil Engineering 342 or consent of instructor.

385K. **Water Quality.** Analysis of water quality in natural systems and of effects of wastewater discharges. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing.

385L. **Water and Wastewater Treatment.** Principles of treatment of domestic and industrial water, wastewater, and sludges. Three lecture hours or two and one-half lecture hours and one laboratory a week for one semester. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing.

385M. **Unit Operations in Water and Wastewater Treatment.** Physical, chemical, and biological unit operations for water treatment and pollution control problems. One lecture hour and six laboratory hours a week for one semester. **Prerequisite:** Graduate standing, and Civil Engineering 385L (Topic 1: Physical and Chemical Treatment or Topic 2: Biological Wastewater Treatment and Sludge Processing) or consent of instructor.
385N. Industrial Wastewater Treatment. Industrial wastewater characteristics; methods of in-plant control; application of various biological, chemical, and physical processes in practical water pollution control systems. Prerequisite: Graduate standing, and credit or registration for Civil Engineering 385L or consent of instructor.

385R. Land Treatment of Wastes. Principles of the use of land in management of municipal and industrial wastewaters, sludges, and solids; includes problem evaluations. Prerequisite: Graduate standing, and Civil Engineering 342 or consent of instructor.

385W. Drinking Water: Treatment and Public Health Issues. Fundamentals and applications of drinking water treatment processes, interactions among treatment processes, source water quality, and public health issues. Prerequisite: Graduate standing, Civil Engineering 385L (Topic 1: Physical and Chemical Treatment), and consent of instructor.

386M. Water Treatment and Wastewater Treatment Plant Design. Design of water and wastewater treatment facilities; pumps and hydraulic considerations; design of wastewater collection systems; design of systems for handling and disposal of residuals. Specific facilities may be selected to meet individual interests. Six hours of lecture and design laboratory a week for one semester, with appropriate field trips to operating facilities. Prerequisite: Graduate standing, and credit or registration for Civil Engineering 385L or consent of instructor.

386P. Engineering Fracture Mechanics. Application of fracture mechanics to fracture-safe design of metal structures; material behavior and analysis of components containing cracks. Prerequisite: Graduate standing and consent of instructor.

386R. Inelastic Behavior of Materials. Introduction to theories of inelastic behavior; theory of plasticity; applications to materials such as steel, concrete, and soils; implementation of constitutive equations in structural analysis. Prerequisite: Graduate standing and consent of instructor.

387C. Geoenvironmental Engineering. Waste containment systems; ground and groundwater remediation systems; multiphase flow and transport; soil-chemical interaction; nonaqueous-phase liquids; soil liners; geosynthetic materials. Three lecture hours and three laboratory hours a week for one semester. Prerequisite: Graduate standing.

387G. Engineering Geology. Fundamental concepts of geology, including geologic time and plate tectonics. Interactions among earth materials, landforms, and geologic processes across a range of spatial and temporal scales. Emphasizes common interests shared by engineers and geologists, as well as gaps between the disciplines, such as those posed by the geologic vocabulary. Three lecture hours and three hours of laboratory or fieldwork a week for one semester. Prerequisite: Graduate standing in civil engineering.

387L. Soil Mechanics I. Three lecture hours a week for one semester; some topics require additional hours. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Strength and Shearing Properties of Soils. Theoretical and experimental studies of the shearing properties of both saturated and unsaturated soils. Three lecture hours and three laboratory hours a week for one semester.

Topic 2: Foundation Engineering. Bearing capacity, design of piers and pile foundations.

387M. Soil Mechanics II. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Stability of Earth Slopes. Development and application of limit equilibrium procedures for stability analysis of earth slopes, including special conditions of rapid drawdown and seismic loading.

Topic 2: Seepage and Earth Dams. Studies of seepage, emphasizing flow nets and numerical methods, plus control of seepage problems; design of earth and rockfill dams.

387R. Soil Mechanics III. Three hours a week for one semester; some topics may require additional hours. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Consolidation and Settlement of Cohesive Soils. Limit states for buildings; settlement of shallow footings in sand and clay; consolidation properties of soils; closed form and numerical analyses; case history studies of consolidation and settlement of cohesive soils. Three lecture hours and two laboratory hours a week for one semester.

Topic 2: Soil and Rock Dynamics. Wave propagation in soil and rock, foundation vibration and isolation, dynamic behavior of soil. Five hours a week for one semester, including lecture and laboratory.

Topic 4: Earth Retaining Structures. Retaining walls, braced excavations, slurry walls, freezing, reinforced earth, cofferdams, and anchored bulkheads.
387T. Decision, Risk, and Reliability. Principles and theory for modeling uncertainty in civil engineering, analyzing how uncertainties affect performance, and developing rational bases for design and decision making under uncertain conditions. **Prerequisite:** Graduate standing and consent of instructor.

388N. Engineering and Management of Municipal and Industrial Residuals. Characterization and collection of solid wastes; biological, chemical, and physical principles and integrated systems applicable to the treatment and disposal of municipal and industrial residuals. Two lecture hours and three discussion hours a week for one semester, with occasional field trips. **Prerequisite:** Graduate standing in civil or environmental engineering, or graduate standing and consent of instructor.

389C. Advanced Technical Communication for Engineers. Advanced work in theory and practice of communicating research and design results to a variety of audiences, in print, orally, and through multimedia. Students use their own work and writing projects as the material to communicate. Three hours a week for one semester, including lecture and laboratory. **Prerequisite:** Graduate standing.

389H. HVAC Design. Design of heating, ventilation, and air-conditioning systems. **Prerequisite:** Graduate standing and three of the following courses: Architectural Engineering 346N, Civil Engineering 319F, Mechanical Engineering 320, 326, 330, 339.

389T. Indoor Air Quality: Transport and Control. Transport and control of indoor pollutants. Includes particulate removal and pollutant transport into and within indoor environments. **Prerequisite:** Graduate standing in architectural or civil engineering.

390J. Engineering Microbiology. Fundamentals of microbiology and biochemistry as applied to environmental pollution and treatment processes, energetics and kinetics of microbial growth, biological fate of pollutants; introduction to laboratory techniques. Three hours a week for one semester, including lecture and laboratory. **Prerequisite:** Graduate standing.

390L. Environmental Analysis. Advanced analytical procedures for the sampling, monitoring, and analyses of air, liquid, and other wastes. Six hours of lecture and laboratory a week for one semester. **Prerequisite:** Graduate standing, one year of chemistry, and consent of instructor.

390M. Water Quality Management. A consideration of the technical, scientific, legal, and socioeconomic aspects of water quality management. **Prerequisite:** Graduate standing.

390N. Water Pollution Chemistry. Advanced topics in the application of engineering solutions to chemical problems in freshwater and marine environments. **Prerequisite:** Graduate standing.

390P. Environmental Organic Chemistry. Advanced subjects in the environmental chemistry of organic contaminants in groundwater, soil, and air systems. **Prerequisite:** Graduate standing.

391C. Analysis and Design of Transportation Systems I. Introduction to conceptual, methodological, and mathematical foundations of analysis and design of transportation services; review of probabilistic modeling; application of discrete choice models to demand analysis. **Prerequisite:** Graduate standing and consent of instructor.

391D. Analysis and Design of Transportation Systems II. Operations research techniques for modeling system performance and design of transportation services; routing and scheduling problems, network equilibration, and spatially distributed queueing systems. **Prerequisite:** Graduate standing and consent of instructor.

391E. Advances in Transportation Demand Analysis. Developments in the econometric and behavioral aspects of demand analysis and forecasting; supply-demand integration; dynamic models. Applications to passenger and freight transportation and other infrastructure services. **Prerequisite:** Graduate standing.

391F. Advanced Theory of Traffic Flow. Relations among traffic variables; distribution functions; single lane and multilane traffic flow; characterization of traffic in cities; kinematic waves; yellow signal dilemma; merging; fuel consumption; emissions; and special topics. Emphasis on the interplay among theory, experimentation, and observation. **Prerequisite:** Graduate standing and consent of instructor.
391H. Urban Transportation Planning. Inter-
relationship of transportation and the urban
environment; methodologies for planning mul-
timodal transportation systems and developing
feasible alternatives; emphasis on developing
insight into the transportation problem and the
planning process rather than on solving specific
problems of limited scope. Prerequisite: Graduate
standing.

391J. Transportation Planning: Methodology and
Techniques. Analysis of a wide range of planning
studies to establish the logic and foundation for
the transportation planning process. Emphasis
on techniques of estimation and forecasting
population, economic activity, land use, and
mobility patterns; determination of goals and
objectives; decision making; economic analysis;
and alternative evaluation. Prerequisite: Graduate
standing.

391L. Advanced Traffic Engineering. Characteri-
ization and analysis of arterial street and freeway
traffic operations using theoretical and experi-
mental techniques, especially computer simula-
tion. Introduction to the most current analysis
and optimization tools for control device design
and implementation. Three lecture hours and
three hours of supervised work a week for one
semester. Prerequisite: Graduate standing and
consent of instructor.

391M. Advanced Geometric Design. Geometric
design of highways and guideways, including
topics on levels of service, alignment, vehicle
operations, intersection and interchange design,
roadside design, lighting, and economics. Three
lecture hours and one hour of supervised labora-
tory work a week for one semester. Prerequisite:
Graduate standing and consent of instructor.

391N. Engineering System Evaluation and Decision
Making. Advanced methods for selection of
transportation and other infrastructure systems
in the presence of multiple criteria, multiple
decision makers, and uncertainty. Prerequisite:
Graduate standing.

391P. Highway and Airport Pavement Systems.
May be repeated for credit when the topics vary.
Prerequisite: Graduate standing and consent of
instructor.

391Q. Bituminous Materials. Design and use
of asphalt mixtures; chemical, physical, and
rheological properties of asphalt; and practical
applications in highways, airports, and other
construction. Prerequisite: Graduate standing
and consent of instructor.

391R. Airport Design and Operation. Aircraft char-
acteristics, site selection, airport configuration,
capacity, terminal design, traffic control, and
interfacing with other transportation modes.
Prerequisite: Graduate standing and consent of
instructor.

391T. Contemporary Transportation Issues. Con-
sideration, analysis, and evaluation of recent
transportation-related innovations and develop-
ments. May be repeated for credit when the
topics vary. Offered on the credit/no credit basis
only. Prerequisite: Graduate standing and consent
of instructor.

391V. Infrastructure Management Principles. The
basic concepts and principles of infrastructure
management. Life and performance models
required for a sound management system. The
concepts of modeling performance (including
maintenance and repair) for facilities such as
buildings, bridges, and air fields. Prerequisite:
Graduate standing and consent of instructor.

391W. Transportation Systems Operations and
Control. Concepts and advanced methods for
the design of control strategies for transportation
systems operations, including highway traffic
systems (signalized street networks and freeways),
transit systems, and private carrier operations,
including airlines. Prerequisite: Graduate standing
and consent of instructor.

391C. Transportation Network Analysis I. Trans-
portation network analysis focusing on planning
and optimization. Includes precise algorithms for
finding transport network equilibrium flows and
applications that relate to these flows, routing
algorithms, deterministic equilibrium, transport-
ation network design, and stochastic extensions.
Prerequisite: Graduate standing.
392D. Transportation Network Analysis II. Provides analytical framework for transportation network analysis focusing on stochastic and dynamic conditions. Includes precise algorithms employed for finding dynamic network equilibrium flows via simulation, mathematical programming approaches and applications that relate to these flows, time-dependent and/or online routing algorithms, simulation-based dynamic traffic assignment, linear programming DTA models, dynamic network design, and stochastic extensions. Prerequisite: Graduate standing and Civil Engineering 392C.

392M. Public Transportation Engineering. Introduction to public transportation systems, including demand forecasting, operations, and design. Includes statistical methods, driver and vehicle scheduling, algorithms, and survey sampling techniques. Civil Engineering 392M and 397 (Topic: Public Transportation Engineering) may not both be counted. Prerequisite: Graduate standing.

392R. Discrete Choice Theory and Modeling. Methods and statistics of model estimation, with emphasis on maximum-likelihood; individual choice theory; binary choice models; unordered multinomial and multidimensional choice models; sampling theory and sample design; ordered models and aggregate prediction with choice models; introduction to advanced concepts, such as unobserved population heterogeneity, joint slated preference and revealed preference modeling, and longitudinal choice analysis. Prerequisite: Graduate standing.

392S. Intermodal Transportation Systems. Strategic planning of intermodal freight transportation systems (infrastructure and rolling stock). Freight logistics, intermodal technology, and intermodal terminal operations. Intermodal freight transportation policy, planning, and operational systems and programs. Prerequisite: Graduate standing.

392T. Transport Economics. Application of economic theory and principles to transportation systems analysis and evaluation. Topics include individual travel demand decisions, optimal private and public transport supply (including pricing strategies), location choice and land valuation, transport-market imperfections, and welfare-based transport policy. Prerequisite: Graduate standing.

393. Advanced Concrete Materials. Comprehensive coverage of Portland cement concrete materials. Topics include cement and aggregate properties, chemical and mineral admixtures, concrete microstructure and the effects of chemical and mechanical properties, durability issues, concrete construction, and special concretes. Offered on the letter-grade basis only. Prerequisite: Graduate standing, and Civil Engineering 314K or an equivalent materials course.

393M. Environmental Engineering Research Seminar. Presentation and discussion of environmental topics in surface water, groundwater, air resources, and land resources. May be repeated for credit when the topics vary. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

393S. Structural Engineering Research Seminar. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing.

394. Interaction of Soils and Structures. Beams on foundation, laterally loaded piles, applications of the finite-element method, beam-columns with nonlinear soil support, and behavior of pile groups. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and a course in soil mechanics or consent of instructor.

Topic 1: Dynamic Soil-Structure Interaction. Fundamentals of wave propagation; determination of foundation stiffnesses; mat foundations on the surface of a layered soil; embedded foundations; pile foundations; effect of foundation conditions on dynamic response of structures to applied loads (machine foundations) and to seismic excitation. Additional prerequisite: Consent of instructor.

394K. Engineering Hydrology. May be repeated for credit when the topics vary. With consent of instructor, any topic may be repeated for credit. Prerequisite: Graduate standing; and a basic course in hydrology and in differential equations, or consent of instructor.

Topic 2: Surface Water. Rainfall runoff processes, hydrograph theory, linear and nonlinear hydrologic system models, hydrologic and hydraulic streamflow routing, rainfall and flood flow frequency analysis, watershed models.


394M. Advanced Analyses in Geotechnical Engineering. Development and application of linear and nonlinear finite element procedures for solution of geotechnical engineering problems related to embankments, excavations, and static soil-structure interaction. Prerequisite: Graduate standing and consent of instructor.

395P. Project Automation. Some topics may require additional hours; these are identified in the Course Schedule. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.


Topic 2: Introduction to Construction Automation. Same as Architectural Engineering 395P (Topic 2: Introduction to Construction Automation). Construction automation activities, methods for opportunity identification and financial analysis of automated systems, and tools from several disciplines that are used in construction automation; students prepare a project that synthesizes this information.

Topic 3: Design of Automated Construction Systems. The elements of construction systems, including mechanisms, sensors, and control; systems design methods and concerns. Students develop an individual design project.

Topic 4: Sensing in Civil Engineering. Sensor types and properties, data acquisition, sensor data analysis, sensor fusion, and classes of civil engineering applications. Students are encouraged to work on projects related to their research areas.

395Q. Project Controls. Some topics require two lecture hours and three laboratory hours a week; these are identified in the Course Schedule. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Project Controls I. Fundamentals of planning, scheduling, and cost management on projects. Topics include network scheduling, activity and resource management, cost loading and cost control, and computer tools used for project controls, such as schedule simulation and three-dimensional and four-dimensional CAD.

Topic 2: Project Controls II. Advanced topics in project controls, including supply chain management, procurement, interorganizational controls and incentives, process modeling, and simulation.

395R. Project Information Systems. Three lecture hours a week for one semester; some topics require additional hours. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 2: Project Information Management Systems. Information systems design and management concepts and their implementation in construction projects. Data acquisition, transmission, and storage; database management systems and information systems design.

Topic 3: Decision and Risk Analysis. Fundamentals of decision analysis and risk assessment; construction engineering/project management applications in decision analysis; methods of risk management; overview of project insurance.

Topic 4: Metrics. Measurement systems and benchmarking approaches for many aspects of construction projects. Included are measurement systems for design effectiveness, construction productivity, safety, cost and schedule controls, and overall industry statistics.

Topic 5: Artificial Intelligence for CEPM. Same as Architectural Engineering 395R (Topic 5: Artificial Intelligence for CEPM). Introduction to basic concepts in artificial intelligence and LISP programming. Topics include theory and application of expert systems, neural nets, and fuzzy logic to construction engineering and project management. Two lecture hours and two laboratory hours a week for one semester. Additional prerequisite: A course in computer programming.

Topic 6: Quantitative Methods for Project Analysis. Practical methods of data analysis for evaluating project performance metrics. Includes quantitative methods for solving everyday problems such as bid selection, capital budgeting, assignment of resources, equipment replacement analysis, and the optimization of capital structure. Techniques for developing models under conditions of risk using Microsoft Excel and add-ins such as At Risk. Civil Engineering 395R (Topic 6) and 397 (Topic: Quantitative Methods for Project Analysis) may not both be counted.
395S. Project Organization. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.
Topic 1: Human Resources Project Management. Evaluation of individual, group, and organizational behavior in construction work. In-depth study of communication, decision making, and the relationship between controls and behavior.
Topic 2: Construction Productivity. Construction productivity improvement by group field studies. In-depth study of the way overtime, changes, weather, and staffing levels influence productivity. Industrial engineering techniques are applied to the construction environment to improve the use of equipment and human and material resources.
Topic 4: Project Management. Same as Architectural Engineering 395S (Topic 4: Project Management). Overall aspects of project management from inception to successful operation: establishing project objectives, feasibility analyses, scope definition, contracting methods, project control systems, and project execution planning.

395T. Project Technology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.
Topic 3: Heavy Construction. Conventional heavy construction, equipment, methods, and practice; planning for critical operations; modeling and simulation; safety. Includes field studies.
Topic 6: Value Management Processes I. Industry value management processes, including value engineering and LCC, individual value engineering, process simplification, function analysis concept development, design to capacity, constructability, modularization and preassembly, and design effectiveness.
Topic 7: Value Management Processes II. Industry value management processes, including mechanical reliability modeling, predictive maintenance, design for maintainability, waste minimization and pollution prevention, sustainable design and construction, planning for startup, lean construction, value engineering change proposals, postoccupancy evaluation, and knowledge management and lessons learned systems.

395U. General Topics in Construction Engineering and Project Management. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.
Topic 1: Front-End Planning. Principles and applications for effective early planning of capital facilities, including finance, economic decision making, risk management, team alignment, and preproject planning processes and tools.
Topic 2: Continuous Quality Improvement. History, concepts, and principles of continuous quality improvement (CQI) in organizations. Implementation of CQI in engineering and construction companies and projects. Use of statistical process control and management and planning tools in engineering and construction applications.
Topic 3: Advanced Legal Concepts. Same as Architectural Engineering 395U (Topic 3: Advanced Legal Concepts). Contracts, documentation requirements, claims avoidance, and settlement of claims by alternative dispute resolution. Students conduct and present in-depth studies of the most frequent causes of claims (delay, disruption, acceleration, soil conditions, and changes) and consider the way the court establishes causation and determines damages.

395V. Seminar/Conference Course in Construction Engineering and Project Management. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.
Topic 1: Seminar. Offered on the credit/no credit basis only.
Topic 2: Conference Course.

396L. Air Resources Engineering. Sources, transport, fate, impacts, characteristics, and control of air contaminants; source control and prevention; urban air quality; occupational and residential indoor air quality. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.
Topic 1: Air Pollution Chemistry. Classification, transport, transformation, deposition, sampling and analysis of particulate and gaseous air pollutants in urban, regional, and global-scale systems.
Topic 2: Air Pollution Control. Design of air pollution control systems for stationary sources. Technical, regulatory, and economic fundamentals related to the control of gaseous and particulate emissions.
Topic 5: Atmospheric Transport and Dispersion Modeling. Mathematical models of contaminant transport in the atmosphere; atmospheric turbulence and air pollution meteorology; Gaussian plume, gradient transport, and higher-order closure models; theoretical development and practical applications to engineering problems.
396M. Advanced Topics in Atmospheric Science. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in a natural science or engineering.

Topic 1: General Topics.
Topic 2: Air Pollution Meteorology. Basic meteorology applied to air pollution; diffusion of conservative and nonconservative pollutants; plume rise; air pollution models.

197, 297, 397. Special Studies in Civil Engineering. For each semester hour of credit earned, the equivalent of one class hour a week for one semester; some topics require additional hours. May be repeated for credit when the topics vary. With consent of instructor, any topic may be repeated for credit. Some topics may be offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing and consent of instructor. Additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 4: Freight Transportation. Topics include review of transport systems analysis; shipper objectives; demand and supply modeling; freight flow data; network analysis; truck size and weight policies; finance.

Topic 5: Infrastructure Management Systems. Concepts and principles of infrastructure management and performance, with emphasis on bridge and pavement management systems.

Topic 6: Traffic Science Seminar. Topics range from fundamentals of vehicular traffic science to relevant methodologies in physics, applied mathematics, and operational science.


Topic 17: Air Sampling and Analysis. Collection and analysis of air samples for gaseous and particulate contaminants. Gas flow rate and calibration techniques, stationary source sampling and analysis, indoor air sampling, ozone and NOx ambient air monitoring.

Topic 18: Acquisition and Analysis of Transportation Data. Methods and technologies for the acquisition and analysis of data on various aspects of transportation systems. Topics include properties of different data sources and types; stated versus revealed preferences; traffic sensing; survey design; sampling strategies; probabilistic methods of data analysis; overview of statistical methods and various regression models, including random-utility, ordered-choice, simultaneous-equations, time-series, and neural-network models.

Topic 20: Computer Methods for Civil Engineers. Essential methods for computer-aided problem solving in transportation and other civil engineering areas. Topics may include computer operating systems concepts; the Internet and World Wide Web site design; advanced programming with C programming language; data structures; file manipulation and management; Monte Carlo simulation techniques; interfacing with spreadsheets, SQL databases, and computer-aided design packages; introduction to Geographic Information Systems. Team programming is emphasized.

Topic 21: Transportation Systems Management. Evolving concepts of transportation agency organization, management, and delivery of transportation programs, products, and services. Separation versus integration of transport policy-making and service delivery functions; emerging models for delivering programs and services, such as outsourcing, privatization, and state-owned enterprises; review of national and international experiences with innovative approaches and the benefits and costs associated with change.

Topic 22: Intelligent Transportation Systems Seminar. Introduction to Intelligent Transportation Systems (ITS) concepts, evolution, and current initiatives. Program evolution from Mobility 2000, through IVHS and strategic planning activities by the Department of Transportation and ITS America, to current operational tests and deployment projects.

Topic 32: Hydrodynamics of Propulsors and Dynamic Positioning Systems. Hydrofoil and lifting surface theory, actuator disk and lifting line theory, vortex-lattice and panel methods, blade design techniques, propulsor-inflow and propulsor-hull interaction, unsteady blade and shaft forces, and modeling of sheet cavitation.
Topic 35: Introduction to Structural Mechanics. Discussion of force and stress, vectors and tensors; equilibrium; displacement and deformation; compatibility; constitutive equations, with examples from linear elasticity, linear viscoelasticity, and plasticity; principle of virtual work; elastic structures, principle of minimum potential energy, reciprocity theorem; critical equilibrium, stability; linear theories of beams, plates, and shells.

Topic 36: Computational Environmental Fluid Mechanics. Basics of numerical methods as applied to the solution of the steady and unsteady fluid flow equations, such as the Euler and the Navier-Stokes equations, and the advection-diffusion equation. Emphasis on finite volume methods as applied to fluid mechanics problems in civil and environmental engineering.

Topic 37: Intelligent Infrastructure Systems. Concepts, frameworks, and models of intelligent infrastructure systems, with emphasis on the application of new technologies and advanced modeling techniques to the engineering and management of infrastructure systems.

Topic 50: Water Resources Development and Policies. Analysis of water resources projects, particularly international water projects, with emphasis on engineering and planning considerations and their relation to governmental policies.

Topic 54: Water Pollution Control. The application and evaluation of new concepts in water pollution abatement and advanced wastewater treatment.

Topic 56: Air Pollution Control. Evaluation of new theoretical approaches to air pollution control.

Topic 78: Design of Offshore Structures. Selection of design storm; wave forces on structures; preliminary analysis of steel jacket platforms; joint design; fatigue considerations; foundation design; dynamic effects and responses.

397F. Forensic Engineering: Materials and Structures. Same as Architectural Engineering 383 (Topic 4: Forensic Engineering: Materials and Structures). Methods of forensic analysis; role of the expert witness; methods of dispute resolution; case studies; tern project. Two lecture hours a week for one semester, with three laboratory hours a week for presentation of case studies. Prerequisite: Graduate standing and consent of instructor.

397K. Stability of Structures. Stability as it relates to actual behavior and design; elastic and inelastic theories; evaluation of specifications; columns, beams, and frames. Prerequisite: Graduate standing and consent of instructor.

397L. Advanced Structural Metals. Elastic and inelastic design methods for steel members, connections, and structures; torsion of open and closed sections, welding, plate buckling, and column stability; bracing design. Prerequisite: Graduate standing, Civil Engineering 335, and consent of instructor.

197S, 297S, 397S, 697S. Special Independent Studies in Civil Engineering. Independent study. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in civil engineering and consent of the graduate adviser; for 698B, Civil Engineering 698A.

398D. Departmental Report. Preparation of a report to fulfill the requirement for the master's degree under the departmental report option. Individual instruction. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in civil engineering and consent of the supervising professor and the graduate adviser.

398R. Master's Report. Preparation of a report to fulfill the requirement for the Master of Science in Engineering degree under the Graduate School report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in civil engineering and consent of the supervising professor and the graduate adviser.

398T. Supervised Teaching in Civil Engineering. Special training in teaching methods and procedures for civil engineering courses, including laboratory courses; the development of new material and methods to update present courses. Prerequisite: Graduate standing in civil engineering and appointment as a teaching assistant.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Civil Engineering 399R, 699R, or 999R.
ELECTRICAL AND COMPUTER ENGINEERING

Master of Science in Engineering
Doctor of Philosophy

OBJECTIVE
The objective of the electrical and computer engineering faculty is to provide a graduate program that is both broad and deep, covering the diverse technical areas within electrical and computer engineering. Eight subareas within the department support this objective: biomedical engineering; computer engineering; electromagnetics and acoustics; energy systems; manufacturing systems engineering; plasma/quantum electronics and optics; solid-state electronics; and communications, networks, and systems. In each area, a program of study can be designed to meet the educational objectives of each student.

FACILITIES FOR GRADUATE WORK
Facilities are available for graduate work in almost all specialties of electrical and computer engineering, from experimental, theoretical, and computational perspectives. Graduate activities of the department are housed principally in the Engineering-Science Building, with ready access to several special-purpose facilities located in the Applied Computational and Engineering Science Building and at the J.J. Pickle Research Campus.

The McKinney Engineering Library and the Kuehne Physics Mathematics Astronomy Library, located near the Engineering-Science Building, provide a rich source of literature to support graduate activities in electrical engineering. Also available for use in education and research are the extensive facilities of Information Technology Services, including more than two hundred computer workstations in the Engineering-Science Building. The Center for Electromechanics, the Computer Engineering Research Center, the Microelectronics Research Center, the Telecommunications and Signal Processing Research Center, and the Center for Perceptual Systems are nationally recognized centers for multidisciplinary research, in which electrical and computer engineering faculty members participate. Numerous facilities for experimental research are provided by the well-equipped research laboratories within the department.

AREAS OF STUDY
Graduate courses and research are offered with varying degrees of specialization in the following general areas. Topics of specialization within each area reflect the research interests of the faculty.

Biomedical engineering. The current research of this faculty is focused in the following areas: bioinstrumentation, admittance plethysmography, cardiac dynamics, thermography, hyperthermia, modeling of electromagnetic energy-tissue interactions, thermal alteration of tissues, radio frequency and laser surgery, acquisition of physiological data by noninvasive means, engineering in the cardiovascular system, effects of laser radiation on biological material, laser applications in medicine, coherence imaging of biological materials, optical tomography, visual system instrumentation, computer vision, acquisition and processing of neurological signals, neuroprostheses, applications of finite element modeling in medicine, and acoustics and ultrasound.
Computer engineering. This area involves research and study in computer architecture, computer systems and networks, theory and design of digital systems, and software engineering. Investigations include architecture design, parallel processing, neural networks, microprocessor-based systems, fault-tolerant computing, design for testability, computer-aided design, computer vision, VLSI system design, embedded systems, local area networks, and hardware/software codesign. This area of study is also available through alternatively scheduled programs in software engineering and engineering circuit design to professionals who are working full-time. Information about these programs is available at http://lifelong.engr.utexas.edu/degree/ or by e-mail from execmail@uts.cc.utexas.edu.

Electromagnetics and acoustics. This area includes the study of wave propagation ranging from ultralow frequencies to microwaves. It involves investigations of electrical geophysics, antennas and scattering, radar target identification, wireless communications, microwave and millimeter-wave integrated circuits, and guided wave devices and systems. The activities in acoustics involve research in transducers, atmospheric and underwater acoustics, and noise and vibration control.

Energy systems. This area involves research in the production, distribution, and use of electric energy. Present investigations are concerned with electromechanical devices for pulsed power applications, advanced electrical machines, power system-related analyses, simulation of power systems, energy system economics and optimization, open-access transmission, energy efficiency and demand-side management, power system harmonics, power quality, and power electronics.

Manufacturing systems engineering. This area emphasizes the application of computers, information sciences, and information systems to the development of equipment and software systems for manufacturing. Students take the required core courses, Electrical Engineering 380N (Topic 7: Computer Control of Manufacturing Systems), 380N (Topic 9: Fundamentals of Robotics and Mechatronics), and 390C, and additional courses in a specialized option. These specialization options include integrated circuit manufacturing, electronic packaging manufacturing, and manufacturing automation and assembly.

Plasma/quantum electronics and optics. This area involves research in plasma dynamics, optics, quantum-optic and photonic devices, and plasma processing of semiconductors. Plasma investigations include the design of plasma diagnostics, high-order spectral analysis of plasma waves, and plasma-enhanced chemical vapor deposition. Research in quantum electronics includes optical systems, lasers and laser applications, optical signal processing, optoelectronic devices, and lightwave systems. Investigations include quantum transport studies of double barrier heterostructures, components for very-high-speed communications and computation, and high-energy laser applications in materials synthesis and processing.

Solid-state electronics. This area emphasizes the electronic and magnetic properties of materials and new electronic devices. Present investigations are concerned with new semiconductor materials and crystal growth, metal-oxide semiconductor materials and devices, thermodynamic properties of materials, infrared devices and systems, semiconductor interfaces, integrated optics, and microelectromechanical sensors.

Communications, networks, and systems. This area involves research and design in these fields of networking, communications, signals, and systems: analysis and synthesis of systems, and the processing of information for the purposes of identification, communication, control, and security; linear and nonlinear systems and
modeling techniques; and analysis, simulation, and experimental research for a wide range of communications systems and applications, including information theory, digital communications, wireless communications, digital signal processing, antennas and propagation, ad hoc and sensor networks, queueing theory, stochastic processes, probability, networking control theory and active networks, optimization, nonlinear systems, estimation, and signal, image, and video processing.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Jacob A. Abraham
J. K. Aggarwal
Anthony P. Ambler
Jeffrey G. Andrews
Aristotle Arapostathis
Adnan Aziz
Chandrajit L. Bajaj
Ross Baldick
Sanjay K. Banerjee
K. Suzanne Barber
Don S. Batory
Michael F. Becker
Francis X. Bostick Jr.
Alan C. Bovik
James C. Browne
A. Bruce Buckman
Joe C. Campbell
Craig M. Chase
Ray Chen
Derek Chiou
John R. Cogdell
John H. Davis
Dennis G. Deppe
Gustavo A. De Veciana
Ananth Dodabalapur
Mircea D. Driga
Brian L. Evans
Robert H. Flake
Donald S. Fussell
Vijay K. Garg
Joydeep Ghosh
Mario J. Gonzalez Jr.
John B. Goodenough
W. Mack Grady
Gary A. Hallock
Mark F. Hamilton
Robert W. Heath Jr.
Archie L. Holmes Jr.
Warren A. Hunt Jr.
Margarida F. Jacome
Lizy K. John
Christine L. Julien
Sarfraz Khurshid
Benjamin Jack Kuipers
Dim-Lee Kwong
Jack C. Lee
Hao Ling
Gerald Jack Lipovski
Kathryn S. McKinley
Thomas E. Milner
J Strother Moore
Dean P. Neikirk
Scott Nettles
Michael E. Orshansky
David Z. Pan
Yale N. Patt
John A. Pearce
Dewayne E. Perry
Edward Joseph Powers Jr.
Theodore S. Rappaport
Leonard F. Register
Rebecca Richards-Kortum
Charles Harold Roth Jr.
H. Grady Rylander III
Irwin W. Sandberg
Surya Santos
Sanjay Shakkottai
Ben G. Streetman
Earl E. Swartzlander Jr.
Nur A. Touba
Jonathan W. Valvano
Sriram Vishwanath
Terry John Wagner
Rodger M. Walser
Ashley James Welch
Baxter F. Womack
Shouli Yan
ADMISSION REQUIREMENTS
To enter the graduate program in electrical and computer engineering, a student should normally have an undergraduate degree in this field. A student with a degree in another field may enter if his or her background is appropriate for the chosen area of specialization; however, deficiencies in undergraduate preparation must be made up at the discretion of the Graduate Studies Committee. Standards for entrance into the program generally exceed the minimum standards established by the University; a departmental admissions committee recommends admission or nonadmission of individual applicants.

Graduate students in electrical and computer engineering are expected to be proficient in English. Any student who does not meet the proficiency standards of the University or the department may be required to complete a three-semester-hour technical communications and English course. The course is counted toward the student’s course load for the semester but is not counted toward the fulfillment of course requirements for the graduate degree.

DEGREE REQUIREMENTS
Entering students are urged to seek a compatible supervising professor. Students may work toward a Master of Science in Engineering degree or, with the approval of the Graduate Studies Committee, may proceed directly to the Doctor of Philosophy degree. More information about course loads, course selection, degree requirements, financial aid, and related matters is available from the office of the graduate adviser.

Master of Science in Engineering
There are three options for obtaining the master's degree. The thesis option requires thirty semester hours of coursework, of which six hours are earned in the thesis course. The report option requires thirty-three semester hours of coursework, of which three hours are earned in the report course. The master's degree without thesis or report requires thirty-six semester hours of coursework. All coursework for the master's degree should be taken on the letter-grade basis.

Up to six semester hours of Electrical Engineering 397K (Topic 1: Conference Course) may be counted by students who follow the option without thesis or report. All coursework in and outside electrical engineering must be logically related, and the student’s entire program must be approved by the supervising committee, the graduate adviser, and the graduate dean. Specific regulations regarding the master's degree program are available from the graduate adviser.

Alternatively scheduled programs in software engineering and engineering circuit design. These master's degree programs are available in addition to the course of study offered in the traditional program within the department. They are designed for engineers and computer professionals who are employed full-time. Classes are scheduled once a month on Fridays and Saturdays throughout the academic year; at least two calendar years of study are needed to complete the program. Students are required to prepare a master’s report as part of their course requirements.

Doctor of Philosophy
Early in the doctoral degree program, the prospective candidate should select a supervising professor, after discussion with and consent of the faculty member so chosen. As early as possible thereafter, the candidate should prepare a tentative Program of Work, with the advice and approval of the supervising professor.
Formal entry into the doctoral program is achieved when the student is admitted to candidacy for the Doctor of Philosophy degree. The Graduate Studies Committee considers the student’s admission to candidacy, upon completion of at least one full semester in residence, after a thorough review of the student’s overall academic record and performance on a doctoral qualifying examination. A detailed description of the procedure for admission to candidacy is available from the graduate adviser. The doctoral program typically requires two to four years of work after the master’s degree.

FOR MORE INFORMATION

Campus address: Engineering-Science Building (ENS) 101, phone (512) 471-8511, fax (512) 475-7692; campus mail code: C0803

Mailing address: The University of Texas at Austin, Graduate Program, Department of Electrical and Computer Engineering, 1 University Station C0803, Austin TX 78712

E-mail: eccgrad@ece.utexas.edu

URL: http://www.ece.utexas.edu/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Electrical Engineering: EE

380K. Introduction to System Theory. Introduction to linear dynamical systems and differential equations, state space analysis and applications to feedback control, functional analytic methods, realization theory, stability theory, and elements of optimal control. Prerequisite: Graduate standing; and credit or registration for Mathematics 365C or the equivalent, or consent of instructor.

380L. Computer Systems in Engineering. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 5: Engineering Programming Languages. Higher-level languages for engineering design and problem solving; object-oriented programming in C++ and UNIX systems programming.

Topic 6: Operating Systems. Input/output systems calls, drivers and descriptors, and integrated circuits. Design and implementation of hardware and software for a UNIX-like operating system.

Topic 7: Introduction to Pattern Recognition and Computer Vision. Pattern recognition topics, including Bayesian decision theory, maximum likelihood and estimation, nonparametric techniques, and linear discriminant functions. Computer vision topics, including geometric camera models and calibration, geometry of multiple views and stereopsis, structure from motion, and tracking. Emphasis varies each semester.

Topic 8: Computer Vision Systems. Discussion of current research results and exploration of new directions in computer vision systems. Includes linear discriminant functions, nonmetric methods, unsupervised learning and clustering, model-based vision, segmentation using probabilistic methods, and content-based image and video analysis. Application of the techniques to real-world vision systems. Emphasis varies each semester.

Topic 10: Data Mining. Analyzing large data sets for interesting and useful information. Includes online analytical processing, finding association rules, clustering, classification, and function approximations. Scalability of algorithms and real-life applications.


380N. Topics in System Theory. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and Electrical Engineering 380K or consent of instructor.


Topic 4: Learning Systems and Cybernetic Machines.

Topic 5: Stochastic Control Theory. Dynamic programming in finite and infinite horizon, models with imperfect state information, ergodic control problems, adaptive and risk-sensitive control. Additional prerequisite: Electrical Engineering 381J.

Topic 7: Computer Control of Manufacturing Systems.

Topic 8: Algorithms for Parallel and Distributed Computation. Same as Computational and Applied Mathematics 380N.

Topic 9: Fundamentals of Robotics and Mechatronics. Theory of robotics and mechatronics, with emphasis on control, sensing, actuation, low- and high-level vision. Introduction to manipulator geometry, kinematics, dynamics, and planning of trajectories. Robotics laboratory.

Topic 10: Robotics II.


381J. Probability and Stochastic Processes I. Probability spaces, random variables, expectation, conditional expectation, stochastic convergence, characteristic functions, and limit theorems. Introduction to Markov and Gaussian processes, stationary processes, spectral representation, ergodicity, renewal processes, martingales, and applications to estimation, prediction, and queueing theory. Prerequisite: Graduate standing, and Electrical Engineering 351K or the equivalent.

381K. Topics in Communication Theory and Signal Processing. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Detection Theory.

Topic 2: Digital Communications. Characterization of communication signals and systems (bandpass signals and systems, signal space representation, digitally modulated signals, and spectral characteristics), optimum receivers for additive white Gaussian noise (correlation demodulator, matched-filter demodulator, performance for binary and M-ary modulation, and noncoherent receivers), error control codes (block and convolutional), and bandlimited channels (ISI and equalization). Additional prerequisite: Electrical Engineering 351K, 351M, and 360K.

Topic 3: Satellite Communication. Overview of satellite communication systems, including analog and digital transmission, link budgets, RF aspects, onboard systems, earth stations, current satellite communication systems and services, Global Positioning Systems (GPS), the role of standards and regulations, and orbital mechanics. Additional prerequisite: A graduate or upper-division introductory communication course.

Topic 4: Performance Evaluation.


Topic 6: Estimation Theory.

Topic 7: Information Theory. Source and channel coding theorems, Kolmogorov complexity, network information theory, and connections with large deviations. Additional prerequisite: Electrical Engineering 371M.

Topic 8: Digital Signal Processing. Signals and systems; generalized functions; z-transforms; Fourier series and transforms; fast Fourier transform; sampling, quantization, and aliasing; digital filter design; discrete-time random processes; multirate processing; filter banks and subband decomposition; nonlinear digital filters. Additional prerequisite: Electrical Engineering 351K and 351M.

Topic 9: Advanced Signal Processing. Signal modeling; optimum filtering; spectral estimation; fast algorithms; and applications in array signal processing, speech coding, and digital communication. Additional prerequisite: Electrical Engineering 351K, 381K (Topic 8), and Mathematics 340L.
Topic 11: Wireless Communications. Introduction to fundamental aspects of wireless communications. Channel modeling, radio propagation, cellular concepts, fading and multipath countermeasures (equalization, diversity, channel coding), spread spectrum, and basic multiple access techniques. Additional prerequisite: Electrical Engineering 351K and 371M, or their equivalents.


381L. Digital Time Series Analysis and Applications. Digital implementation of higher-order spectra and other techniques useful in analyzing, interpreting, and modeling random time series data from linear and nonlinear physical systems. Prerequisite: Graduate standing in engineering or natural sciences.

381M. Probability and Stochastic Processes II. Random walk and Brownian motion; renewal and regenerative processes; Markov processes; ergodic theory; continuous parameter martingales; stochastic differential equations; diffusions; stochastic control; multidimensional stochastic models. Prerequisite: Graduate standing, and Electrical Engineering 381J or consent of instructor.

381V. New Topics in Communications, Networks, and Systems. Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

382C. Topics in Computer Engineering. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Engineering Design of Software and Software Systems. The software development process; selection and application of software design methods; evaluation of software designs.

Topic 2: Creation and Maintenance of Distributed Software Systems. Creation of large distributed software applications, with emphasis on specification, failure models, correctness, security.


Topic 4: Software/Hardware Engineering Project Management. Requirements for a project management plan; role of the manager of the software development life cycle; economic and customer-driven factors.

Topic 5: Large Software/Hardware/Communications Systems Engineering. Techniques used to specify and design systems of software, hardware, and communications components. Creation of a requirements document and system specification.

Topic 6: Software for Highly-Available Distributed Applications.

Topic 7: Software Architectures. Software engineering approaches; scenario-based engineering processes to analyze problem domain; domain modeling and representations; creation of component-based reference architecture providing an object-oriented representation of system requirements.

Topic 8: Methodologies for Hardware/Software Codesign. Techniques used to design complex hardware/software systems; emphasis on specification, modeling, estimation, partitioning, verification/validation, and synthesis.


Topic 11: Requirements Engineering.

382L. Theory of Digital Systems. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and Electrical Engineering 316 or consent of instructor.

Topic 1: Switching Theory. General theory and realization algorithms for combinational, sequential, and array logic.

Topic 2: Graph Theory and Applications. Elementary graph theory concepts; graph theory algorithms and applications in multicomputer architecture, switching and coding theory, data structures, computer networks, programming, algorithm analysis, diagnosis and fault tolerance.
382M. Design of Digital Systems. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: VLSI Testing. Hardware and software reliability analysis of digital systems; testing, design for testability, self-diagnosis, fault-tolerant logic design, error-detecting and error-correcting codes.

Topic 2: Dependable Computing. Design techniques for reliable, fault-tolerant, fail-safe and fail-soft systems; fault diagnosis and fault avoidance methods at program and system levels; experimental and commercial fault-tolerant computer systems.


Topic 7: VLSI I. CMOS technology; structured digital circuits; VLSI systems; computer-aided design tools and theory for design automation; chip design.

Topic 8: VLSI II. Microelectronic systems architecture; VLSI circuit testing methods; integration of heterogeneous computer-aided design tools; wafer scale integration; advanced high-speed circuit design and integration.

Topic 9: Simulation Methods in CAD/VLSI. Techniques and algorithms for simulating large-scale digital and analog circuits.


Topic 11: Verification of Digital Systems. Automatic verification of digital systems; formal models and specifications, equivalence checking, design verification, temporal logic, BDDs, logical foundations, automata theory, recent developments.

Topic 12: System Design Metrics. Analysis of design at chip, board, and system levels; life cycle implications of design decisions, including design for testability effects on production and field service; economic and customer-driven factors.


Topic 14: Analog Integrated Circuit Design.

Topic 15: Computer Performance Evaluation and Benchmarking. Performance metrics, benchmarks, measurement tools and techniques, simulation, trace generation, sampling, analytical modeling, workload characterization, statistical methods to compare alternatives, linear regression, and design of experiments.

382N. Computer Systems and Networks. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 3: Interconnection Networks. Topologies, routing algorithms, permutations, resource allocations, performance evaluation, fault tolerance, VLSI design, parallel/distributed algorithms, languages for specifying protocols, distributed operating systems.

Topic 4: Advanced Embedded Microcontroller Systems. Hardware and software design of microcontroller systems; applications, including communication systems; object-oriented and operating systems approaches to interfacing and resource management.


Topic 10: Parallel Computer Architecture. Study of parallel computing, including models, algorithms, languages, compilers, interconnection networks, and architectures.

Topic 11: Distributed Systems. Concurrent programming languages, distributed algorithms, distributed operating systems, distributed data, formal models of concurrency, protection and security in computer networks.


Topic 14: High-Speed Computer Arithmetic I. Design of computer arithmetic units: fast adders, fast multipliers, dividers, and floating-point arithmetic units.
Topic 15: High-Speed Computer Arithmetic II. Advanced topics in computer arithmetic, including error correcting coding, residue number systems, CORDIC arithmetic, and VLSI implementation. Additional prerequisite: Electrical Engineering 382N (Topic 14).


Topic 17: Superscalar Microprocessor Architectures. Superscalar processor architectures, comparison with VLIW processors, program parallelism, performance evaluation, trace generation, memory systems, branch prediction.

Topic 18: Distributed Systems II.

Topic 19: Microarchitecture.

382V. New Topics in Computer Engineering. Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

383L. Electromagnetic Field Theory. Vector space, Green's function; equivalence theorem; vector potentials; plane, cylindrical, and spherical waves; radiation and scattering. Prerequisite: Graduate standing in electrical engineering, or graduate standing and consent of instructor.

383M. Microwave Field Theory. Guided waves in cylindrical waveguides, microstrip lines, dielectric and optical waveguides; integrated circuits; periodic structures. Prerequisite: Graduate standing in electrical engineering, or graduate standing and consent of instructor.

383N. Theory of Electromagnetic Fields: Electrodynamics. Intermediate electromagnetic field theory, with emphasis on the interaction of fields and material media, including anisotropic media. Prerequisite: Graduate standing and consent of instructor.

383P. Topics in Optical Processing and Laser Communications. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in engineering, mathematics, chemistry, or physics; or graduate standing and consent of instructor.

Topic 1: Fourier Optics. Fourier transforming properties of lenses, frequency analysis of optical imaging systems, spatial filtering, introduction to optical information processing and holography.


Topic 5: Fiber and Integrated Optics II. Principles and practices of guided-wave optical sensor technology. Nonlinear optical effects in fibers, including amplification and fiber lasers.


Topic 8: Optical Communications.

383V. New Topics in Electromagnetics. Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

384N. Acoustics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Acoustics I. Same as Mechanical Engineering 384N (Topic 1: Acoustics). Plane waves in fluids; transient and steady-state reflection and transmission; lumped elements; refraction; strings, membranes, and rooms; horns; ray acoustics; absorption and dispersion.

Topic 2: Acoustics II. Same as Mechanical Engineering 384N (Topic 2: Acoustics II). Rigorous derivation of acoustic wave equation; spherical and cylindrical waves; source theory; vibrating piston; enclosures; waveguides; arrays; diffraction. Additional prerequisite: Electrical Engineering 384N (Topic 1) or Mechanical Engineering 384N (Topic 1: Acoustics I).

Topic 3: Electromechanical Transducers. Same as Mechanical Engineering 384N (Topic 3: Electromechanical Transducers). Electrical, mechanical, and acoustical dynamics; principles of energy conversion, transducer laws, and representation; effects of the transducer characteristics on accuracy and efficiency of energy transformation. Biomedical Engineering 384N (Topic 3: Electromechanical Sensors/Actuators) and Electrical Engineering 384N (Topic 3) may not both be counted.

Topic 4: Nonlinear Acoustics. Same as Mechanical Engineering 384N (Topic 4: Nonlinear Acoustics). Distortion and shock formation in finite amplitude waves; harmonic generation and spectral interactions; absorption and dispersion; radiation pressure; acoustic streaming; weak shock theory; numerical modeling; diffraction of intense sound beams; parametric arrays.
Topic 5: Underwater Acoustics. Same as Mechanical Engineering 384N (Topic 5: Underwater Acoustics). Acoustical properties of the ocean; point sources and Green’s functions; reflection phenomena; ray theory; normal mode theory; guided waves in horizontally stratified fluid media; WKB and parabolic approximations. Additional prerequisite: Electrical Engineering 384N (Topic 1), Mechanical Engineering 384N (Topic 1: Acoustics I), or consent of instructor.

Topic 6: Noise Control. Same as Mechanical Engineering 384N (Topic 6: Noise Control). Acoustic modeling techniques; panel radiation theory; absorption, barrier, and enclosure design; diagnosis based on experimental data.

Topic 7: Ultrasonics. Same as Mechanical Engineering 384N (Topic 7: Ultrasonics). Acoustic wave propagation in liquids and solids and at interfaces; transducers, arrays; imaging and sonar systems. Biomedical Engineering 384N (Topic 7: Ultrasonics) and Electrical Engineering 384N (Topic 7) may not both be counted.

385J. Topics in Biomedical Engineering. Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in engineering and consent of instructor.

Topic 3: Bioelectric Phenomena. Same as Biomedical Engineering 384J (Topic 3: Bioelectric Phenomena). Examines the physiological bases of bioelectricity and the techniques required to record bioelectric phenomena both intracellularly and extracellularly; the representation of bioelectric activity by equivalent dipoles and the volume conductor fields produced.


Topic 15: Biosignal Analysis. Same as Biomedical Engineering 384J (Topic 3: Biosignal Analysis). Theory and classification of biological signals such as EEG, EKG, and EMG. Data acquisition and analysis procedures for biological signals, including computer applications.

Topic 16: Laser-Tissue Interaction: Optical. Same as Biomedical Engineering 381J (Topic 2: Laser-Tissue Interaction: Optical). The optical behavior of random media such as tissue in interaction with laser irradiation. Approximate transport equation methods to predict the absorption and scattering parameters of laser light inside tissue. Port-wine stain treatment; cancer treatment by photocoagulation; and cardiovascular applications.

Topic 7: Ultrasonics. Same as Mechanical Engineering 384N (Topic 7: Ultrasonics). Acoustic wave propagation in liquids and solids and at interfaces; transducers, arrays; imaging and sonar systems. Biomedical Engineering 384N (Topic 7: Ultrasonics) and Electrical Engineering 384N (Topic 7) may not both be counted.

385J. Topics in Biomedical Engineering. Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in engineering and consent of instructor.

Topic 3: Bioelectric Phenomena. Same as Biomedical Engineering 384J (Topic 3: Bioelectric Phenomena). Examines the physiological bases of bioelectricity and the techniques required to record bioelectric phenomena both intracellularly and extracellularly; the representation of bioelectric activity by equivalent dipoles and the volume conductor fields produced.


Topic 15: Biosignal Analysis. Same as Biomedical Engineering 384J (Topic 3: Biosignal Analysis). Theory and classification of biological signals such as EEG, EKG, and EMG. Data acquisition and analysis procedures for biological signals, including computer applications.

Topic 16: Laser-Tissue Interaction: Optical. Same as Biomedical Engineering 381J (Topic 2: Laser-Tissue Interaction: Optical). The optical behavior of random media such as tissue in interaction with laser irradiation. Approximate transport equation methods to predict the absorption and scattering parameters of laser light inside tissue. Port-wine stain treatment; cancer treatment by photocoagulation; and cardiovascular applications.
Topic 32: Projects in Biomedical Engineering. Same as Biomedical Engineering 384J (Topic 5: Projects in Biomedical Engineering). An in-depth examination of selected topics, such as optical and thermal properties of laser interaction with tissue; measurement of perfusion in the microvascular system; diagnostic imaging; interaction of living systems with electromagnetic fields; robotic surgical tools; ophthalmic instrumentation; noninvasive cardiovascular measurements. Three lecture hours and six laboratory hours a week for one semester. Additional prerequisite: Electrical Engineering 385J (Topic 31).


385V. New Topics in Biomedical Engineering. Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

390C. Statistical Methods in Engineering and Quality Assurance. The interpretation of data from designed experiments and production processes. Topics include probability distributions, confidence intervals, analysis of variance, hypothesis testing, factorial designs, and quality control data. Prerequisite: Graduate standing in engineering and a course in probability and statistics, or graduate standing and consent of instructor.

390V. New Topics in Manufacturing Systems Engineering. Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

391C. Technical Entrepreneurship. Introduction to the technology-based company: entrepreneurship, teamwork, strategic planning, finance, marketing, sales, operations, research and development, manufacturing, and management. Student teams form hypothetical companies and simulate their ventures over an extended period; presentations and reports are required. Prerequisite: Graduate standing.

392K. Antenna Theory and Practice. Modern antenna systems for receiving and transmitting, including driven and parasitic arrays, horns, parabolic and other antennas. Prerequisite: Graduate standing in electrical engineering, or graduate standing and consent of instructor.

393C. Plasma Dynamics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in engineering, physics, chemistry, or mathematics; or graduate standing and consent of instructor.

Topic 1: Introduction to Plasma Dynamics. Plasma properties, including collective effects, Debye shielding, quasineutrality, the plasma frequency, collisions. Single particle motions in electric and magnetic fields. Particle drifts, adiabatic invariants, cyclotron resonance.

394. Topics in Power System Engineering. Steady-state and transient analysis; symmetrical components, stability, protection, relaying. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in electrical engineering, or graduate standing and consent of instructor.

Topic 1: Power System Instrumentation and Control. Study of control functions related to energy control centers and to power plant control.


Topic 4: Economic Operation of Power Systems. Advanced techniques for operating power systems in the most economic manner while meeting various network constraints; economic dispatch, penalty factors, optimal power flow.


Topic 6: Advanced Electric Machinery. Detailed modeling and design of large induction and synchronous machines.

Topic 7: Power Electronic Devices and Systems. A study of power electronic components and circuits; HVDC converters; electronic drives for machines; AC/DC converters.

Topic 8: Power Transmission and Distribution Topics. Calculation of electric fields, standing waves, audible noise, corona, and high voltage effects.

Topic 9: Power Quality. The study of electrical transients, switching surges, lightning, and other phenomena that cause deviations in 60-hertz sinusoidal voltages and currents.

Topic 11: Design of Electrical Machines. Same as Mechanical Engineering 384E (Topic 2: Design of Electrical Machines). Electrical and mechanical design of electrical machines.

Topic 12: Open-Access Transmission. Terms and conditions, pricing methodologies, independent system operators, ancillary services, auctions and bid strategies, losses and allocation policies.

Topic 13: Intelligent Motion for Robotics and Control.


394J. Energy Systems. Same as Mechanical Engineering 394J. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in engineering and consent of instructor.

Topic 1: Power System Engineering I. Physical features, operational characteristics, and analytical models for major electric power systems and components.

Topic 2: Power System Engineering II. Advanced techniques for solving large power networks; loadflow, symmetrical components, short circuit analysis.


Topic 4: Environmental Engineering and Energy Systems. Environmental effects and controls for air, water, and land pollution for power systems.

Topic 5: Power System Planning and Practices. The economics of integrated resource planning.

Topic 6: Energy Conversion Engineering. Thermal analysis and operating characteristics of systems for electric power generation.

Topic 7: Power System Harmonics. The study of nonsinusoidal voltages and currents in power systems. Detailed modeling and simulation of harmonics sources, system response, and effects on equipment.

394V. New Topics in Energy Systems. Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

396K. Solid-State Device Theory. Theory of electron, magnetic, and electro-optic devices. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.
Topic 20: Plasma Processing of Semiconductors II. Plasma chemistry and equilibrium; analysis of molecular collisions; chemical kinetics and surface processes; plasma discharge particle and energy balance; analysis of inductive and DC plasma processing reactors; plasma etching, deposition, and implantation.


Topic 22: Semiconductor Microlithography.

Topic 23: Semiconductor Heterostructures.

Topic 24: Microwave Devices.


Topic 26: Microelectromechanical Systems.

Topic 27: Charge Transport in Organic Semiconductors.

396M. Quantum Electronics. Quantum mechanical principles as applied to electron devices, lasers, and electro-optics; material properties and interaction of radiation and material. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in electrical engineering and consent of instructor.

Topic 1: Introductory Quantum Electronics. Basic quantum mechanics and applications to solid-state phenomena and lasers.

396V. New Topics in Solid-State Electronics. Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in electrical engineering and consent of instructor.

197C, 297C, 397C, 697C, 997C. Research Problems. Problem selected by the student with approval of the department. For each semester hour of credit earned, the equivalent of one lecture hour a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in electrical engineering and consent of instructor.

197G, 297G, 397G, 697G, 997G. Research Problems. Problem selected by the student with approval of the department. For each semester hour of credit earned, the equivalent of one lecture hour a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing in electrical engineering and consent of instructor.

397K. Advanced Studies in Electrical Engineering. Selection of topics based on needs of an adequate number of students. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in electrical engineering and consent of instructor.

Topic 1: Conference Course. May be repeated for credit.

397M. Graduate Research Internship. Research associated with enrollment in the Graduate Research Internship Program (GRIP). Offered on the credit/no credit basis only. Prerequisite: Graduate standing in electrical engineering and consent of instructor.

197S, 297S, 397S. Graduate Seminar in Electrical Engineering. One, two, or three lecture hours a week for one semester. May be repeated for credit. Some sections of Electrical Engineering 197S are offered on the letter-grade basis only; others are offered on the credit/no credit basis only. These sections are identified in the Course Schedule. Prerequisite: Graduate standing.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in electrical engineering and consent of the graduate adviser; for 698B, Electrical Engineering 698A.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in electrical engineering and consent of the graduate adviser.

398T. Supervised Teaching in Electrical Engineering. Teaching under close supervision for one semester, attending group meetings or individual consultations, and submitting reports as required. Three lecture hours a week, or the equivalent, for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and appointment as a teaching assistant.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Electrical Engineering 399R, 699R, or 999R.
ENERGY AND MINERAL RESOURCES

Master of Arts

FACILITIES FOR GRADUATE WORK

The program in energy and mineral resources is interdisciplinary. The facilities of the Departments of Geological Sciences, Petroleum and Geosystems Engineering, Economics, Government, and Geography and the Environment and of the McCombs School of Business are available. Materials located in the Walter Geology Library, the McKinney Engineering Library, and the Perry-Castañeda Library include an array of specialized publications, such as the contract research of the United States Department of Energy and its predecessors, a selective collection of United States and Texas government documents, conference proceedings, and society and association publications. In addition, a wide range of electronic information resources in science, business, and the social sciences is accessible through the University Libraries Web site, http://www.lib.utexas.edu/.

AREAS OF STUDY

Graduate study in energy and mineral resources includes study in geological sciences, petroleum and geosystems engineering, economics, resource management, government, and policy studies. The student’s program should represent as broad a spectrum as possible of energy and mineral resources courses.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Victor L. Arnold  
Ross Baldick  
James S. Dyer  
William L. Fisher  
Kenneth E. Gray  
Genaro J. Gutiérrez  
J. Richard Kyle  
Larry W. Lake  
Krishan A. Malik  
James T. O’Connor  
Kamy Sepehrnoori  
Mukul M. Sharma  
W. C. J. van Rensburg

ADMISSION REQUIREMENTS

The entering student who wishes to pursue an advanced degree in energy and mineral resources should have a bachelor’s degree in one of the participating disciplines. The specific goal of the degree is a broad acquaintance with energy and mineral resources problems, both from a technological and from an economic or policy perspective. Students whose backgrounds are insufficient in one of these principal areas may be asked to take undergraduate courses in addition to the degree requirements.

DEGREE REQUIREMENTS

Candidates for the Master of Arts degree must complete thirty semester hours of coursework and must submit a thesis based on individual research. The thesis course counts for six of the thirty semester hours required for the degree. A three-hour seminar in energy and mineral resources is required.
FOR MORE INFORMATION

*Campus address:* Chemical and Petroleum Engineering Building (CPE) 4.182A, phone (512) 471-3247, fax (512) 471-9605; campus mail code: C0301

*Mailing address:* The University of Texas at Austin, Energy and Mineral Resources, 1 University Station C0301, Austin TX 78712

*URL:* http://www.pge.utexas.edu/embr/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the *Course Schedule* to determine which courses and topics will be offered during a particular semester or summer session. The *Course Schedule* may also reflect changes made to the course inventory after the publication of this catalog.

Energy and Mineral Resources: EMR

396. Seminar in Energy and Mineral Resources. Graduate seminar covering a wide range of issues in energy and mineral resources. Three lecture hours a week for one semester. May be repeated for credit when the topics vary. *Prerequisite:* Graduate standing.

Topic 1: Macroeconomics of Petroleum.
Topic 2: Energy Finance.
Topic 3: International Petroleum Concessions and Agreements.
Topic 4: Economics of Mineral Energy.
Topic 6: Extractive Metallurgy.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. *Prerequisite:* For 698A, graduate standing in energy and mineral resources, at least nine semester hours of coursework in the energy and mineral resources program, and consent of the graduate adviser; for 698B, Energy and Mineral Resources 698A.

ENGINEERING MANAGEMENT

Master of Science in Engineering

The engineering management program is offered by the College of Engineering and administered by the Center for Lifelong Engineering Education. The mission of the program is to contribute significantly to engineers’ managerial leadership abilities within their technological organizations by allowing students an opportunity to pursue higher education that is innovative and intellectually inspiring. The program fulfills this mission by offering courses that teach engineers how to lead and how to manage projects, processes, personnel, products, and services in real-world situations.

OBJECTIVES

The core objective of the engineering management program is to provide engineers who have chosen to pursue leadership and management career paths with the tools and education that will most directly support their success. The goal of the degree program is to provide engineering professionals with these foundations and to help them continue lifelong learning while employed in industry. Further objectives are to teach students about the measurement of technical, business, and human performance processes required in engineering environments; to enhance the student’s perspective on leadership and management of technology-based organizations; to develop students’ expertise in the management of innovation; to give students the knowledge and skills to manage projects and processes effectively; to teach students to identify and balance the risks associated with technology development; to broaden
the engineering manager’s perspective on the marketing of technological products and services, the potential success or failure of an engineering project with respect to financing, and legal issues that affect technology. Additional objectives are to provide a program that is challenging, innovative, and intellectually inspiring; to offer a program for the working professional by offering courses that meet once a month on Friday and Saturday; and to offer an advanced degree in engineering management that meets the needs of technology organizations and industry in the Austin area and in the state.

The program is designed to give students the knowledge to measure and evaluate technical, business, and human performance processes in engineering environments. In the required courses listed on pages 221–222, students are expected to develop their perspectives on leadership and management of technology in industry and to gain insight into other management issues critical to lead or manage a technological organization.

The curriculum is designed to help students become better engineering leaders who can manage personnel, projects, products, and services. The program’s special scheduling option allows the working professional to earn an advanced degree while maintaining his or her career.

AREAS OF STUDY
The interdisciplinary engineering management faculty includes members of several departments of the College of Engineering, the McCombs School of Business and the School of Law. The current research of this faculty includes such topics as engineering economics; decision and risk analysis; economic management and marketing; management of people and organizations; and the legal issues that affect technology, such as product liability and patent law.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

<table>
<thead>
<tr>
<th>Faculty Name</th>
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<tbody>
<tr>
<td>Anthony P. Ambler</td>
<td>Alison Davis-Blake</td>
</tr>
<tr>
<td>Uttarakant Bagchi</td>
<td>David S. Dolling</td>
</tr>
<tr>
<td>John Daly</td>
<td>Genaro J. Gutiérrez</td>
</tr>
</tbody>
</table>

ADMISSION REQUIREMENTS
This two-year program provides graduate education for the working professional who is employed in or planning to move into the field of engineering management. Classes meet all day one Friday and Saturday a month, with an orientation session at the beginning of the program. The program requires a serious commitment on the part of the student and the student’s employer. The coursework is rigorous and demanding and can provide an excellent educational experience.

Students must have at least eighteen months of professional experience.

DEGREE REQUIREMENTS
The program requires thirty-six semester hours of graduate coursework, including the following core courses:

- Engineering Management 380, Topic 1: Managing People and Organizations
- Engineering Management 381, Topic 1: Legal Issues for Engineering Managers
Engineering Management 383, Topic 1: *Management of Projects and Processes*
Engineering Management 383, Topic 2: *Strategic Decision and Risk Analysis*
Engineering Management 383, Topic 3: *System Design Metrics*
Engineering Management 384, *Engineering Economics*

The student must also complete the project course, Engineering Management 397P; six semester hours in the seminar course, Engineering Management 397K; and the master’s report, Engineering Management 398R.

**FOR MORE INFORMATION**

*Campus address:* Development Office Building (DEV) Suite 100, phone (512) 471-3506, fax (512) 471-0831; campus mail code: A2800

*Mailing address:* The University of Texas at Austin, Engineering Management Program, PO Box H, Austin TX 78713-8908

*E-mail:* execmail@uts.cc.utexas.edu

*URL:* http://lifelong.engr.utexas.edu/degree/index.cfm

**GRADUATE COURSES**

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the *Course Schedule* to determine which courses and topics will be offered during a particular semester or summer session. The *Course Schedule* may also reflect changes to the course inventory made after the publication of this catalog.

Classes generally meet once a month, all day on Friday and Saturday; a week-long seminar is also required at the beginning of the program.

**Engineering Management: ENM**

**380. Topics in Engineering Management.** Engineering management theories of social and psychological behavior, and how these theories are used by administrators and managers. May be repeated for credit when the topics vary. Offered on the letter-grade basis only. *Prerequisite:* Graduate standing and admission to the engineering management degree program.

  - **Topic 1:** *Managing People and Organizations.*
  - **Topic 2:** *The Art and Science of Negotiations.* Current issues in organization science.
  - **Topic 3:** *Advanced Marketing Management.* Major marketing concepts and variables, their interrelationships, and their implications for policy making, problem solving, and strategy formulation.

**381. Legal Issues in Engineering Management.** Legal considerations in the practice of engineering management. May be repeated for credit when the topics vary. Offered on the letter-grade basis only. *Prerequisite:* Graduate standing and admission to the engineering management degree program.

  - **Topic 1:** *Legal Issues for Engineering Managers.* Legal considerations in the practice of engineering; specifications and contracts for equipment and engineering services.
  - **382. Management Simulations in Engineering Management.** Management simulations in the practice of engineering management. May be repeated for credit when the topics vary. Offered on the letter-grade basis only. *Prerequisite:* Graduate standing and admission to the engineering management degree program.
  - **383. Decision Making in Engineering Management.** Management of engineering decision-making processes and practices. May be repeated for credit when the topics vary. Offered on the letter-grade basis only. *Prerequisite:* Graduate standing and admission to the engineering management degree program.

  - **Topic 1:** *Management of Projects and Processes.* Methods for organizing, coordinating, and controlling resources to minimize risk and conflict and to maintain budgets and schedules. Topics include evaluation of competing alternatives, organization of a project, scheduling of tasks and resources, and the role of management over time.
Topic 2: Strategic Decision and Risk Analysis. Fundamentals of decision analysis and risk assessment; mathematical and psychological aspects of decision making, especially under uncertain conditions; engineering and project management applications.

Topic 3: System Design Metrics. Analysis of design at chip, board, and system levels; life cycle implications of design decisions; economic and customer-driven factors.

384. Engineering Economics. Introduction to fundamental concepts in finance and their application. Emphasis on how to evaluate investment and financing opportunities in a corporation. Examines investments, capital structure choice, financial models, and issues in corporate control. Offered on the letter-grade basis only. Prerequisite: Graduate standing and admission to the engineering management degree program.

397K. Engineering Management Seminar. Current topics in engineering management. Conference course. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and admission to the engineering management degree program.

397P. Projects in Engineering Management. Independent project carried out under the supervision of an engineering management faculty member. Offered on the letter-grade basis only. Prerequisite: Graduate standing and admission to the engineering management degree program.

398R. Master's Report. Preparation of a report to fulfill the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and admission to the engineering management degree program.

ENGINEERING MECHANICS

Master of Science in Engineering
Doctor of Philosophy

OBJECTIVES
The engineering mechanics graduate program is involved in teaching and research in analytical, computational, and experimental methods in mechanics of solids, structures, and materials and fluid mechanics. The objectives of the program are to enable the student to attain a deeper understanding of engineering mechanics fundamentals, a knowledge of recent developments, and the ability as a master’s degree student to participate in research and as a doctoral degree student to conduct individual research. The goals are accomplished through coursework, seminars, and active research programs.

AREAS OF STUDY AND FACILITIES
Graduate study and facilities for research are offered in the areas of theoretical mechanics and applied mathematics, dynamics, computational mechanics, experimental fluid mechanics, computational fluid dynamics, finite element methods, boundary element methods, experimental mechanics, solid and structural mechanics, and structural dynamics. The extensive facilities of Information Technology Services and related hardware for interactive computer graphics and real-time control of experiments are available to graduate students for research use. For experimental research, the Department of Aerospace Engineering and Engineering Mechanics maintains laboratory facilities on campus and at the J. J. Pickle Research Campus. These facilities include equipment for studies in high-velocity impact, structural dynamics, and materials science. A well-equipped machine shop is partially supported by the department, and technical assistance is available when required.
GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.
Ivo M. Babuska
Eric B. Becker
Jeffrey K. Bennighof
Robert H. Bishop
Graham F. Carey
Clint Dawson
Leszek F. Demkowicz
David S. Dolling
Linda J. Hayes
Rui Huang
Thomas J. R. Hughes
Stelios Kyriakides
Kenneth M. Liechti
Hans Mark
Mark E. Mear
J. Tinsley Oden
Krishnaswa Ravi-Chandar
Gregory J. Rodin
Ronald O. Stearman
Byron D. Tapley
Mary F. Wheeler

DEGREE REQUIREMENTS
Candidates for a graduate degree in engineering mechanics must meet all the general requirements for advanced degrees. Particular details are given below.

Master of Science in Engineering
Before being admitted to candidacy, the student must have a satisfactory proficiency in basic and intermediate material in engineering mechanics and mathematics. Students entering without an undergraduate degree in engineering are usually required to do some remedial work at the undergraduate level. A master's degree program normally consists of twenty-four semester hours of graduate coursework in engineering mechanics and related fields, and six semester hours in the thesis course. Two optional routes to the master's degree are available by petition to the Graduate Studies Committee. These are thirty-six hours of coursework with no thesis or report and thirty hours of coursework and a report based on work done in an additional prescribed conference course. Details of the options and requirements pertaining to course selection are given in instructions supplied by the department.

Doctor of Philosophy
Doctoral candidates must fulfill the basic course requirements prescribed for candidates for the master's degree. Beyond that, the course program is tailored to each student's needs.
Before being admitted to candidacy for the degree, the student must pass both a written and an oral qualifying examination on graduate-level material in mechanics and mathematics.
After being admitted to candidacy, the student completes coursework, carries out an acceptable program of original research, and writes a dissertation covering this research. The committee appointed to approve the Program of Work and the dissertation examines the student for both breadth and depth of knowledge. Examinations may be oral or written or both and must include a public defense of the dissertation.
Further information about policy, procedure, and requirements is available from the Department of Aerospace Engineering and Engineering Mechanics.
GRADUATE COURSES
The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Engineering Mechanics: E M

380. Theory of Plasticity. Physical basis of plastic deformation; mathematical theory of incremental plasticity; total theories; numerical implementation; slip and physical theories of plastic deformation; rate dependent (viscoplastic) models; applications to several engineering problems. Prerequisite: Graduate standing, and Engineering Mechanics 388 or the equivalent.

381. Advanced Dynamics. Dynamics of systems of particles and rigid bodies; vibration theory; analytical dynamics, including Lagrangian and Hamiltonian formulations; dynamic stability; continuous systems. Prerequisite: Graduate standing, and Engineering Mechanics 388 or the equivalent.

382. Nonlinear Analysis. Methods for analyzing various types of nonlinear differential equations of dynamical systems; exact methods, perturbation and averaging techniques, direct method of Liapunov. Prerequisite: Graduate standing and consent of instructor.

384K. Continuum Mechanics. Foundations of the general nonlinear theories of continuum mechanics; general treatment of motion and deformation of continua, balance laws, constitutive theory; particular application to elastic solids and simple materials. Prerequisite: Graduate standing, and Engineering Mechanics 386K or consent of instructor.


386K. Mathematical Methods in Applied Mechanics I. Basic topics in real and complex analysis, ordinary and partial differential equations, and other areas of applied mathematics with application to applied mechanics. Prerequisite: Graduate standing.

386L. Mathematical Methods in Applied Mechanics II. Continuation of Engineering Mechanics 386K. Prerequisite: Graduate standing, and Engineering Mechanics 386K or consent of instructor.

386M. Functional Analysis in Theoretical Mechanics. Same as Computational and Applied Mathematics 386M. An introduction to modern concepts in functional analysis and linear operator theory, with emphasis on their application to problems in theoretical mechanics; topological and metric spaces, norm linear spaces, theory of linear operators on Hilbert spaces, applications to boundary value problems in elasticity and dynamical systems. Prerequisite: Graduate standing, Engineering Mechanics 386L, and Mathematics 365C.

386N. Qualitative Methods in Nonlinear Mechanics. A study of methods for assessing the qualitative behavior of solutions to equations governing nonlinear continuum mechanics. Prerequisite: Graduate standing and Engineering Mechanics 386M.

387. Foundations of Fluid Mechanics. Governing equations in differential and integral forms; applications to both inviscid and viscous flow problems. Prerequisite: Graduate standing.

388F. Fracture Mechanics. Griffith theory of brittle crack propagation, other theories, crack toughness testing concepts. Prerequisite: Graduate standing, and Engineering Mechanics 388 or consent of instructor.


388M. Micromechanics. Constitutive characterization of materials based on their microstructure. Relationships between internal structure and mechanical properties for composites, polycrystals, and polymers on the basis of linear elasticity, plasticity, and theories that account for rate-dependence. Prerequisite: Graduate standing and a graduate course in solid mechanics.

388V. Theory of Viscoelasticity. Introduction to linear viscoelasticity; methods of characterizing viscoelastic material behavior; analytical and approximate solution techniques for engineering problems, including contact, wave propagation, and thermoviscoelastic problems. Prerequisite: Graduate standing, and Engineering Mechanics 388 or consent of instructor.

389J. Experimental Mechanics. Principles and techniques of measurement in mechanics; includes discussion of strain gauges, optical interference methods, photoelasticity, and dynamic measurements. Two lecture hours and three laboratory hours a week for one semester. Prerequisite: Graduate standing.

392R. Random Vibrations. Introduction to probability theory and its application to random excitation of linear and nonlinear systems; a probabilistic discussion of failure and fatigue in structures. Prerequisite: Graduate standing.


394. Structural Stability. Fundamental theory of buckling of elastic structural elements such as bars, frames, rings, plates, and shells; also special stability topics including inelastic buckling, creep buckling, and buckling under dynamic loading. Prerequisite: Graduate standing, and Engineering Mechanics 388 or consent of instructor.

394F. Finite Element Methods. Same as Aerospace Engineering 384P (Topic 4: Finite Element Methods) and Computational and Applied Mathematics 394F. Derivation and implementation of the finite element method; basic coding techniques; application to problems of stress and diffusion. Prerequisite: Graduate standing and consent of instructor.

394G. Computational Techniques in Finite Elements. Organization and data management in finite element codes; element models and calculations; equation solving; preprocessing and postprocessing. Prerequisite: Graduate standing and Engineering Mechanics 394F.


394V. Wave Propagation I. Solutions of linear wave equations; waves in elastic media, including plates and cylinders; transient waves, transform methods, asymptotic approximation. Prerequisite: Graduate standing, and Engineering Mechanics 388 or consent of instructor.

397, 697, 997. Advanced Studies in Engineering Mechanics. For each semester hour of credit earned, one lecture hour a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Advanced Topics in Viscoelasticity.
Topic 2: Individual Research. Offered on the credit/no credit basis only.
Topic 4: Grid Generation and Adaptive Grids.

397R. Individual Research. Must be arranged by mutual agreement between student and faculty member. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing.
397S. Mechanics Seminar. Current topics in mechanics. Conference course. May be repeated for credit. Offered on the credit/no credit basis only. All engineering mechanics graduate students are required to register for this course each semester. Prerequisite: Graduate standing.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in engineering mechanics and consent of the supervising professor and the graduate adviser; for 698B, Engineering Mechanics 698A.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in engineering mechanics and consent of the graduate adviser.

398T. Supervised Teaching in Engineering Mechanics. Teaching methods and objectives, criteria for evaluating teaching effectiveness, procedures and regulations, laboratory teaching. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and appointment as a teaching assistant.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Engineering Mechanics 399R, 699R, or 999R.

MATERIALS SCIENCE AND ENGINEERING

Master of Science in Engineering
Doctor of Philosophy

OBJECTIVES
This program is designed to educate materials scientists and engineers, to develop new knowledge, and to solve problems related to the synthesis, processing, characterization, and application of materials. To achieve these objectives, the program gives students great flexibility in planning individual programs of graduate study to suit their interests and goals.

FACILITIES FOR GRADUATE WORK
Extensive facilities, including laboratories for materials research and instruction and offices for faculty members and students, are located in several buildings on the main campus and at the J.J. Pickle Research Campus. The offices for the Texas Materials Institute (TMI), the materials science and engineering graduate program, and numerous faculty members are located in the Engineering Teaching Center. TMI maintains the Electron Microscopy, X-Ray Scattering, Surface Analysis, and Polymer Characterization Facilities, each of which employs a manager to assist users. Other laboratories provide mechanical testing, powder processing, corrosion testing, optical microscopy and metallography, crystal growing, high-pressure, ultrasonic, laser, magnetic, and microwave facilities for use by students and faculty members. Extensive service installations are available, including Information Technology Services, as well as electronics shops, machine shops, and glassblowing services.

AREAS OF STUDY
Graduate study and research are offered in the broad areas of synthesis, characterization, structure and properties, thermodynamics and kinetics, processing, and performance of ceramic, electronic, ionic, magnetic, metallic, optical, polymeric, and structural materials.
GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.


ADMISSION REQUIREMENTS

Students with a bachelor’s degree in engineering or in one of the physical sciences may be admitted to the materials science and engineering degree program upon the recommendation of the Graduate Studies Committee. Students who do not have a background that the committee considers satisfactory for the study of advanced materials science and engineering will be required to take certain preparatory coursework, some of which may be at the undergraduate level. Completion of some coursework may be required before the student begins the work for the graduate degree.

DEGREE REQUIREMENTS

Master of Science in Engineering

The student’s program of coursework is selected with the advice of the graduate adviser and must be approved by the Graduate Studies Committee. The coursework must include twelve hours of materials science and engineering core curriculum courses. (Individual core curriculum courses may be waived if the student has equivalent credit on entering the program.)

Master of Science in Engineering with thesis. For students electing this option, thirty semester hours of credit are required, consisting of twenty-four hours of organized coursework and six hours in the thesis course. A student must take fifteen to eighteen hours in materials science and engineering, including twelve hours in core curriculum courses. Six to nine additional hours of supporting work must be outside the major area. A maximum of nine hours of upper-division coursework may be counted...
toward the required thirty hours, but no more than six of the nine hours may be in
either the major or the supporting work.

The student should choose a thesis research topic and begin research during the first
semester. At least one full year is required to complete the master’s degree program.

Master of Science in Engineering with report. This option requires thirty-three
semester hours of credit, consisting of thirty hours of organized coursework and three
hours in the report course. At least eighteen hours must be in materials science and
engineering, including twelve hours in core curriculum courses; six hours must be
outside materials science and engineering. Up to nine hours of upper-division course-
work may be counted, but no more than six of the nine hours may be in either the
major or the supporting work.

Master of Science in Engineering without thesis or report. For students electing this
option, thirty-six semester hours of coursework are required. From eighteen to thirty
hours must be in materials science and engineering, including twelve hours in core
curriculum courses. The program must be approved by the student’s supervising com-
mittee. Up to nine hours of upper-division coursework may be included, with three
to six hours in the supporting area. No research is required, but the level of academic
performance is the same as that required for the master’s degree with thesis. Enroll-
ment in this option must be approved by the Graduate Studies Committee.

Doctor of Philosophy

A student may choose to pursue the doctoral degree without first obtaining a master’s
degree. Before admission to doctoral candidacy, the student must have a master’s
degree in materials science and engineering or an equivalent amount of graduate
credit and must have demonstrated satisfactory performance on a written qualifying
examination. The doctoral candidate must also pass preliminary and final oral exami-
nations covering the research program and the underlying science and engineering
upon which the research is based. For a student with a Bachelor of Science degree, at
least three years are required to complete the Doctor of Philosophy degree program.

FOR MORE INFORMATION

Campus address: Engineering Teaching Center (ETC) 8.176, phone (512) 471-1504,
fax (512) 475-8482; campus mail code: C2201

Mailing address: The University of Texas at Austin, Materials Science and Engineer-
ing Program, 1 University Station C2201, Austin TX 78712

E-mail: tmi@mail.utexas.edu

URL: http://www.tmi.utexas.edu/
GRADUATE COURSES
The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–
2007; however, not all courses are taught each semester or summer session. Students should consult
the Course Schedule to determine which courses and topics will be offered during a particular semester
or summer session. The Course Schedule may also reflect changes made to the course inventory after the
publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Materials Science and Engineering: MSE

397. Graduate Seminar. Presentation of research
topics by invited speakers, faculty, and students.
Offered on the credit/no credit basis only. Prereq-
uisite: Graduate standing.

May be repeated for credit. Offered on the
credit/no credit basis only. Prerequisite: Graduate
standing.

698. Thesis. The equivalent of three lecture hours a
week for two semesters. Offered on the credit/no
credit basis only. Prerequisite: For 698A, graduate
standing in materials science and engineering
and consent of the graduate adviser; for 698B,
Materials Science and Engineering 698A.

398R. Master’s Report. Preparation of a report to
fulfill the requirement for the master’s degree
under the report option. The equivalent of three
lecture hours a week for one semester. Offered on
the credit/no credit basis only. Prerequisite: Graduate
standing in materials science and engineering
and consent of the graduate adviser.

to the Doctor of Philosophy in materials science
and engineering. Offered on the credit/no credit
basis only. Prerequisite: Admission to candidacy
for the doctoral degree.

to the Doctor of Philosophy in materials science
and engineering. Offered on the credit/no credit
basis only. Prerequisite: Materials Science and
Engineering 399R, 699R, or 999R.

Related Courses

Aerospace Engineering

384P. Structural and Solid Mechanics. Three lecture
hours or two lecture hours and three laboratory
hours a week for one semester, depending on the
topic. May be repeated for credit when the topics
vary. Prerequisite: Graduate standing and consent
of instructor.

Topic 11: Mechanics of Composite Materials. Constitutive equations; micromechanical and
macromechanical behavior of lamina; strength
and stiffness in tension and compression, theory
of laminated plates; strength of laminates; de-
amination.

Chemical Engineering

384, 684. Introduction to Research. The equivalent
of three or six class hours a week for one semester.
Any number of topics may be taken for credit,
and, with consent of instructor, any topic may be
repeated for credit. Prerequisite: Graduate standing
in chemical engineering, or graduate standing
and consent of instructor.

Topic 21: Kinetic Processes in Materials. Examina-
tion of the connection between structure and
various kinetic processes that occur in different
classes of materials, metals, ionic crystals, inor-
ganic glasses, and polymers. Discusses the kinetic
theory of gases and Brownian dynamics.

386K. Theory of X-Ray Diffraction. Application of
basic diffraction theory to polycrystalline and
single crystal materials. Prerequisite: Graduate
standing and consent of instructor.

386L. Laboratory Experiments in X-Ray Diffraction.
Application of x-ray diffraction techniques to the
examination of polycrystalline and single crystal
materials. Two or three lecture hours and three
or four laboratory hours a week for one semester.
Prerequisite: Graduate standing and consent of
instructor.

392. Polymer Science. Details of polymerization
mechanisms; structure-property relationships,
fundamentals of processing, and characteriza-
tion of high polymers. Prerequisite: Graduate
standing.

395C. Chemical Processes for Microelectronics.
Introduction to the chemical processes and the
manufacturing operations used in microelec-
tronics device fabrication. Prerequisite: Graduate
standing.
395E. Polymer Science and Engineering Laboratory. Training in the preparation and instrumental characterization of polymers, blends, and compounds. Twelve laboratory hours a week for one semester. Prerequisite: Graduate standing.

Chemistry

390K. Advanced Topics in Inorganic Chemistry. Topics include magnetic resonance; organometallic, main-group, and transition metal chemistry; nonaqueous solvents; high-temperature superconductors; new developments in synthetic chemistry; and aspects of inorganic chemistry relevant to material science. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in chemistry, Chemistry 380L, and consent of instructor.

390L. Advanced Topics in Analytical Chemistry. Topics include electrochemistry, electronics, mathematical methods, mass spectrometry, and optical methods. For most topics, three lecture hours a week for one semester; for topics on electronics and optical methods, two lecture hours and three laboratory hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

392N. Physical Chemistry of Macromolecular Systems. Theory of macromolecular solutions and methods for characterization of macromolecular systems. Prerequisite: Graduate standing, and undergraduate physical chemistry or consent of instructor.

393L. Advanced Topics in Physical Chemistry. Topics include magnetic resonance, electron scattering; quantum scattering in gases; chemical kinetics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in chemistry, Chemistry 382M, and consent of instructor.

Electrical Engineering

396K. Solid-State Device Theory. Theory of electron, magnetic, and electro-optic devices. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Metal Oxide Semiconductor Devices: Physics and Technology.


396M. **Quantum Electronics.** Quantum mechanical principles as applied to electron devices, lasers, and electro-optics; material properties and interaction of radiation and material. May be repeated for credit when the topics vary. *Prerequisite:* Graduate standing in electrical engineering or physics, or graduate standing and consent of the graduate adviser.

Topic 1: *Introductory Quantum Electronics.* Basic quantum mechanics and applications to solid-state phenomena and lasers.

388V. **Theory of Viscoelasticity.** Introduction to linear viscoelasticity; methods of characterizing viscoelastic material behavior; analytical and approximate solution techniques for engineering problems, including contact, wave propagation, and thermoviscoelastic problems. *Prerequisite:* Graduate standing, and Engineering Mechanics 388 or consent of instructor.

389J. **Experimental Mechanics.** Principles and techniques of measurement in mechanics; includes discussion of strain gauges, optical interference methods, photoelasticity, and dynamic measurements. Two lecture hours and three laboratory hours a week for one semester. *Prerequisite:* Graduate standing.

### Mechanical Engineering

386P. **Materials Science: Fundamentals.** May be repeated for credit when the topics vary. *Prerequisite:* Graduate standing and consent of instructor.

Topic 1: *Introduction to Phase Transformations.* Basics of crystal structures and phase diagrams; diffusion; solidification; solid-state phase transformations.

Topic 2: *Mechanical Behavior of Materials.* Elastic deformation; viscoelasticity; yielding, plastic flow, plastic instability; strengthening mechanisms; fracture, fatigue, creep; significance of mechanical properties tests. Microstructural mechanisms and macroscopic behavior of metals, polymers, ceramics, and composites.

Topic 3: *Introduction to Thermodynamics of Materials.* Thermodynamic properties; reactions and chemical equilibrium in gases; solutions, phase equilibria, phase diagrams, reaction equilibria; surfaces and interfaces; point defects in crystals.

Topic 4: *Introduction to Solid-State Properties of Materials.* Introduction to the electronic, magnetic, and optical properties of materials. Solid-state properties of metals, semiconductors, and ceramics; fundamental concepts needed for the description of these properties, using an introductory-level description of the electronic structure of solids.

Topic 5: *Structure of Materials.* Essential crystallography of lattices and structures; symmetry; elements of diffraction and reciprocal lattices; point, line, and surface defects in crystals; crystalline interfaces; noncrystalline materials; polymers; glasses.

386Q. **Materials Science: Structure and Properties.** May be repeated for credit when the topics vary. *Prerequisite:* Graduate standing and consent of instructor.
Topic 1: Theory of Materials. Periodic behavior and the periodic table; historical approach to the principles of crystal structure; complex alloy phases; some aspects of phase stability.

Topic 2: Phase Diagrams. Phase equilibria in materials systems; systematic treatment of unary, binary, and ternary phase diagrams.


Topic 4: Physical Metallurgy of Steels. The iron-carbon system; transformations and structures of steels; properties of pearlite, bainite, and martensite; tempering; hardenability and the effect of alloying elements.

Topic 7: Composite Materials. The theory of structural composite materials, their physical and mechanical properties; processing associated with metal-ceramic-polymer composites. Additional prerequisite: Mechanical Engineering 260K (or 360K) or the equivalent, Mechanical Engineering 378K or the equivalent, or consent of instructor.

Topic 9: Crystalline and Composite Anisotropy. Mathematical analysis of anisotropic materials, including single crystals, laminate composites, and deformation-hardened metals. Topics include thermal and electrical conductivity, diffusivity, thermal expansion, elasticity, and yielding.

Topic 10: High-Temperature Materials. Theory and practice in use of materials for high-temperature structural applications; case-study considerations of actual problems and requirements; interactive process-microstructure-property relationships in materials development and applications of superalloys, intermetallics, composites, and ceramics; prospective trends.

Topic 11: Ceramic Engineering. Bonding; crystal structures; defects; phase diagrams; glass ceramics; electrical, dielectric, magnetic, and optical ceramics. Mechanical Engineering 386Q (Topic 6: Ceramic Materials) and 386Q (Topic 11) may not both be counted.


Topic 14: Electrochemical Materials. Electrochemical cells; principles of electrochemical power sources; materials for batteries, fuel cells, electrochemical capacitors, electrochromic devices, and electrochemical sensors.

386R. Materials Science: Physical and Electronic Properties. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Localized versus Itinerant Electrons in Solids. Same as Electrical Engineering 396K (Topic 9: Localized versus Itinerant Electrons in Solids). Description of electrons, from free atoms to crystals; band theory contrasted with crystal-field theory; evolution of electronic properties on passing from magnetic insulators to normal metals, from ionic to covalent solids, from single-valent compounds to mixed-valent systems; electron-lattice interactions and phase transitions; many examples. Additional prerequisite: A semester of quantum mechanics and a semester of solid-state science or technology.


Topic 3: Transport Properties of Transition-Metal Oxides. Electronic and ionic transport in transition-metal oxides as they relate to battery cathodes, solid oxide cells, spin electronics, thermistors, and high-temperature superconductors.

386S. Materials Science: Microelectronics and Thin Films. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Thin Films and Interfaces. Application of thin films and interfaces in microelectronics; basic properties, deposition techniques, microstructures and defects, diffusion characteristics; materials reaction in thin films and at interfaces.

Topic 2: Metallization and Packaging. Technology requirements and trends, impact of device scaling, multilayered interconnect structures, Schottky and ohmic contacts, contact reactions, silicide properties and applications, electromigration, thermal/mechanical properties, reliability. Additional prerequisite: Mechanical Engineering 386S (Topic 1).

386T. Materials Science: The Design of Technical Materials. The process of designing a material for a specific engineering function as illustrated for various materials. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.
Topic 1: Ionic Conductors. Same as Electrical Engineering 396K (Topic 10: Ionic Conductors).


**387Q. Materials Science: Thermodynamics and Kinetics.** May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.


Topic 2: Kinetics and Phase Transformations. Nucleation and growth, spinodal decomposition, transformations in alloy systems.

Topic 3: Solidification. Liquid to solid transformations in pure materials, alloys and eutectics; applications such as zone refining, composites, and castings.

Topic 4: Corrosion. Electrode kinetics and the theory of polarization, passivity, galvanic coupling, and high temperature oxidation.

Topic 5: Thermodynamics of Materials. First and second laws, fugacity, activity, chemical equilibria, phase diagrams, and introductory statistical concepts.

Topic 6: Statistical Thermodynamics of Materials. Quantum mechanics applied to partition functions of condensed and gaseous phases; chemical equilibria: phase transitions; and lattice statistics including the Ising model.

Topic 7: Group Theory and Phase Transformations. Symmetry principles and the associated mathematics applied to the description of condensed phases and their transformations.

**387R. Materials Science: Experimental Techniques.** Some topics may require additional laboratory hours; these are identified in the Course Schedule. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.


Topic 5: Materials Characterization Techniques. Classification and selection of characterization techniques: principles and applications of diffraction, spectroscopic, quantitative chemical analysis, thermal analysis, and transport and magnetic measurement techniques.


Topic 7: Scanning Electron Microscopy. Theory and practice of scanning electron microscopy; image formation, elemental analysis, sample preparation, and electron-sample interactions. Three lecture hours and two laboratory hours a week for one semester.

**387S. Materials Processing.** May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.


**Physics**

**392K. Solid-State Physics.** Lattice vibrations and thermal properties of solids; band theory of solids; transport properties of metals and semiconductors; optical properties; magnetic properties; magnetic relaxation; superconductivity. Prerequisite: Graduate standing, Physics 389K, and Physics 375S or the equivalent.

**392L. Solid-State Physics.** Elementary excitations: phonons, electrons, spin waves; interactions: phonon-phonon, electron-electron, electron-phonon; theory of metals and semiconductors; transport theory; optical properties. Prerequisite: Graduate standing and Physics 392K.

**392T. Special Topics in Solid-State Physics.** Topics to be announced. With consent of instructor, may be repeated for credit. Prerequisite: Graduate standing, Physics 392K, and consent of instructor.
MECHANICAL ENGINEERING

Master of Science in Engineering
Doctor of Philosophy

OBJECTIVES

The graduate program in mechanical engineering is designed to educate engineers who will be in the forefront of the mechanical engineering profession, leading the way to new and improved engineering systems to transform energy, materials, and information to meet the needs of society. To achieve this objective, the program offers a breadth of research and study areas and facilities. The faculty values creativity, the novel application of fundamental engineering science, interdisciplinary activities, the development of future leaders and a community of scholars, professionalism, and excitement in discovery. The program is designed to enhance these values, drawing upon the diverse interests and experience of the faculty. The major areas of emphasis are described below.

AREAS OF STUDY AND FACILITIES

Acoustics. The Departments of Mechanical Engineering and Electrical and Computer Engineering offer an interdisciplinary course of study in this field. Research projects are carried out in physical acoustics, industrial acoustics, electroacoustics, nonlinear acoustics, underwater acoustics, and medical ultrasound. Major experimental facilities include a general-purpose acoustics laboratory, a transducers laboratory, an anechoic chamber, a reverberation chamber, waveguides for high-intensity sound, a computer-controlled water tank for ultrasonics, and extensive underwater sound facilities at the Applied Research Laboratories.

Biomechanical engineering. This concentration provides studies for application of mechanical engineering principles to biological and medical problems. Areas of study are physiology, bioheat transfer, biomaterials, biorheology, health physics, biosignal analysis, biomechanics, ultrasonics, and biomedical computing. Supporting courses and facilities are also provided through the Department of Biomedical Engineering.

Dynamic systems and control. This concentration offers intensive study in the analysis, design, and control of engineered and natural systems. Areas of study include applied mechanics, biomedical engineering, constitutive modeling of materials, electromechanics, information and control theory, mechanisms and robotics, mechatronics, modeling of multienergy domain systems, multibody dynamics, simulation and analysis of system dynamics, tribology, and vibrations. Laboratories and facilities are available for research in acoustics, biomechanics, control systems, mechatronics, robotics, system dynamics, and tribology.

Manufacturing and decision systems engineering. Manufacturing and decision systems engineering (MDSE) embraces the broad spectrum of knowledge required by decision makers in the realms of manufacturing and service systems. Courses in MDSE cover topics drawn from mechanical systems and design, thermal and fluid systems, materials science and engineering, operations research and industrial engineering, and leadership and entrepreneurship. Major research facilities are available for graduate students in this field.

Manufacturing and design. The concentration in manufacturing and design offers state-of-the-art programs in innovative manufacturing processes, product design and development, and supporting technologies. Areas of study include product design methods, layer-based manufacturing (solid freeform fabrication), machine design,
unit manufacturing processes, robotics, contemporary prototyping, reverse engineering, optimization techniques, computer-aided design and manufacturing (CAD/CAM), computational geometry, machine intelligence, and design for people with disabilities. Well-equipped laboratories are available for research in solid freeform fabrication (including selective laser sintering), product modeling and simulation, unit manufacturing processes, robotics, one-off prototyping (such as CNC processes, woodworking equipment, power tools, and product measurement equipment), scaled manufacturing (from macro to meso to micro), biomedical device fabrication, and laser-based processes. These laboratories are part of the Advanced Manufacturing Center.

**Materials engineering.** This concentration encompasses graduate study in the fields of materials development, characterization and processing, and in structure-property-performance relationships. Areas of study include ceramics, physical metallurgy, mechanical behavior, materials processing, fuel cells, high-energy density batteries, new materials development, nanomaterials and nanotechnology, corrosion, and microelectronics packaging. Laboratory facilities include scanning and transmission electron microscopes; x-ray scattering, metallographic, laser processing, thermal analysis, and thin-film characterization facilities; and mechanical, electrical, magnetic, and electrochemical property measurement equipment. The Department of Mechanical Engineering is also a primary participant in the interdisciplinary materials science and engineering graduate degree program.

**Nuclear and radiation engineering.** This concentration provides graduate study and research in nuclear radiation science, analysis and design of nuclear systems, and experimental techniques in nuclear technology. Emphasis is on radiation transport and measurements, neutron physics, health physics and dosimetry, transport and disposal of nuclear wastes, and nuclear material safeguards and disposition. The Nuclear Engineering Teaching Laboratory is equipped with a 1.1-MW TRIGA pulsing nuclear reactor; a cold neutron source with prompt gamma analysis; neutron radiography equipment; neutron activation analysis equipment, including a pneumatic transfer system; californium-252 neutron sources; a low-level gamma-ray counting system and many radiation detection systems; and extensive computational capabilities.

**Thermal/fluid systems.** This concentration offers graduate study and research in the areas of thermodynamics, heat and mass transfer, fluid mechanics, combustion, energy conversion, energy conservation, alternative energy, microscale heat transfer, microfluidics, advanced laser-materials processing, and thermoelectrics. Experimental facilities include subsonic wind tunnels, three-dimensional laser-Doppler anemometry, a micro/nano fabrication facility, scanning probe microscopy, a cryogenic measurement facility, instrumentation calibration facilities for semiconductor rapid thermal processing, fundamental combustion research facilities, engine and emission test facilities, solar energy components and systems, and various fluid mechanics and heat transfer equipment. The University’s computation resources for numerical investigations are state-of-the-art and extensive.

**GRADUATE STUDIES COMMITTEE**

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Chandrajit L. Bajaj
Jonathan F. Bard
J. Wesley Barnes
Ronald E. Barr
Joseph J. Beaman Jr.
Anthony Bedford
Adela Ben-Yakar
Steven Biegalski
ADMISSION REQUIREMENTS

To enter the graduate program in mechanical engineering, a student should have an undergraduate degree in engineering or in an equivalent quantitative field of study. Students who do not meet this requirement may have to take additional courses at the discretion of the graduate adviser.

DEGREE REQUIREMENTS

Master of Science in Engineering. Students generally follow the thesis option, which requires thirty semester hours of credit, including six hours in the thesis course. Students who are appointed as teaching assistants or research assistants are expected to choose the thesis option. Except for students in manufacturing and decision systems engineering (MDSE), the report option requires thirty-three semester hours, including three hours in the report course; the MDSE concentration requires thirty-six hours, including three in the report course. The option without thesis or report requires thirty-six hours of coursework. At least eighteen hours (including the thesis or report, if any) should be in the major area; at least six hours should be in a supporting area. The supporting courses may be in mechanical engineering but must represent a specialty distinct from the major courses. Some areas of study have required core courses.

Doctor of Philosophy. The student must pass oral and written qualifying examinations administered by faculty members in the area of specialty. After passing the qualifying examinations, the student applies for candidacy by submitting a Program of Work that includes a proposed dissertation topic and a suggested dissertation committee. The dissertation committee recommends courses to be taken as part of the Program of Work, which should include at least eighteen hours (for students
with a master’s degree) or forty-eight hours (for students without a master’s degree) of graduate coursework in the area of specialization. This coursework must be taken on the letter-grade basis. The Program of Work must be approved by the chair of the Graduate Studies Committee. Application for candidacy must be submitted before the student completes fifty hours of credit toward the doctoral degree.

DUAL DEGREE PROGRAM

Master of Science in Engineering/Master of Business Administration

The objective of this dual degree program is to offer an opportunity for a well-rounded professional education in the design and management of manufacturing technology. For the manufacturing engineer, this program offers the opportunity to understand the labor and management issues in the design of the manufacturing complex. For the manager of manufacturing, it offers the opportunity to develop an appreciation of world-class manufacturing technology.

A student must complete a total of at least seventy-two semester hours, including a report in the College of Engineering. The curriculum includes design for manufacturing, manufacturing automation and assembly, advanced electronics packaging, integrated circuits, production and logistics management, and advanced materials manufacturing.

A student interested in the dual degree program should apply through the Graduate and International Admissions Center. He or she must be accepted by each individual program in order to be admitted to the dual program. Like all other graduate applicants, the student is responsible for submitting any additional information required by the Graduate Studies Committee for each program.

Upon admission to the dual degree program, the student must pay a nonrefundable enrollment deposit to indicate that he or she accepts the offer of admission. The deposit serves to confirm the student’s intention of enrolling in both programs and is applied to the payment of fees when the student enrolls. Students who demonstrate financial need may qualify for assistance to cover the deposit.

FOR MORE INFORMATION

 Campus address: Engineering Teaching Center (ETC) 5.204, phone (512) 232-2701, fax (512) 471-8727; campus mail code: C2200
 Mailing address: The University of Texas at Austin, Graduate Program, Department of Mechanical Engineering, 1 University Station C2200, Austin TX 78712
 E-mail: gradofc@www.me.utexas.edu
 URL: http://www.me.utexas.edu/go/
GRADUATE COURSES
The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.
Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Mechanical Engineering: M E

180M, 280M, 380M, 680M, 980M. Research. Individual research. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in mechanical engineering.

380Q. Mathematical Methods in Engineering. Applications of mathematical analysis and numerical concepts to typical engineering problems. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and Mathematics 427K or the equivalent.

Topic 1: Engineering Analysis: Analytical Methods. Analytical solutions for linear ordinary differential equations; numerical integration of ordinary differential equations; Fourier series and integrals; the Laplace transform; the solution of partial differential equations; vector analysis and linear transformations.

Topic 2: Engineering Analysis: Advanced Analytical Methods. Classification and solution of partial differential equations; includes linear superposition, separation of variables, Fourier and Laplace transform methods, Green’s functions, similarity solution, and spectral methods; introduction to solution of nonlinear partial differential equations, including both exact and approximate techniques, with a strong emphasis on physical systems.

Topic 3: Perturbation Methods. Introduction to perturbation theory; regular expansions and sources of nonuniformities; method of strained coordinates and multiple scales; method of matched asymptotic and composite expansions. Places strong emphasis on the relationship between the physical and the mathematical basis and on the crucial role of nondimensionalization in problem solving.

Topic 4: Numerical Methods for Differential Equations. Numerical solution of ordinary differential equations, both initial and boundary value equations; includes quasilinearization, shooting methods, and method of adjoints; classification and solution of partial differential equations by the finite difference method; stability and convergence criteria for various schemes; special attention to nonlinear equations with a strong emphasis on the Navier-Stokes equations.

381P. Dynamics of Fluids. Detailed study of fluid dynamics, boundary layer phenomena, and incompressible flows. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.


Topic 3: Dynamics of Turbulent Flow. Fundamentals of turbulence, including scaling, transport, and kinetic energy of turbulence; wakes, jets; wall-bounded flows; spectrum of turbulence.

Topic 4: Separated Flow. Laminar and turbulent compressible free shear flow regions; effects of heat and mass transfer.

Topic 5: Applications of Incompressible Flow. Dynamics of vorticity, inviscid flow; boundary layer theory and computational techniques, linear stability theory for parallel flow, flow at moderate Reynolds number.


Topic 7: Hypersonic Flow. Classical solution techniques for compressible laminar and turbulent boundary layers for both constant and nonconstant chemical composition; computational methods for inviscid and viscous flows.

381Q. Thermodynamics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and Mechanical Engineering 326 or the equivalent.

Topic 1: Advanced Thermodynamics. Development of macroscopic thermodynamics from basic physical relationships; introduction to the thermodynamics of mixtures.

Topic 3: Nonequilibrium Thermodynamics. Forces, flows, and entropy production, coupled flows, phenomenological relations, Onsager's reciprocal relations, applications.


Topic 5: Optics and Lasers. Fundamentals of geometric and physical optics, interaction of light with matter, spectroscopy, laser and electrooptics applications.

381R. Heat Transfer and Rate Processes. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and Mechanical Engineering 339 or the equivalent.


Topic 2: Convection Heat Transfer. Laminar and turbulent transport in boundary layers and inside tubes, with equal emphasis on momentum and energy transport; compressible and property effects, numerical simulation of convective transport.

Topic 3: Radiation Heat Transfer. Thermal radiation, blackbody properties, surface properties, radiant exchange, absorbing and emitting media, combined modes.


Topic 7: Microelectromechanical and Nanoelectromechanical Systems. Fundamentals of microscale and nanoscale science and engineering; microfabrication and nanofabrication techniques; metrology and packaging for microdevices and nanodevices; applications including thermal MEMS, micro-fluidics, BioMEMS, and NEMS.

382N. Computational Fluid Dynamics. Numerical analysis applied to fluid flow and heat transfer problems. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Introduction to Computational Fluid Dynamics. Applied numerical analysis, including solution of linear algebraic equations and ordinary and partial differential equations; modeling of physical processes, including fluid flow and heat and mass transfer; use of general-purpose computer codes, including commercial computational fluid dynamics software. Additional prerequisite: Mechanical Engineering 339 or the equivalent.

Topic 2: Spectral Methods in Fluid Dynamics. Use of spectral approximation theory to solve partial differential equations; introduction to Hilbert space and basic convergence theory; Fourier series and Chebyshev polynomial expansions of functions; use of fast Fourier transforms; applications to problems in fluid dynamics and heat transfer. Additional prerequisite: Mathematics 427K or the equivalent.

382P. Advanced Experimental Methods for Thermal/Fluid Systems. Design of experiments; fundamentals of electronic signal processing and optics; and advanced experimental techniques, including laser-Doppler velocimetry, hot-wire anemometry, and thermocouples. Two lecture hours and three laboratory hours a week for one semester. Prerequisite: Graduate standing.

382Q. Design of Thermal and Fluid Systems. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and Mechanical Engineering 339 (or 328) or the equivalent.

Topic 1: HVAC System Design. Heating, air-conditioning, and refrigeration equipment; environmental control system analysis and design.


382R. Topics in Combustion. Fundamentals of combustion science, technology, and engineering. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Fundamentals of Combustion Science. Topics include reaction rates, laminar and turbulent flames, premixed and diffusion flames, mass transfer, and modeling techniques.

Topic 2: Chemical Kinetics. The theory of combustion chemistry. Issues include physics of molecular interactions, the explosion peninsula, elementary reaction schemes, reduced reaction schemes, and global chemistry.

Topic 3: Combustion Sources of Air Pollution. The environmental impact of the pollution emissions of fundamental combustion processes. Topics include policy issues, combustion fundamentals, and analysis of stationary and mobile combustion equipment.
Topic 5: Combustion Theory. Analytical and computational topics in combustion. The theory of laminar flames, examined in a detailed mathematical formulation in which both activation energy asymptotic (AEA) and rate ratio asymptotic (RRA) methods are applied to a variety of flame configurations. Issues in turbulent combustion for both premixed and nonpremixed systems are examined.


Topic 7: Fire Dynamics. Fire physics and its application to typical fire analysis. Topics include combustion, thermochemistry, heat transfer (combustion, convention, radiation), premixed flames, pool fires (liquid), plumes, solid combustion, ignition, flame spread, fire severity laws, egress models, fire detection basics, zone fire computer models (CFAST, FPIETOOLS), and field-based computer models (FDS).

382T. Fire Science. Analysis of dynamics and consequences of fire in structures. Topics include combustion thermochemistry, premixed and diffusion flames, fluid mechanics of fire, human tenability in burning structures, computer modeling of fires. Mechanical Engineering 382R (Topic: Fire Science) and 382T may not both be counted. Prerequisite: Graduate standing, and Mechanical Engineering 326, 330, and 339, or their equivalents.

383Q. Analysis of Mechanical Systems. Detailed studies in the characteristics of mechanical systems. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Vibrations. Formulation of discrete and continuous models for mechanical systems in vibration; modal analysis; analytical solution methods for constant property linear systems; numerical solution methods.

Topic 2: Dynamics of Mechanical Systems. Advanced dynamics, including Newton-Euler, Lagrange, and Hamilton’s principles; gyroscopic effects in mechanical systems; analysis of stability of systems; continuous bodies; introduction to Hamilton-Jacobi.

Topic 4: Modeling of Physical Systems. Development of models for mechanical, electrical, fluid, thermal, and chemical systems; circuit techniques; bond graphs; energy and variational methods; hardware examples.

Topic 5: Wave Propagation. Fundamentals of wave propagation; transverse waves on strings and membranes; compressional, torsional, and flexural waves in rods and plates; longitudinal, shear, and surface waves in elastic media; tube waves; and water waves.

Topic 6: Fourier and Spectral Analysis in Dynamic Systems. Fourier transformations (series, integrals, fast Fourier transforms) and their relationships. Sampling, aliasing, convolution, correlation, leakage, windowing, power spectra, frequency response functions, and coherence functions in one-dimensional digital signal processing. Cepstrum analysis, Hilbert transforms. Experimental techniques and applications include modal analysis, mechanical signature analysis, and path identification. Additional prerequisite: Consent of instructor.

Topic 8: Digital Signal Processing. Sampling and quantizing processes; analog/digital and digital/analog conversion; digital Fourier analysis, including fast Fourier transform; z transform; design of finite impulse response and infinite impulse response digital filters.

Topic 9: Applied Intelligence for Engineers. Fundamental concepts of artificial neural systems; architecture, paradigms, topology, and learning algorithms. Introduction to the most popular networks and to their selection for engineering applications.

Topic 10: Modeling and Simulations of Multienergetic Systems. Methods for modeling and simulation of multienergy systems. Detailed study of applications in electromechanical systems, fluid power, chemical and biological processes, optimal control, and other areas of interest to the class.

383S. Lubrication, Wear, and Bearing Technology. Theory of friction and wear; design of bearing systems, including hydrodynamic, rheodynamic, and direct contact devices. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.


384E. Electromechanics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.


384N. Acoustics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.
Topic 1: *Acoustics I*. Same as Electrical Engineering 384N (Topic 1: *Acoustics I*). Plane waves in fluids; transient and steady-state reflection and transmission; lumped elements; refraction; strings, membranes, and rooms; horns; ray acoustics; absorption and dispersion.

Topic 2: *Acoustics II*. Same as Electrical Engineering 384N (Topic 2: *Acoustics II*). Rigorous derivation of acoustic wave equation; spherical and cylindrical waves; source theory; waveguides; vibrating piston; diffraction; arrays. Additional prerequisite: Electrical Engineering 384N (Topic 1: *Acoustics I*), Mechanical Engineering 384N (Topic 1), or consent of instructor.

Topic 3: Electromechanical Transducers. Same as Electrical Engineering 384N (Topic 3: *Electromechanical Transducers*). Electrical, mechanical, and acoustical dynamics; principles of energy conversion, transducer laws, and representation; effects of the transducer characteristics on accuracy and efficiency of energy transformation. Biomedical Engineering 384N (Topic 3: *Electromechanical Sensors/Actuators*) and Mechanical Engineering 384N (Topic 3) may not both be counted.

Topic 4: *Nonlinear Acoustics*. Same as Electrical Engineering 384N (Topic 4: *Nonlinear Acoustics*). Distortion and shock formation in finite amplitude waves; harmonic generation and spectral interactions; absorption and dispersion; radiation pressure; acoustic streaming; weak shock theory; numerical modeling; diffraction of intense sound beams; parametric arrays.

Topic 5: *Underwater Acoustics*. Same as Electrical Engineering 384N (Topic 5: *Underwater Acoustics*). Acoustical properties of the ocean; point sources and Green’s functions; reflection phenomena; ray theory; normal mode theory; guided waves in horizontally stratified fluid media; WKB and parabolic approximations. Additional prerequisite: Electrical Engineering 384N (Topic 1: *Acoustics I*), Mechanical Engineering 384N (Topic 1), or consent of instructor.

Topic 6: *Noise Control*. Same as Electrical Engineering 384N (Topic 6: *Noise Control*). Acoustic modeling techniques; panel radiation theory; absorption, barrier, and enclosure design; diagnosis based on experimental data.

Topic 7: *Ultrasonics*. Same as Electrical Engineering 384N (Topic 7: *Ultrasonics*). Acoustic wave propagation in liquids and solids and at interfaces; transducers, arrays; imaging and sonar systems. Biomedical Engineering 384N (Topic 7: *Ultrasonics*) and Mechanical Engineering 384N (Topic 7) may not both be counted.

**384Q. Design of Control Systems.** May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing; and Mechanical Engineering 364L or the equivalent.

Topic 1: *Introduction to Modern Control*. State variable methods, eigenvalues, and response modes; controllability, observability, and stability; calculus of variations; optimal control; Pontryagin maximum principle; control of regulator and tracking servomechanisms; Hamilton-Jacobi, dynamic programming; deterministic observers, Kalman filter; discrete and continuous time.

Topic 2: *Nonlinear Control Systems*. State space formulation; stability criteria; Liapunov functions; describing functions; signal stabilization; Popov and circle criteria for design.

Topic 7: *Stochastic Systems, Estimation, and Control*. Probability and random variables; filtering theory; stochastic calculus; stochastic control; engineering applications; linear and nonlinear systems; spectral techniques.

**384R. Robotics.** May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing.


Topic 2: *Design of Smart Mechanisms*. Design of reprogrammable multiple-degree-of-freedom architectures. The course addresses various mechanical configurations and stresses the integrated design approach to sensing/actuation/control architecture and control software. Includes design project.

Topic 3: *Advanced Dynamics of Robotic Systems*. Treatment in depth of the dynamics of robotic systems. Discussion of modeling, analysis, and control of conventional serial robots, in-parallel manipulators, dual arms, and legged locomotion systems.

Topic 4: *Geometry of Mechanisms and Robots*. Advanced topics in theoretical kinematics geometry: applications of screw system theory to the study of motion and force fields in spatial mechanisms and robotic systems; analytical and numerical schemes associated with kinematics geometry.


**385J. Topics in Biomedical Engineering.** Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing in engineering and consent of instructor.
Topic 1: Cell and Tissue Anatomy and Physiology for Engineers. An overview of cellular biology, including functional cellular anatomy, DNA replication and the cell cycle, protein synthesis, membrane structure and function, energy metabolism, cellular homeostasis, and cell repair and death; and functional anatomy and physiology of the basic tissues. Normally offered in the fall semester only.

Topic 2: Organ System Anatomy, Physiology, and Pathology for Engineers. The functional anatomy and physiology of the major human organ systems; representative pathologic disorders associated with these organs. An overview of general pathologic processes, with emphasis on the influences of normal and abnormal organ anatomy, physiology, and disease on the definition and solution of biomedical engineering problems. Two lecture hours and one three-hour laboratory a week for one semester. Normally offered in the spring semester only. Additional prerequisite: Mechanical Engineering 385J (Topic 1) or the equivalent.

Topic 3: Bioelectric Phenomena. Examines the physiological bases of bioelectricity and the techniques required to record bioelectric phenomena both intracellularly and extracellularly; the representation of bioelectric activity by equivalent dipoles and the volume conductor fields produced. Normally offered in the fall semester only.

Topic 4: Cardiovascular Dynamics. Anatomy, physiology, pathophysiology, and dynamics of the cardiovascular system, with emphasis on the design and application of electrical and mechanical devices for cardiac intervention. Normally offered in the fall semester only.


Topic 6: Biomedical Application of Transport Phenomena. Investigates radioisotopic methods for biological transport, including theory and experiments. Investigates artificial organ systems with clinical laboratory experiments to augment theory presented in lectures.

Topic 7: Biomedical Engineering Hospital Interfaces. Students gain firsthand knowledge of the instrumentation, procedures, and organization of a modern hospital. Class sessions are held in the different clinical services and laboratories of the hospital. Normally offered in the spring semester only.

Topic 12: Biomedical Heat Transfer. Heat transfer in biological tissue; determination of thermodynamic and transport properties of tissue; thermal effects of blood perfusion; cryobiology; numerical modeling methods; clinical applications. Normally offered in the fall semester only. Additional prerequisite: Mechanical Engineering 339, Chemical Engineering 353, or the equivalent.

Topic 13: Molecular Recognition in Biology and Biotechnology.

Topic 15: Biosignal Analysis. Theory and classification of biological signals such as EEG, EKG, and EMG. Data acquisition and analysis procedures for biological signals, including computer applications. Normally offered in the spring semester only.

Topic 16: Laser-Tissue Interaction: Optical. The optical behavior of random media such as tissue in interaction with laser irradiation. Approximate transport equation methods to predict the absorption and scattering parameters of laser light inside tissue. Port-wine stain treatment; cancer treatment by photochemotherapy; and cardiovascular applications. Normally offered in the fall semester only.

Topic 17: Biomedical Instrumentation II: Real-Time Computer-Based Systems. Design, testing, patient safety, electrical noise, biomedical measurement transducers, therapeutics, instrumentation electronics, and microcomputer interfaces. Several case studies are presented. Four structured laboratories and an individual project laboratory. Normally offered in the fall semester only.

Topic 18: Biomedical Image Processing. Physical principles and signal processing techniques used in thermographic, ultrasonic, and radiographic imaging, including image reconstruction from projections such as CT scanning, MRI, and millimeter wave determination of temperature profiles. Normally offered in the spring semester only. Additional prerequisite: Electrical Engineering 371R.

Topic 20: Network Thermodynamics in Biophysics. Modeling and simulation methods for nonlinear biological processes, including coupling across multienergy domains; practical implementation by bond graph techniques. Normally offered in the spring semester only. Additional prerequisite: Mechanical Engineering 344 or consent of instructor.
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Topic 26: Therapeutic Heating. Engineering aspects of electromagnetic fields that have therapeutic applications: diathermy (short wave, microwave, and ultrasound), electrosurgery (thermal damage processes), stimulation of excitable tissue, and electrical safety. Normally offered in the fall semester only.

Topic 27: The Biotechnology Revolution and Engineering Ethics. The history and status of genetic engineering; potential applications in medicine, agriculture, and industry; ethical and social issues surrounding the engineering of biological organisms; ethics in engineering practice in physical and biological realms. Normally offered in the spring semester only.

Topic 28: Noninvasive Optical Tomography. Basic principles of optical tomographic imaging of biological materials for diagnostic or therapeutic applications. Optical-based tomographic imaging techniques including photothermal, photoacoustic, and coherent methodologies.

Topic 29: Transport Processes in Biological Systems. Introduction to engineering analysis of transport phenomena in living systems, including fluid flow, heat transfer, pharmacokinetics, and membrane fluxes with clinical applications.

Topic 30: Introduction to Biomechanics. Modeling and simulation of human movement; neuromuscular control; computer applications; introduction to experimental techniques. Three lecture hours and one laboratory hour a week for one semester.

Topic 31: Biomedical Instrumentation I. Application of electrical engineering techniques to analysis and instrumentation in biological sciences: pressure, flow, temperature measurement; bioelectrical signals; pacemakers; ultrasonics; electrical safety; electrotherapeutics.

Topic 32: Projects in Biomedical Engineering. An in-depth examination of selected topics, such as optical and thermal properties of laser interaction with tissue; measurement of perfusion in the microvascular system; diagnostic imaging; interaction of living systems with electromagnetic fields; robotic surgical tools; ophthalmic instrumentation; noninvasive cardiovascular measurements. Three lecture hours and six laboratory hours a week for one semester. Additional prerequisite: Mechanical Engineering 385J (Topic 31).

Topic 33: Neurophysiology/Prosthesis Design. The structure and function of the human brain. Discussion of selected neurological diseases in conjunction with normal neurophysiology. Study of neuroprosthesis treatments and design philosophy, functional neural stimulation, and functional muscular stimulation. Normally offered in the fall semester only.

386Q. Materials Science: Structure and Properties.
May be repeated for credit when the topics vary. 
Prerequisite: Graduate standing and consent of instructor.

Topic 1: Theory of Materials. Periodic behavior and the periodic table; historical approach to the principles of crystal structure; complex alloy phases; some aspects of phase stability.
Topic 2: Phase Diagrams. Phase equilibria in materials systems; systematic treatment of unary, binary, and ternary phase diagrams.
Topic 4: Physical Metallurgy of Steels. The iron-carbon system; transformations and structures of steels; properties of pearlite, bainite, and martensite; tempering; hardenability and the effect of alloying elements.
Topic 7: Composite Materials. The theory of structural composite materials, their physical and mechanical properties; processing associated with metal-ceramic-polymer composites. Additional prerequisite: Mechanical Engineering 260K (or 360K) or the equivalent, Mechanical Engineering 378K or the equivalent, or consent of instructor.
Topic 9: Crystalline and Composite Anisotropy. Mathematical analysis of anisotropic materials, including single crystals, laminate composites, and deformation-hardened metals. Topics include thermal and electrical conductivity, diffusivity, thermal expansion, elasticity, and yielding.
Topic 10: High-Temperature Materials. Theory and practice in use of materials for high-temperature structural applications; case-study considerations of actual problems and requirements; interactive process-microstructure-property relationships in materials development and applications of superalloys, intermetallics, composites, and ceramics; prospective trends.
Topic 11: Ceramic Engineering. Bonding; crystal structures; defects; phase diagrams; glass ceramics; electrical, dielectric, magnetic, and optical ceramics.

386R. Materials Science: Physical and Electronic Properties. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Localized versus Itinerant Electrons in Solids. Same as Electrical Engineering 396K (Topic 9: Localized versus Itinerant Electrons in Solids). Description of electrons, from free atoms to crystals; band theory contrasted with crystal-field theory; evolution of electronic properties on passing from magnetic insulators to normal metals, from ionic to covalent solids, from single-valent compounds to mixed-valent systems; electron-lattice interactions and phase transitions; many examples. Additional prerequisite: A semester of quantum mechanics and a semester of solid-state science or technology.
Topic 3: Transport Properties of Transition-Metal Oxides. Electronic and ionic transport in transition-metal oxides as they relate to battery cathodes, solid oxide cells, spin electronics, thermistors, and high-temperature superconductors.

386S. Materials Science: Microelectronics and Thin Films. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Thin Films and Interfaces. Application of thin films and interfaces in microelectronics; basic properties, deposition techniques, microstructures and defects, diffusion characteristics; materials reaction in thin films and at interfaces.
Topic 2: Metallization and Packaging. Technology requirements and trends, impact of device scaling, multilayered interconnect structures, Schottky and ohmic contacts, contact reactions, silicide properties and applications, electromigration, thermal/mechanical properties, reliability. Additional prerequisite: Mechanical Engineering 386S (Topic 1).

386T. Materials Science: The Design of Technical Materials. The process of designing a material for a specific engineering function as illustrated for various materials. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Ionic Conductors. Same as Electrical Engineering 396K (Topic 10: Ionic Conductors).

387Q. Materials Science: Thermodynamics and Kinetics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 2: Kinetics and Phase Transformations. Nucleation and growth, spinodal decomposition, transformations in alloy systems.
Topic 3: Solidification. Liquid to solid transformations in pure materials, alloys and eutectics; applications such as zone refining, composites, and castings.
Topic 4: Corrosion. Electrode kinetics and the theory of polarization, passivity, galvanic coupling, and high temperature oxidation.
Topic 5: Thermodynamics of Materials. First and second laws, fugacity, activity, chemical equilibrium, phase diagrams, and introductory statistical concepts.
Topic 6: Statistical Thermodynamics of Materials. Quantum mechanics applied to partition functions of condensed and gaseous phases; chemical equilibria; phase transitions; and lattice statistics including the Ising model.
Topic 7: Group Theory and Phase Transformations. Symmetry principles and the associated mathematics applied to the description of condensed phases and their transformations.

387R. Materials Science: Experimental Techniques. Some topics may require additional laboratory hours; these are identified in the Course Schedule. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 5: Materials Characterization Techniques. Classification and selection of characterization techniques: principles and applications of diffraction, spectroscopic, quantitative chemical analysis, thermal analysis, and transport and magnetic measurement techniques.
Topic 7: Scanning Electron Microscopy. Theory and practice of scanning electron microscopy; image formation, elemental analysis, sample preparation, and electron-sample interactions. Three lecture hours and two laboratory hours a week for one semester.

387S. Materials Processing. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.


388Q. Nuclear and Radiation Engineering: Theoretical Concepts. Scientific and engineering concepts and analytical techniques in nuclear engineering. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and Mechanical Engineering 361E or the equivalent.

Topic 1: Nuclear Reactor Theory I. Principle concepts in the physics of nuclear systems, including radiation, radioactive decay, and the buildup and depletion of isotopes in nuclear systems; neutron-nucleus interactions and nuclear cross sections; transport or radiation using one-group and two-group diffusion theory; and concepts of criticality and time dependent reactors.
388R. Nuclear and Radiation Engineering: Systems Analysis. Engineering analysis of nuclear radiation and reactor systems. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and Mechanical Engineering 361E or the equivalent.

Topic 1: Nuclear Radiation Shielding. Radiation fields/sources; techniques in neutron and photon attenuation; transport description of radiation penetration.

Topic 2: Nuclear Power Engineering. Fundamental principles of the design and analysis of nuclear systems; introduction to the physics of nuclear reactions, chain reactions, and nuclear energy generation; heat generation and conduction within nuclear systems; heat transfer and fluid flow in nuclear systems; the thermodynamics of nuclear power; the nuclear fuel cycle; and issues related to the materials aspect of reactor engineering.

Topic 5: Nuclear Health Physics. Quantification of exposure to ionizing radiation mathematics and physics of sources, interactions, spectrometry, and dosimetry of ionizing radiation. Dispersion and environmental significance of radionuclides released into the environment, including deposition, environmental transport, uptake, and biological effects. Operational radiological safety and radiation measurements. Additional prerequisite: Mechanical Engineering 337D or consent of instructor.

389Q. Nuclear and Radiation Engineering: Design of Systems. Synthesis of engineering concepts, materials specifications, and economics in the design of nuclear systems. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and Mechanical Engineering 361E or the equivalent.

Topic 1: Design of Nuclear Systems. Integration of fluid mechanics, heat transfer, thermomechanics, and thermodynamics with reactor theory for core design.

389R. Nuclear and Radiation Engineering: Experimental Methods. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and Mechanical Engineering 361E or the equivalent.

Topic 1: Nuclear Engineering Laboratory. Experiments using the TRIGA reactor and a subcritical assembly; measurement of reactor characteristics and operational parameters.

Topic 2: Nuclear Analysis Techniques. Thermal and fast neutron activation, scintillation and solid-state detectors, beta and gamma spectrometry, coincidence techniques.

390N. Health Physics Laboratory. The application of radiation and radiation protection instrumentation. Includes personnel monitoring; radiation detection systems; gamma-ray spectroscopy; determination of environmental radiation; counting statistics; and gamma and neutron shielding. One lecture hour and three laboratory hours a week for one semester. Prerequisite: Graduate standing.

390T. Nuclear and Radiochemistry. Theory and application of nuclear and radiochemistry, including alpha, beta, and gamma ray processes; fission products; statistics; solvent extraction; absorption and teaching techniques; various counting methods; and radiation protection. One lecture hour and three laboratory hours a week for one semester. Prerequisite: Graduate standing.
391R. Artificial Intelligence Programming for Engineers. Provides a working knowledge of LISP and compares it with PROLOG; use of the Texas Instruments Explorer, and artificial intelligence techniques applied to engineering problems. Prerequisite: Graduate standing and consent of instructor.

392C. Design Optimization and Automation. Optimization in mechanical design, including monotonicity analysis, gradient-based constrained optimization, tree-searching, and stochastic approaches. Prerequisite: Graduate standing and proficiency in C or MATLAB.

392G. Computer Graphics and Computer-Aided Design. Studies in computer graphics and its application to design. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.


Topic 2: Computer-Aided Geometric Design. Introduction to techniques for representing geometry for computer-aided engineering design. Two- and three-dimensional curve formulations, techniques from algebraic and vector geometry, implicit versus parametric definitions; and free-form surface formulation and solid modeling. Additional prerequisite: Proficiency in C or C++.


Topic 4: Advanced Topics in Computer-Aided Design. Detailed execution of an independent computer-aided design project. Projects require significant development and emphasize application of techniques from computer-aided engineering and interactive computer graphics. Lectures deal with the subject matter of the projects. Additional prerequisite: Mechanical Engineering 352K, 392G (Topic 1), or 392G (Topic 2); and consent of instructor.

392M. Advanced Mechanical Design. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Analytical Techniques in Mechanical Design. Analytical techniques and some computational techniques for the advanced stress and strength analysis of machine components and mechanical structures.

Topic 3: Advanced Design of Machine Elements. Review of basic machine elements, properties, and stresses; fluid couplings and torque converters; thermal stresses, relaxation, and beneficial residual stressing; shells and rotors; plasticity.


392Q. Manufacturing. Topics that cut across departmental concentrations (mechanical systems and design, metallurgy and materials engineering, operations research and industrial engineering), including design for manufacturing, manufacturing machines and manufacturing processing, and production systems. Three lecture hours a week for one semester; additional laboratory hours may be required for some topics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.


Topic 4: Automation and Integration of Manufacturing Systems. Integration of automated manufacturing components into a cohesive manufacturing system. Selection of automation strategy, communication and interaction between system components, economics and reliability of the resulting systems.


248 Fields of Study
Topic 6: *Mechatronics I*. Integrated use of mechanical, electrical, and computer systems for information processing and control of machines and devices. System modeling, electromechanics, sensors and actuators, basic electronics design, signal processing and conditioning, noise and its abatement, grounding and shielding, filters, and system interfacing techniques. Three lecture hours and two laboratory hours a week for one semester.

Topic 7: *Microcomputer Programming and Interfacing*. Microcomputer architecture and programming; microcomputer system analysis; interfacing and digital control.

Topic 8: *The Factory of the Twenty-First Century*. Projection of technologies that may significantly affect discrete-parts manufacturing ten to twenty-five years into the future. Speakers may include leaders from academia, government, and industry.

Topic 9: *Mechatronics II*. Interfacing microcomputers with sensors and actuators; hybrid (analog/digital) design; digital logic and analog circuitry; data acquisition and control; microcomputer architecture, assembly language programming; signal conditioning, filters, analog-to-digital and digital-to-analog conversion. Three lecture hours and two laboratory hours a week for one semester.

**394J. Energy Systems.** Same as Electrical Engineering 394J. May be repeated for credit when the topics vary. *Prerequisite:* Graduate standing in engineering and consent of instructor.

Topic 1: *Power System Engineering I*. Physical features, operational characteristics, and analytical models for major electric power systems and components.

Topic 2: *Power System Engineering II*. Advanced techniques for solving large power networks; loadflow, symmetrical components, short circuit analysis.


Topic 4: *Environmental Engineering and Energy Systems*. Environmental effects and controls for air, water, and land pollution for power systems.


Topic 6: *Energy Conversion Engineering*. Thermal analysis and operating characteristics of systems for electric power generation.

**397. Current Studies in Engineering.** The equivalent of three class hours a week for one semester. May be repeated for credit when the topics vary. *Prerequisite:* Graduate standing and consent of the graduate adviser.


**197K, 297K, 397K. Graduate Seminar.** Normally required of all mechanical engineering graduate students. For each semester hour of credit earned, one lecture hour a week for one semester. May be repeated for credit when the topics vary. Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing.

Topic 1: *Acoustics*.

Topic 2: *Advanced Thermal/Fluid Seminar*.

Topic 3: *Materials Engineering*.

Topic 4: *Mechanical Systems and Design*.

Topic 5: *Nuclear Engineering*.

Topic 6: *Introductory Thermal/Fluid Seminar*.

**397M. Graduate Research Internship.** Research associated with enrollment in the Graduate Research Internship Program (GRIP). Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing and consent of instructor and the dean of the College of Engineering.

**197P, 297P, 397P. Projects in Mechanical Engineering.** Independent project carried out under the supervision of a mechanical engineering faculty member. Three, six, or nine laboratory hours a week for one semester. *Prerequisite:* Graduate standing and consent of instructor and the graduate adviser.

**698. Thesis.** The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. *Prerequisite:* For 698A, graduate standing in mechanical engineering and consent of the graduate adviser; for 698B, Mechanical Engineering 698A.
398R. Master's Report. Preparation of a report to fulfill the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in mechanical engineering and consent of the graduate adviser.

398T. Supervised Teaching in Mechanical Engineering. Teaching under close supervision, group meetings or individual consultations, and reports as required. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and appointment as a teaching assistant.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Mechanical Engineering 399R, 699R, or 999R.

OPERATIONS RESEARCH AND INDUSTRIAL ENGINEERING

Master of Science in Engineering

Doctor of Philosophy

Operations research is a mathematical science concerned with optimal decision making and the modeling of deterministic and probabilistic systems. Its focus and field of application are interdisciplinary, embracing a broad range of quantitative techniques. Industrial engineering is concerned with the design, improvement, and installation of integrated systems of personnel, material, and equipment. Together, operations research and industrial engineering provide a rational approach to engineering and managerial problem solving through the deliberate application of scientific methods.

In practice, operations research and industrial engineering address both the performance objectives and the resource constraints of an organization, working toward the establishment of policies that are most beneficial to the organization as a whole. The function of the operations research analyst or the industrial engineer is to guide decision making by identifying underlying cause-and-effect relationships, developing and proposing courses of action, establishing criteria by which to judge their effectiveness, and evaluating their probable effects. The program in operations research and industrial engineering is designed to allow students to develop the technical, analytic, and managerial skills necessary to perform these tasks successfully.

OBJECTIVES

The principal goals of the program are to provide the student with the educational basis for continued learning and to impart the fundamental skills necessary to be a successful analyst. Students are expected to develop proficiency in one or more programming languages, expertise in mathematical modeling, and an understanding of the uses and limitations of commercial optimization and statistical software. The master's degree program balances theory and applications. At the doctoral level, the program's emphasis on research is intended to enable students to extend their field of knowledge and to develop the analytic techniques that will serve them in academic, industrial, or governmental careers.

AREAS OF STUDY

The program in operations research and industrial engineering is designed to educate engineers who will solve complex industrial-socioeconomic problems by applying fundamental principles from engineering, mathematics, economics, computer science, and systems theory. In support of this end, a wide variety of research and study areas are offered by a faculty whose expertise covers such fields as optimization,
simulation, statistics, stochastic processes, and manufacturing systems. The program is rigorous but sufficiently flexible to accommodate the needs and interests of most students.

Once a student chooses a study area, he or she works closely with one or more faculty members pursuing research in that area. Because of the interdisciplinary nature of the program, many projects involve teamwork and collaboration with departments in the College of Engineering and the McCombs School of Business. Each student’s program includes a balanced combination of coursework, seminars, computational analysis, and research. State-of-the-art computer facilities, specialized laboratories, and the latest versions of applications software are available to all graduate students.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Jonathan F. Bard
J. Wesley Barnes
Melba M. Crawford
John J. Hasenbein
Erhan Kutanoglu
David P. Morton
Elmira Popova

ADMISSION REQUIREMENTS

The Admission Committee uses the following policies in considering applicants for admission. Each application is reviewed on its merits.

1. Applicants must provide a Graduate Record Examinations General Test score no more than five years old. The applicant should have a grade point average in upper-division undergraduate coursework of at least 3.20 on a 4-point scale, or the equivalent. Students who feel that their GRE scores and grades do not reflect their ability to do high-quality graduate work should submit a statement explaining this belief.

2. Both the master’s and the doctoral degree program are designed for full-time study, but part-time students are accepted. From the time of entry until completion, students are expected to show evidence of commitment to the program and of progress toward the degree.

3. As a general rule, students should enter the program in the fall semester, because of the way basic graduate courses are scheduled.

4. Students who do not have undergraduate degrees in engineering, mathematics, or the sciences may be required to remove deficiencies before beginning graduate coursework.

DEGREE REQUIREMENTS

Master of Science in Engineering

To enter the MSE program, a student should have an undergraduate degree in engineering or an equivalent quantitative field such as mathematics, economics, or one of the physical sciences. The graduate adviser may require those with degrees in other fields to take additional courses. In general, an adequate background includes coursework in probability, statistics, computer programming, linear algebra, calculus, engineering economics, and optimization. These courses may be taken after enrollment, but they usually will not be counted toward fulfillment of degree requirements.
The operations research component of the program emphasizes the application of mathematics to a variety of economic and operational problems. Students take advanced coursework in optimization, probability and statistics, and stochastic processes. Those interested primarily in industrial engineering may concentrate on forecasting, project management, production planning and control, scheduling, or reliability. Each student must complete either thirty semester hours of coursework, including a thesis; thirty-three semester hours of coursework, including a report; or thirty-six hours of coursework. (Students must have the approval of the graduate adviser to follow the thirty-six-hour option.) More coursework may be required, depending on the student's background and goals. All options require at least two courses in a minor area, which usually comprises work in mathematics, business, computer science, or other branches of engineering.

**Doctor of Philosophy**

The chief components of this program are scholastic excellence and original research. Although there is no specific number of semester hours required for the doctoral program, the student must meet the requirements of the Graduate Studies Committee. He or she usually completes twenty-four to thirty-six semester hours of graduate coursework beyond the master's degree. Formal admission to candidacy is considered by the Graduate Studies Committee after a thorough review of the student's overall academic record and performance on the doctoral qualifying examination.

**FOR MORE INFORMATION**

*Campus address:* Engineering Teaching Center (ETC) 5.128, phone (512) 471-1336, fax (512) 471-8727; campus mail code: C2200

*Mailing address:* The University of Texas at Austin, Operations Research and Industrial Engineering Program, Department of Mechanical Engineering, 1 University Station C2200, Austin TX 78712

*E-mail:* wbarnes@mail.utexas.edu

*URL:* http://www.me.utexas.edu/~orie/
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Operations Research and Industrial Engineering: ORI

180M, 280M, 380M, 680M, 980M. Research. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in operations research and industrial engineering.

381. Deterministic Methods for Operations Research. Theory and algorithms for deterministic operations research methods. Algorithms for solving linear, integer, and nonlinear optimization models. May not be counted toward a degree in operations research and industrial engineering. Prerequisite: Graduate standing.

382. Stochastic Methods for Operations Research. Theory and algorithms for stochastic operations research methods. Algorithms related to stochastic processes: Markov chain analysis; queueing theory; stochastic inventory theory and decision analysis. May not be counted toward a degree in operations research and industrial engineering. Prerequisite: Graduate standing and Mechanical Engineering 335 or the equivalent.

390Q. Industrial Engineering. Industrial engineering techniques for quantitative solution of contemporary systems and management problems. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Project Management. Methods for organizing, coordinating, and controlling resources to minimize risk and conflict and to maintain budgets and schedules. Topics include evaluation of competing alternatives, organization of a project, scheduling of tasks and resources, and the role of management over time.

Topic 2: Production and Inventory Control. Issues in inventory control with known and unknown demand, materials requirement planning, just-in-time, pull control systems, operations scheduling, dispatching and aggregate planning, and the basic dynamics of production and inventory control.

Topic 3: Facility Layout and Location. Layout of operations within a facility, design of the material flow, choice of flexible manufacturing systems and/or cellular manufacturing, location of facilities within a geographic region, and distribution using mathematical models and optimization.


390R. Statistics and Probability. Concepts of probability and mathematical statistics; application of these analytical methods to planning and evaluation of research and industrial experimentation. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and an undergraduate calculus-based course in probability and statistics or consent of instructor.


Topic 2: Mathematical Statistics. Sampling distributions, properties of estimators, point and interval estimation, hypothesis testing, introduction to multivariate and nonparametric statistics.

Topic 3: Time-Series Analysis. Classical techniques in time domain forecasting Box-Jenkins univariate, transfer function, and multivariate time-series analysis.


Topic 6: *Regression and Analysis of Variance*. Fitting equations to data; joint confidence regions; partial correlation analysis; general linear hypotheses; dummy variables; diagnostics and remedial measures; design of experiments; fixed, random, and mixed models; factorial and nested designs. Additional prerequisite: Operations Research and Industrial Engineering 390R (Topic 2) or consent of instructor.


Topic 8: *Queueing Theory*. Introduction to the classical and modern theories of queueing systems. Simple Markovian queues; the M/G/1 and G/G/1 queues; Jackson and Kelly networks; multiclass networks; stability, scheduling, and routing in queueing networks; fluid and diffusion approximations. Additional prerequisite: Operations Research and Industrial Engineering 390R (Topic 1) or consent of instructor.


Topic 10: *Statistical Design of Experiments*. Introduction to statistical design of experiments based on both classical analysis of variance and modern heuristic techniques. Additional prerequisite: Operations Research and Industrial Engineering 390R (Topic 1) or the equivalent, 390R (Topic 2) or the equivalent, and 390R (Topic 6) or the equivalent.


Topic 14: *Special Topics in Probability, Stochastic Processes, and Statistics*. Study of specialized topics, such as advanced stochastic processes, Bayesian statistics, simulation, and stochastic optimization, intended to introduce and stimulate further research. Additional prerequisite: Consent of instructor.

391Q. **Optimization**. Mathematical optimization techniques with applications to engineering and industrial problems. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and a course in operations research methods.


Topic 2: *Dynamic Programming*. Systems that require sequential decisions. Problem modeling and solution algorithms for deterministic and stochastic systems.


Topic 5: *Linear Programming*. Models, algorithms, and theory of linear programming. Linear programming geometry, primal, dual and revised simplex algorithms, duality theory, optimality conditions, sensitivity analyses, interior point methods, and computer implementations.


Topic 7: *Multicriteria Decision Making*. Techniques for problems involving more than one criterion measured on incommensurate scales, such as dollars, reliability, and quality of life. Topics include methods for generating nondominated solutions, interactive procedures for continuous problems, goal programming, multiattribute utility theory, and the analytic hierarchy process.

Topic 8: *Combinatorial Optimization*. Optimization of combinatorial structures; computational complexity; stable marriages, shortest paths, maximum flows, minimum-cost flows, matching problems; approximation algorithms for NP-hard problems.
Topic 9: Large-Scale Systems Optimization. Mathematical programs with special structure, Dantzig-Wolfe decomposition, partitioning and relaxation procedures, duality and decomposition, compact inverse methods, applications in engineering and management.

Topic 10: Stochastic Optimization. Optimization of mathematical programming models under uncertainty; model formulations; exact, bounding-and-approximation, and Monte Carlo sampling-based solution techniques that exploit special structures; applications; use of algebraic modeling language.


397. Current Studies in Operations Research and Industrial Engineering. The equivalent of three class hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

197K, 297K, 397K. Graduate Seminar. One, two, or three lecture hours a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Normally required of all students in operations research and industrial engineering. Prerequisite: Graduate standing.

397M. Graduate Research Internship. Students conduct research in an industrial setting to gain practical experience in their area of interest. Twenty to forty hours of fieldwork a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of the graduate adviser and supervising faculty member.

197P, 297P, 397P. Projects in Operations Research and Industrial Engineering. Independent project carried out under the supervision of a faculty member in operations research and industrial engineering. Three, six, or nine laboratory hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in operations research and industrial engineering and consent of the graduate adviser; for 698B, Operations Research and Industrial Engineering 698A.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in operations research and industrial engineering and consent of the graduate adviser.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Operations Research and Industrial Engineering 399R, 699R, or 999R.
PETROLEUM ENGINEERING

Master of Science in Engineering
Doctor of Philosophy

OBJECTIVES

This program is designed to educate engineers to solve problems related to exploring and recovering subsurface resources such as oil and gas. In addition to the traditional advanced petroleum engineering areas, the program allows students to study in situ environmental cleanup and underground waste disposal. Students may specialize in computational geosystems engineering, drilling engineering, environmental and geosystems engineering, formulation evaluation, petroleum economics, production engineering, or reservoir engineering.

Students take several courses in their area of specialization and have the option of taking courses from the other areas. A list of the courses in each area is available from the graduate adviser. Once students have chosen a degree option, they may choose to work closely with a faculty member conducting research in that area. The program offers a doctoral degree based on a combination of coursework and research, and a master's degree based on either a thesis or a report, or on coursework alone.

FACILITIES FOR GRADUATE WORK

Excellent facilities for graduate research in petroleum and geosystems engineering are available in the Chemical and Petroleum Engineering Building. In addition to departmental offices and classrooms, the building houses over forty thousand square feet of laboratory space, providing unique capabilities for studies in production logging, vertical and inclined flow in wells, artificial lift, core flooding for enhanced oil recovery techniques, subsurface environmental remediation, drilling, stimulation, rock mechanics, well log digitizing and interpretation, and PVT analysis. Additional laboratory space at the J.J. Pickle Research Campus is used for research. A machine shop is maintained to fabricate and support research equipment.

In addition to the facilities of Information Technology Services, students have access to a host of computers housed in the Department of Petroleum and Geosystems Engineering, including numerous microcomputers and workstations. Excellent library facilities include the Mallet Chemistry Library, the McKinney Engineering Library, the Walter Geology Library, and the Kuehne Physics Mathematics Astronomy Library.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Steven L. Bryant
Mojdeh Delshad
Kenneth E. Gray
Russell T. Johns
Larry W. Lake
Jon E. Olson
Ekwere J. Peters
Augusto L. Podio
Gary A. Pope
William R. Rossen
Kamy Sepehrnoori
Mukul M. Sharma
Sanjay Srinivasan
Carlos Torres-Verdin
W.C.J. van Rensburg
Mary F. Wheeler
ADMISSION REQUIREMENTS
All prospective degree candidates must have a background satisfactory for study of advanced petroleum engineering as determined by the Graduate Studies Committee. For students without this background, such as those without degrees in the field, the Graduate Studies Committee will recommend a program of coursework designed to prepare the student for graduate study. Complete requirements for admission are available at http://www.pge.utexas.edu/prospective/howto.cfm.

DEGREE REQUIREMENTS

Master of Science in Engineering
With the approval of the Graduate Studies Committee, the student elects one of three options:

1. Thesis option. Thirty semester hours (including six hours in the thesis course) are required to complete the program. In addition to the thesis, eighteen semester hours of work must be completed in the Department of Petroleum and Geosystems Engineering; six semester hours of supporting work must be completed outside the department.

2. Report option. Thirty-three semester hours (including three hours in the report course) are required to complete the program. In addition to the report, twenty-four semester hours of work must be completed in the Department of Petroleum and Geosystems Engineering; six semester hours of supporting work must be completed outside the department.

For students who plan to continue their studies and enter the doctoral degree program, the report may be a PhD proposal.

3. Option without thesis or report. Thirty-six semester hours are required to complete the program. Twenty-seven to thirty semester hours of work must be completed in the Department of Petroleum and Geosystems Engineering; six to nine semester hours of supporting work must be completed outside the department.

All options must include at least eighteen semester hours of engineering courses. The program of coursework must be approved by the graduate adviser and the graduate dean. More detailed information is available at http://www.pge.utexas.edu/current/grad.cfm.

Doctor of Philosophy
To qualify as a doctoral candidate, the student must fulfill the following requirements:

1. Hold a Master of Science degree in science or engineering. Upon formal petition by the student, the Graduate Studies Committee may waive this requirement in exceptional cases.

2. Perform satisfactorily on the qualifying procedures conducted by the Graduate Studies Committee.

3. Maintain a grade point average of at least 3.50 on all graduate coursework at the University of Texas at Austin.

In general, two to four years beyond the master's degree are required to complete the Doctor of Philosophy degree program. More detailed information is available at http://www.pge.utexas.edu/current/grad.cfm.
FOR MORE INFORMATION

Campus address: Chemical and Petroleum Engineering Building (CPE) 2.502, phone (512) 471-3161, fax (512) 471-9605; campus mail code: C0300

Mailing address: The University of Texas at Austin, Graduate Program, Department of Petroleum and Geosystems Engineering, 1 University Station C0300, Austin TX 78712

E-mail: pgegradoffice@mail.utexas.edu

URL: http://www.pge.utexas.edu/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Petroleum and Geosystems Engineering: PGE

380, 680. Advanced Petroleum Laboratory for Master's Degree Candidates. For each semester hour of credit earned, the equivalent of one class hour a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and twelve semester hours of upper-division coursework in petroleum and geosystems engineering.

381. Drilling Engineering. Not open to students who have a degree in petroleum engineering. Basic drilling terminology and advanced drilling engineering topics. Required for students pursuing the doctoral degree in petroleum engineering. Prerequisite: Graduate standing in petroleum engineering.

381K. Engineering Analysis. Application of classical methods of mathematical analysis to problems frequently encountered in engineering applications. Prerequisite: Graduate standing.

381L. Advanced Petrophysics. Measurement, interpretation, and analysis of petrophysical properties of petroleum reservoir rocks. Prerequisite: Graduate standing.

381M. Transport Phenomena. Prerequisite: Graduate standing in computational and applied mathematics, engineering, or geological sciences.

382. Basic Geological Concepts for Engineers. Basic geological principles for students with little or no geological background. Prerequisite: Graduate standing in petroleum or civil engineering.

382K. Theory and Application of Reservoir Transients. Mathematical development and application of multiple pressure transients in well and reservoir systems. Prerequisite: Graduate standing.

382L. Numerical Methods in Petroleum and Geosystems Engineering. Same as Computational and Applied Mathematics 382L. The use of numerical methods and computers in the solution of petroleum and geosystems engineering problems. Prerequisite: Graduate standing.

383. Special Topics in Petroleum and Geosystems Engineering. Recent literature on petroleum production practice and petroleum and geosystems engineering problems. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in computational and applied mathematics, engineering, or geological sciences. Students seeking to enroll in any seminar must present technical prerequisites satisfactory to the instructor.

Topic 2: Advanced Drilling Fluids.

Topic 5: Thermal Recovery.

Topic 6: Advanced Reservoir Engineering.


Topic 12: Near Wellbore Problems.

Topic 17: Naturally Fractured Reservoirs.
Topic 20: Geostatistics.
Topic 24: Natural Gas Engineering.
Topic 28: Macroeconomics of Petroleum.
Topic 33: Advanced Drilling and Well Completion.
Topic 35: Advanced Production Engineering.
Topic 38: Chromatographic Transport and Geochemical Modeling.
Topic 39: Design and Analysis of Pumping Systems.
Topic 41: Energy Finance.
Topic 46: International Petroleum Concessions and Agreements.
Topic 50: Reservoir Applications of Foam.
Topic 51: Special Problems in Well-Logging.
Topic 57: Deepwater Operations. Overview of various technical, logistical, and managerial elements that are functionally integrated in deepwater operations, with emphasis on applications in the Gulf of Mexico.
Topic 58: Applied Reservoir Characterization. Reservoir modeling using software tools for statistical analysis of reservoir data; variogram analysis and modeling; spatial interpolation (kriging); tools for data integration in kriging; stochastic simulation of rock types (lithology), pay thickness/porosity, and permeability; inputting geological models into flow simulation; uncertainty assessment.

384. Advanced Thermodynamics and Phase Behavior. Thermodynamic study of pressure/volume/temperature/composition relationships in oil and gas mixtures. May be repeated for credit. Prerequisite: Graduate standing in petroleum engineering and twelve semester hours of upper-division coursework in petroleum and geosystems engineering.

385M. Advanced Well-Logging and Correlation. Advanced well-logging for the geologist and engineer, involving working problems with suites of well logs to cover advanced mapping and logging techniques. Prerequisite: Graduate standing, Petroleum and Geosystems Engineering 368, and Geological Sciences 383.

386K. Advanced Fluid Flow in Porous Media. The hydrodynamic equations governing the steady state flow of homogeneous fluids in porous media and their application to petroleum and geosystems engineering problems. Prerequisite: Graduate standing.

387. Secondary Recovery of Petroleum. Recovery by gas injection and water flooding. Prerequisite: Graduate standing in petroleum engineering and twelve semester hours of upper-division coursework in petroleum and geosystems engineering.

387K. Fundamentals of Enhanced Oil Recovery I. Recent innovations in the recovery of petroleum by injecting fluids miscible with the oil or by application of heat to the reservoir. Prerequisite: Graduate standing.

387L. Fundamentals of Enhanced Oil Recovery II. Selection of candidate reservoirs; design and performance prediction of miscible and thermal processes. Prerequisite: Graduate standing and Petroleum and Geosystems Engineering 387K.

388. Advanced Reservoir Engineering. Basic concepts of reservoir engineering, with applications to the production of hydrocarbons from both gas and oil reservoirs. Examines the governing equations for flow in permeable media, as well as concepts such as streamline flow; pseudo-steady-state flow, fractional flow, and both immiscible and miscible flow. Uses black oil and compositional reservoir simulators. Prerequisite: Graduate standing in computational and applied mathematics, engineering, or geological sciences. Students must present technical prerequisites satisfactory to the instructor.

389. Economic Analysis in the Petroleum Industry. Engineering justification for capital outlay in the petroleum industry. Prerequisite: Graduate standing in engineering or geological sciences.

290, 390, 690, 990. Advanced Laboratory for Doctoral Candidates. For each semester hour of credit earned, the equivalent of one class hour a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in petroleum engineering.

392K. Numerical Simulation of Reservoirs. Development and application of reservoir simulator models to primary and secondary recovery processes in reservoir engineering. Prerequisite: Graduate standing.
393. Research Seminar. For each semester hour of credit earned, the equivalent of one class hour a week for one semester. May be repeated for credit when the topics vary. Offered on the credit/no credit basis only. Prerequisite: Graduate standing.

397M. Graduate Research Internship. For students holding Master of Science degrees from other institutions who wish to pursue Doctor of Philosophy degrees at the University of Texas at Austin. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of the graduate adviser and the dean of the College of Engineering.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in petroleum engineering and consent of the graduate adviser; for 698B, Petroleum and Geosystems Engineering 698A.

398R. Master's Report. Preparation of a report to fulfill the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in petroleum engineering and consent of the graduate adviser.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Petroleum and Geosystems Engineering 399R, 699R, or 999R.
College of Fine Arts

FINE ARTS

Master of Arts
Master of Fine Arts
Master of Music
Doctor of Musical Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

In addition to the academic departments, the College of Fine Arts includes the Performing Arts Center and the Jack S. Blanton Museum of Art. These components provide University students and the Austin community with opportunities to attend art exhibitions, plays, operas, ballets, recitals, and concerts by internationally renowned artists and companies. The proximity of Austin to Houston, San Antonio, Dallas, and Fort Worth places the major art collections and dramatic and musical events of those cities within a few hours’ drive.

Performing Arts Center. Created in 1981, the Performing Arts Center (PAC) complex includes six venues to accommodate diverse performances: Nancy Lee and Perry R. Bass Concert Hall (three thousand seats), the Ralph and Ruth McCullough Theatre (four hundred seats), Hogg Memorial Auditorium (twelve hundred seats), the B. Iden Payne Theatre (five hundred seats), the Oscar G. Brockett Theatre (two hundred seats), and Kate Broocks Bates Recital Hall (seven hundred seats), with its three-story Visser-Rowland tracker pipe organ. Support facilities include rehearsal rooms, paint shops, scene shops, costume shops, metal shop, prop shop, and administrative offices. The Performing Arts Center’s mission is to educate, enlighten, and entertain with a season program that includes artists from around the world, reflecting a multitude of cultures and art forms. In addition, the PAC maintains the Artsreach program, which helps the Austin community to become more involved with the performing arts through preperformance lectures, master classes, residencies, youth performances, and workshops. The PAC also serves as a learning laboratory for University students, giving them the opportunity to work alongside professionals in a variety of fields.

Jack S. Blanton Museum of Art. Founded in 1963, the Jack S. Blanton Museum of Art is one of the finest university art museums in the country and an important center for scholarship, research, and professional training in the visual arts. Students have opportunities to gain firsthand experience in academic and museum careers through formal internships and work with curators and faculty members on exhibitions, educational programs, and conservation activities. The museum’s permanent collection includes more than thirteen thousand works of art that span the history of Western civilization from antiquity to the present. Highlights include the Suida-Manning Collection of Renaissance and Baroque Art, a collection of twentieth-century American art that features the Mari and James A. Michener Collection, the C.R. Smith Collection of Art of the American West, and the Contemporary Latin American Art Collection. Holdings of prints and drawings, available for study in the Clark...
Print Room, consist of more than eleven thousand works on paper dating from the fifteenth century to the present. Also on view at the museum are antiquities from ancient Greece and Rome and the William J. Battle Collection of Plaster Casts, which features life-size cast replicas of the great masterpieces of ancient Greek and Roman sculpture.

**Fine Arts Library.** Located in the E. William Doty Fine Arts Building, the Fine Arts Library contains materials on art, theatre, dance, and music.

The art collection supports instruction and research for the four divisions of the Department of Art and Art History: art history, design, studio art, and visual arts studies/art education. The collection includes materials on most art and design movements and schools, photography, and art education. Artists of most periods and nationalities and studies of their works are represented, as are most media and techniques.

The theatre and dance collection supports the Department of Theatre and Dance, which concentrates on performance, especially play production, theatrical design, playwriting, theatre education, and dance. Materials on other types of theatrical presentations, such as magic, circuses, and pantomime, are included. The Fine Arts Library holds texts of major plays written in English or translated into English, with contemporary plays collected most heavily. The Perry-Castañeda Library also holds texts of plays in English and other languages, with emphasis on plays as a literary form and on literary criticism.

The music collection supports instruction and research in the School of Music, which includes music performance, composition, ethnomusicology, music and human learning, music theory, and musicology. Most historical periods and geographical areas are covered in both classical and popular idioms, though the emphasis is on the Western classical tradition. Music is represented in a wide variety of printed and recorded formats.

Fine Arts Library services include reference and research assistance, instruction, circulation and reserves, and media and technology support. The Fine Arts Library is wireless and offers a broad range of media equipment and computing hardware and software to support the study of the fine arts.

**AREAS OF STUDY**

Graduate study is available in the following areas: in the Department of Art and Art History: art history, studio art, design, and art education; in the School of Music: music performance (including conducting and opera), music and human learning, musicology (including ethnomusicology), and music composition and music theory; a jazz emphasis is available in approved areas; and in the Department of Theatre and Dance: acting, dance, directing, drama and theatre for youth, playwriting, teacher training, technical production, theatre history/criticism, and theatrical design. Information about these programs follows; further information is available from the graduate adviser of each program.
GRADUATE COURSES
The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Fine Arts: F A

381. The Arts. Topics within the fine arts, or including the fine arts and other areas. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

382. Independent Studies: Art, Drama, or Music. Study or research in art, drama, or music, or among these areas, or between these areas and other disciplines. Individual instruction. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor and of the dean of the College of Fine Arts.

ART EDUCATION
Master of Arts

FACILITIES FOR GRADUATE WORK
Area public school districts, including those of Austin and Round Rock, provide research and internship opportunities for students, as do private schools, retirement centers, hospitals, and museums. Students have access to the University’s libraries, including the Perry-Castañeda Library, with more than two million volumes, and the Fine Arts Library, which contains a substantial slide collection. Of particular note to museum education majors are the collections of the Jack S. Blanton Museum of Art. Both the Department of Art and Art History and the College of Fine Arts offer access to computer laboratories.

AREAS OF STUDY
Graduate study in art education involves advanced coursework designed to develop the student’s ability to teach art. The program emphasizes theory, practice, and research in the teaching of art in kindergarten through the twelfth grade, in museums, and in adult learning environments. The degree also requires advanced work in studio art or art history. Graduates may seek teaching positions or continue their studies in a doctoral degree program. Those who plan to teach in Texas public schools should fulfill the additional requirements for teacher certification.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Christopher D. Adejumo
Paul E. Bolin
Rebecca L. Brooks

Jarvis W. Ulbricht
Fred Woody
ADMISSION AND DEGREE REQUIREMENTS

The master's degree program comprises three specializations, options A, B, and C. Option A is designed for students who wish to investigate art learning, concepts, and strategies appropriate for teaching art in schools. Option B emphasizes art museum education. Option C focuses on community-based art education. A bachelor's degree in art education, studio art, or art history is suggested for admission to any option; however, special consideration may be given to the applicant with a related bachelor's degree and experience in art teaching, museum education, or work with nontraditional populations. Teacher certification is available for all options with additional coursework through the College of Education and the visual art studies division.

All options require thirty-six semester hours of coursework, consisting of six hours of studio art and/or art history; twenty-one hours of art education, including three hours of internship or classroom research; three hours in a supporting area such as research design; and six hours in the thesis course. The student must pass a written and an oral examination upon completion of twenty-one semester hours and before beginning the thesis.

FOR MORE INFORMATION

Campus address: Art Building (ART) 3.344, phone (512) 471-3377; campus mail code: D1300

Mailing address: The University of Texas at Austin, Graduate Program in Art Education, Department of Art and Art History, 1 University Station D1300, Austin TX 78712

URL: http://www.utexas.edu/cofa/a_ah/aca/vasgra.html

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Art Education: AED

381G. Foundations of Art Education. Explores foundational writings and beliefs, past and present literature, and perspectives within art education. Art Education 381 and 381G may not both be counted. Prerequisite: Graduate standing in art education and consent of the graduate adviser.

381K. Contemporary Issues in Art Education. The role of art education in education and society, including technology, multiculturalism, gender studies, contemporary art, visual and material culture, interdisciplinary connections, media studies, and community-based art education. Art Education 381J and 381K may not both be counted. Prerequisite: Graduate standing in art education, Art Education 381G, and consent of the graduate adviser.

382G. Introduction to Research in Art Education. Explores diverse approaches and methodologies for conducting research in art education. Prerequisite: Graduate standing in art education and consent of the graduate adviser.

382H. Thesis Proposal and Preparation. Focuses on the preparation of a graduate thesis proposal, with emphasis on the student's identification of a central research question. Art Education 382 and 382H may not both be counted. Prerequisite: For art education majors, graduate standing, Art Education 382G, and consent of the graduate adviser; for others, graduate standing and consent of instructor.

383J. Museum Education: History and Theory. Historical and philosophical development of American art museum education. Prerequisite: Graduate standing and consent of the graduate adviser.

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383K. Museum Education: Practice and Application. The practice and application of museum education within the context of art museums. Prerequisite: Graduate standing and consent of the graduate adviser.

384. Special Topics in Art Education. Readings, discussion, and research relevant to major current trends in art education. The equivalent of three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

Topic 1: Psychology of Artistic Development.
Topic 2: Program Development and Administration.
Topic 3: Interdisciplinary Approaches to Visual Arts.
Topic 4: Community-Based Art Education.
Topic 5: History of Art Education.

385. Independent Study in Art Education. Student-initiated study with an art education faculty member covering the topic of student's research focus. The equivalent of three lecture hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing in art education, written approval of the designated faculty member, and consent of the graduate adviser.

386. Internship and Field Study. Supervised observation and research in art education related to the candidate's area of emphasis. May be repeated for credit. Prerequisite: Graduate standing and consent of the graduate adviser.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in art education, passage of an oral and written examination, and consent of the graduate adviser; for 698B, Art Education 698A.

398T. Supervised Teaching in Art Education. Teaching under the close supervision of the course instructor for one semester; weekly group meetings with the instructor, individual consultations, and reports throughout the teaching period. Two lecture hours and four laboratory hours a week for one semester. Prerequisite: Graduate standing in art education, or graduate standing and appointment as a teaching assistant.

ART HISTORY

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

Facilities for study and research include an open-shelf library containing more than 85,000 volumes and periodicals; a collection of 450,000 slides; a highly specialized photographic study collection containing many unique photographs; and the Jack S. Blanton Museum of Art, which has an active exhibition program and can provide training in the various aspects of museum work.

The Fine Arts Library is supplemented by the Perry-Castañeda Library, with holdings of more than two million volumes; by the rare books and manuscripts of the Harry Ransom Humanities Research Center; and by the specialized libraries of the School of Architecture, the Department of Classics, and the Teresa Lozano Long Institute of Latin American Studies.

Visual resources on campus include the Mari and James A. Michener Collection of American Painting; the Duncan Collection of Latin American Art; the Suida-Manning Collection of Renaissance and Baroque Art; an encyclopedic print collection; the Battle Collection of casts after ancient sculpture; and additional drawings, paintings, prints, sculptures, silver, and furniture. Visual resources in the Harry Ransom Humanities Research Center include the Gernsheim History of Photography Collection and the Art Collection.
AREAS OF STUDY
Graduate study in art history is offered in all areas of Western art and in pre-Columbian and Asian art. The student may pursue the degree of Master of Arts or that of Doctor of Philosophy.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Jacqueline E. Barnitz
Persis Berlekamp
Steve Bourget
Michael Charlesworth
John R. Clarke
Penelope J. Davies
Linda Dalrymple Henderson
Joan A. Holladay
Julia G. Guernsey
Janice Leoshko
Amelia Malagamba
Nassos Papalexandrou
Glenn Peers
Susan W. Rather
Ann Morris Reynolds
Richard Shiff
Cherise Smith
David S. Stuart
Louis A. Waldman

ADMISSION AND DEGREE REQUIREMENTS

Master of Arts
Students seeking admission to the Master of Arts degree program are expected to have an undergraduate degree in art history or have completed substantial coursework in art history. The student must also show evidence of the ability to read one foreign language, as well as the capacity for advanced academic work.

The program requires thirty semester hours of coursework, including six hours in the thesis course and six hours in supporting work. (Supporting work consists of upper-division or graduate courses in such related areas as history, literature, anthropology, archaeology, classical civilization, philosophy, architecture, music, museum education, and area studies.) In addition to Art History 395 (Art Historical Methods), the student must complete four seminars selected according to his or her chosen degree track (general, ancient, medieval to early modern, or modern). The student takes an additional three semester hours of art history, preferably as a seminar but, in certain cases, as a reading tutorial (Art History 396) or a lecture tutorial (Art History 396K).

Doctor of Philosophy
For admission to the Doctor of Philosophy degree program, the student must have a master’s degree in art history or have completed substantial coursework in art history on both the undergraduate and graduate levels. Students with special backgrounds in other disciplines are judged on an individual basis. Reading competence in two languages in addition to English is also required.

Degree requirements are (1) completion of five seminar courses, including coursework in at least two of the following chronological areas of Western and non-Western art: ancient, medieval to early modern, and modern; (2) reading competence in additional foreign languages if the student’s area of study requires it; (3) successful participation in the dissertation colloquium; (4) a written and oral qualifying examination that admits the student to candidacy; (5) a public lecture; (6) the dissertation; and (7) the oral defense of the dissertation.
FOR MORE INFORMATION

Campus address: E. William Doty Fine Arts Building (DFA) 2.124, phone (512) 471-7757; campus mail code: D1300
Mailing address: The University of Texas at Austin, Graduate Program in Art History, Department of Art and Art History, 1 University Station D1300, Austin TX 78712
URL: http://www.utexas.edu/cofa/a_ah/aca/arhdiv.html

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Art History: ARH

381. Topics in Latino and Chicano Art. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in art history and consent of the graduate adviser.

381L. Topics in Ancient Near Eastern Art. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in art history and consent of the graduate adviser.

382. Topics in Greek and Roman Art. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in art history and consent of the graduate adviser.

382R. Topics in the Art of Late Antiquity. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in art history and consent of the graduate adviser.

383. Topics in Medieval Art. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in art history and consent of the graduate adviser.

384. Topics in Renaissance Art. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in art history and consent of the graduate adviser.

385. Topics in Baroque Art. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in art history and consent of the graduate adviser.

386G. Topics in Eighteenth-Century Art. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in art history and consent of the graduate adviser.

386f. Topics in Nineteenth-Century Art. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in art history and consent of the graduate adviser.

386N. Topics in Twentieth-Century Art. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in art history and consent of the graduate adviser.

386P. Topics in Modernism. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in art history and consent of the graduate adviser.

387. Topics in the Art of North America. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in art history and consent of the graduate adviser.

390. Topics in Pre-Columbian Art. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in art history and consent of the graduate adviser.

392. Topics in the Art of East Asia. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in art history and consent of the graduate adviser.

394. Special Topics in the History of Art. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in art history and consent of the graduate adviser.

Topic 1: Critical Theory, Poststructuralism, and Art History.
Topic 2: Administration and Development of Visual Resources Collections.

395. Art Historical Methods. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in art history and consent of the graduate adviser.
396. Advanced Studies in the History of Art: Reading Tutorial. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in art history and consent of the graduate adviser.

396K. Advanced Studies in the History of Art: Lecture Tutorial. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in art history and consent of the graduate adviser.

396L. Advanced Studies in the History of Latin American Art: Reading Tutorial. Conference course. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in art history and consent of the graduate adviser.

397. Doctoral Research in the History of Art. Conference course for students preparing for dissertation colloquium. Prerequisite: Graduate standing in art history and consent of the graduate adviser.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in art history and consent of the graduate adviser; for 698B, Art History 698A.

398T. Supervised Teaching in Art History. Teaching under the close supervision of the course instructor for one semester; weekly group meetings with the instructor, individual consultations, and reports throughout the teaching period. Prerequisite: Graduate standing in art history, or graduate standing and appointment as a teaching assistant.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Art History 399R, 699R, or 999R.

DESIGN
Master of Fine Arts

FACILITIES FOR GRADUATE WORK
In addition to the extensive library and computer resources available on campus, the design program supports a computer laboratory dedicated to addressing students’ specific needs, including typography, two-dimensional and three-dimensional imaging, sound animation, and video. Many items, including digital video and digital still cameras, can be borrowed by students. The laboratory is staffed seventy hours a week during the long semesters; graduate students have twenty-four-hour access to the laboratory. In addition to a fully equipped black-and-white darkroom, a photo studio supports the image-capturing requirements of photographic, digital, and video technologies. Letterpress facilities are complemented by an extensive collection of wood and metal type for printing and book projects, and the Department of Art and Art History wood shop addresses many three-dimensional prototyping needs. Studio space specifically for graduate students houses both computers and peripherals.

AREAS OF STUDY
The focus of the program is on the creation of a multidisciplinary environment within which students are encouraged critically to investigate the social, political, and economic contexts in which design is created and used. This emphasis on critical and contextual investigation applies to all forms of learning in the program, including the making of artifacts and more abstract exploration of design issues through discussion, reading, and writing.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Kate Catterall Gloria J. Lee Miodrag Mitrasinovic
Daniel M. Olsen David Shields Chris Taylor

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ADMISSION AND DEGREE REQUIREMENTS

Applicants for admission to the program are expected to be students or practitioners who are independent and self-motivated and who demonstrate an advanced interest in exploring alternative concepts of design. Applicants must submit documentation of their work as part of the admission application; information about this requirement is available from the Department of Art and Art History. Applicants are not required to submit Graduate Record Examinations scores.

Candidates for the degree must complete at least sixty semester hours of coursework, chosen with the advice of the graduate adviser and approved by the supervising committee. At least thirty hours of graduate coursework must be in design (the major), and six hours must be outside design (the minor). Only graduate courses in design may be included in the major, but up to six hours of upper-division undergraduate coursework outside design may be included in the minor.

FOR MORE INFORMATION

Campus address: Art Building (ART) 3.344, phone (512) 471-3377; campus mail code: D1300
Mailing address: The University of Texas at Austin, Graduate Program in Design, Department of Art and Art History, 1 University Station D1300, Austin TX 78712
E-mail: glee@ccwf.cc.utexas.edu
URL: http://www.utexas.edu/cofa/a_ah/aca/desdiv.html

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Design: DES

380. Core Course in Design. Introduction to design process, research, and methodologies. Eight laboratory hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in design, or graduate standing and consent of instructor or the graduate adviser.

381. Core Laboratory 1. Practice laboratory for a variety of design methodologies. Eight laboratory hours a week for one semester. Prerequisite: Graduate standing in design, or graduate standing and consent of instructor or the graduate adviser.

382. Critique Studio 1. Context and structured dialogue regarding areas of, and the student's own direction in, graduate research. Eight laboratory hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing in design, or graduate standing and consent of instructor or the graduate adviser.

383. Graduate Projects. Independent study. May be repeated for credit. Prerequisite: Graduate standing in design, or graduate standing and consent of instructor or the graduate adviser.

391. Core Laboratory 2. Provides students with the opportunity to test and expand their ideas through implementation of design research in a teaching, exhibition, or publishing environment. Eight laboratory hours a week for one semester. Prerequisite: Graduate standing in design, or graduate standing and consent of instructor or the graduate adviser.

392. Critique Studio 2. Structured dialogue regarding areas of, and the student's own direction in, graduate research. Eight laboratory hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing in design, or graduate standing and consent of instructor or the graduate adviser.
**394. Advanced Issues in Design.** Eight laboratory hours a week for one semester. May be repeated for credit when the topics vary. *Prerequisite:* Graduate standing in design, or graduate standing and consent of instructor or the graduate adviser.

**398R. Master's Report.** The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing in design and consent of instructor or the graduate adviser.

**398S. Master's Exhibition.** The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing in design and consent of instructor or the graduate adviser.

**398T. Supervised Teaching in Design.** Training and teaching under the close supervision of the course instructor for one semester; group meetings with the instructor, individual consultations, and reports throughout the teaching period. *Prerequisite:* Graduate standing in design, or graduate standing and appointment as a teaching assistant.

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**MUSIC**

Master of Music
Doctor of Musical Arts
Doctor of Philosophy

**FACILITIES FOR GRADUATE WORK**

The Fine Arts Library has excellent facilities for research in its collection of books, scores, periodicals, microforms, and sound recordings. In addition, the Harry Ransom Humanities Research Center houses many special collections of importance, including the Kraus Libretti Collection, the Bachmann Collection, the Carlton Lake Collection, and the Theodore Finney Collection. The School of Music also maintains a collection of authentic early instruments, non-Western instruments, and folk instruments that are available for performance.

**AREAS OF STUDY**

**Performance.** Degrees in this area are awarded for performance on various instruments, in voice, in opera, and in conducting. In addition to demonstrating the technical achievements of the artist-performer, the student is expected to exhibit a thorough knowledge of the theoretical, pedagogical, and historical aspects of the major, as well as a knowledge of the literature of the performance area.

**Music and human learning.** Students study the fundamental principles of human learning and behavior as applied in all aspects of music activity, including performance, perception, composition, analysis, pedagogy, and the role of music in elementary and secondary schools and in higher education. Individual courses of study are uniquely designed to broaden and refine the knowledge and skills of experienced educators, preparing them for advanced careers as teachers and scholars in the various dimensions of research and professional education.

**Musicology.** In this area the student has the opportunity to acquire the appropriate tools and methods of research in both historical musicology and ethnomusicology, and to study the history of music from the remote past to the present as well as the nature and function of music in the cultures of the world. The student also has the opportunity to do research in any historical aspect of music and to undertake field research in any cultural area. This major provides preparation for positions in college teaching, in research, in music criticism, and, with additional training, in library work. A broad background in the humanities and social sciences is one of the essentials for this degree. Languages, history, philosophy (aesthetics), psychology, anthropology, cultural studies, and sociology are supporting, related fields.
Composition and theory. This area offers the student an opportunity to acquire training for activity as a composer or as a college teacher in music theory. Competence in performance, a thorough knowledge of the pedagogy of theory, and a broad background in the humanities are essentials for this degree.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Gregory D. Allen (piano)  
Byron P. Almen (theory)  
Elliott Antokoletz (musicology)  
Rebecca A. Baltzer (musicology)  
Nathaniel O. Brickens (trombone)  
Steven Bryant (tuba)  
James W. Buhler (theory)  
Thomas Burritt (percussion)  
Lorenzo Candelaria (musicology)  
Robert Carnochan (conducting)  
B. Glenn Chandler (theory)  
Eugenia Costa-Giomi (music and human learning)  
Elizabeth B. Crist (musicology)  
Andrew F. Dell’Antonio (musicology)  
Robert DeSimone (opera)  
Eric A. Drott (theory)  
Robert A. Duke (music and human learning)  
Veit F. Erlmann (ethnomusicology)  
John M. Fremgen (jazz string bass)  
Vincent E. Frittelli (violin)  
Nancy B. Garrett (piano)  
Marianne Gedigian (flute)  
Donald Grantham (composition)  
Eugene Gratovich (violin)  
Lita Anne Guerra (piano)  
Jeff Hellmer (jazz studies)  
Rebecca Henderson (oboe)  
Martha Hilley (piano pedagogy)  
Adam Holzman (guitar)  
Patrick Hughes (horn)  
Judith A. Jellison (music and human learning)  
Kristin Wolfe Jensen (bassoon)  
Leonard Johnson (voice)  
Jerry F. Junkin (conducting)  
K. M. Knittel (musicology)  
Brian Lewis (violin)  
William L. Lewis (voice)  
Richard L. MacDowell (clarinet)  
Betty P. Mallard (piano)  
Hunter C. March (music and human learning)  
Jose R. Mendez (piano accompanying)  
John R. Mills (jazz composition)  
James Morrow (conducting)  
Roger E. Myers (viola)  
David L. Neely (opera conducting/coaching)  
Anton Nel (piano)  
B. David Neubert (double bass)  
David P. Neumeyer (theory)  
Kevin P. Noe (conducting)  
Edward R. Pearsall (theory)  
Suzanne M. Pence (music and human learning)  
Russell F. Pinkston (composition)  
Harvey C. Pittel (saxophone)  
Kevin M. Puts (composition)  
A. David Renner (piano)  
Glenn A. Richter (conducting)  
Sophia Gilmson Rizov (piano pedagogy)  
Mark J. Sarisky (recording technology)  
Ray Sasaki (trumpet)  
Stephen M. Slawek (ethnomusicology)  
David A. Small (voice)  
Frank N. Speller (organ)  
Nikita Storojev (voice)  
Rose A. Taylor (voice)  
Bion Tsang (violoncello)  
Michael C. Tusa (musicology)  
Dan E. Welcher (composition)  
Marianne Wheeldon (theory)  
Darlene Wiley (voice)  
Laurie Scott Young (music and human learning)  
Phyllis C. Young (violoncello)
ADMISSION AND DEGREE REQUIREMENTS

All applicants are required to furnish a statement of intent in graduate study and three letters of reference pertaining to their potential for graduate work in music. Graduate Record Examinations scores are not required for performance and composition students. Applicants planning to major in performance are required to send a tape of their performance (for conducting majors a videotape is required) or to arrange for an audition; those planning to major in composition must send scores of their music, accompanied by tapes if possible; and those planning to major in musicology, music theory, or music and human learning must submit samples of their written work. Those planning to major in music and human learning must also submit a videotape of their teaching.

Diagnostic examinations in music theory and in music history and literature are required of all students before registration for the first semester of graduate work; musicology students must also take proficiency examinations in foreign languages. Passage of these examinations or removal of deficiencies by the means prescribed is necessary for completion of the degree, and, in the case of doctoral students, is a prerequisite to doctoral comprehensive examinations.

Entering graduate students in voice should have had the equivalent of the language and diction courses required at the University for the Bachelor of Music with a voice performance major: one semester each of Italian, French, and German; and two semesters of diction. All entering graduate students in voice are given a diagnostic examination, consisting of reading in these three languages. The examination stresses proficiency in pronunciation and is used to help the student plan a program of study.

Master of Music

The Master of Music is offered in performance (including conducting and opera), composition, theory, music and human learning, literature and pedagogy, and musicology (including ethnomusicology).

Entering students should have a bachelor’s degree (or the equivalent) with a major in music from an accredited institution. Students are expected to have had from six to twelve semester hours of upper-division coursework in their major field at the undergraduate level (the exact number of hours required varies with the major) and to have completed the equivalent of course 260 in their principal instrument.

Most programs of study leading to the Master of Music require a total of thirty semester hours of coursework, consisting of a major of eighteen to twenty-four semester hours and a minor of six to twelve semester hours. A program with a report in lieu of the thesis, requiring thirty-three semester hours, is used for musicology (ethnomusicology), music theory, and literature/pedagogy.

A comprehensive examination is required of all master’s degree candidates, usually in the final semester of study.

Further information about master’s degrees is given in chapter 3 of this catalog. Details of departmental requirements in the various areas of concentration are available from the graduate adviser.

Doctor of Philosophy

The Doctor of Philosophy degree in music is offered with major emphasis in music and human learning, musicology (including ethnomusicology), or music theory. Candidates for this degree are required to pass a comprehensive examination and to write a dissertation based on original research. Information about requirements in the various areas of concentration is available from the graduate adviser.
Doctor of Musical Arts

The Doctor of Musical Arts degree allows for three majors: performance (including conducting, opera, chamber music/collaborative arts, and voice pedagogy emphases), composition, and music and human learning (including conducting and piano pedagogy emphases). Candidates for this degree must pass a comprehensive examination. They must demonstrate outstanding professional competence, artistic maturity, and exceptional knowledge of the historical and practical aspects of their major field. Each candidate must prepare a scholarly treatise in a field appropriate to the major or complete the alternative requirements of the nontreatise degree option. For composition majors, a musical work replaces the treatise. A jazz emphasis is available in each of the three majors.

Further information about requirements in various areas of concentration is available from the graduate adviser.

FOR MORE INFORMATION

Campus address: Music Recital Hall (MRH) 3.704, phone (512) 232-2066, fax (512) 232-6289; campus mail code: E3100

Mailing address: The University of Texas at Austin, Graduate Program, School of Music, 1 University Station E3100, Austin TX 78712

E-mail: mga@mail.music.utexas.edu

URL: http://www.music.utexas.edu/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Music: MUS

380. Advanced Studies in the History of Music. Historical studies of various periods. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in music.
   Topic 1: Medieval.
   Topic 2: Renaissance.
   Topic 3: Baroque.
   Topic 4: Eighteenth Century.
   Topic 5: Nineteenth Century.
   Topic 6: Twentieth Century.

380j. Seminars in the History of Music. Intensive studies of special problems in various historical periods. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in music, and the appropriate topic of Music 380 or consent of instructor.
   Topic 1: Medieval.
   Topic 2: Renaissance.
   Topic 3: Baroque.
   Topic 4: Eighteenth Century.
   Topic 5: Nineteenth Century.
   Topic 6: Twentieth Century.

180K, 280K. Problems in Performance Practice. One lecture hour and three or six laboratory hours a week for one semester. With consent of the graduate adviser, may be repeated for credit. Prerequisite: Graduate standing in music and consent of instructor.
   Topic 1: Large Instrumental Ensembles.
   Topic 2: Small Instrumental Ensembles.
   Topic 3: Large Vocal Ensembles.
   Topic 4: Small Vocal Ensembles.
   Topic 5: Opera Theatre.
   Topic 6: Accompanying.
   Topic 7: Miscellaneous Chamber Ensembles.
   Topic 8: Vocal Repertoire Coaching. The study of performance practices in recital repertoire for voice and piano.
   Topic 9: Collegium Musicum.
   Topic 10: Improvisation. The art of nonjazz improvisation.
280M. Group Piano Pedagogy. The development of skills in teaching group piano; examination and evaluation of methods and materials used in keyboard instruction; learning styles; research. Two lecture hours and one laboratory hour a week for one semester. Prerequisite: Graduate standing in music, or graduate standing and consent of instructor.

280N. Technology in Voice Study. The integration of computer technology and audiovisual equipment into applied voice instruction. One lecture hour and one and one-half laboratory hours a week for one semester. May be repeated for credit, but only two semester hours may be counted toward the Doctor of Musical Arts degree. Prerequisite: Graduate standing in music.

480P. Graduate Course in Pedagogy. Intensive study of the principles and methods of teaching various instruments at the college level. Two lecture hours a week for two semesters. Prerequisite: For 480PA, graduate standing in music, Music 460P or the equivalent, and consent of instructor; for 480PB, graduate standing in music, Music 480PA, and consent of instructor.

381. Reference and Research Materials in Music. Prerequisite: Graduate standing in music.

381J. Introduction to Musicology and Ethnomusicology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in music.

383L. Seminar in Music Education. Individual and group studies of advanced topics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in music, and Music 391 or consent of instructor.

384J. Advanced Studies in Music Education. Review and criticism of research, acoustics, and psychology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in music.

385. Special Topics in Musicology. Research in depth on various topics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in music.

Topic 1: History of Music Theory to 1750.
Topic 2: History of Music Theory since 1750.
Topic 3: Notational Systems before 1400.
Topic 4: Notational Systems since 1400.
Topic 5: History of Musical Instruments.

385J. Special Problems in Musicology and Ethnomusicology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in music.

386J. Topics in the History of Sacred Music. Introduction to a significant body of choral works, from the thirteenth century to the present age, composed especially for religious occasions and venues. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in music.

386S. Music in Worship: Service Planning and Service Playing. The art and practice of preparing, rehearsing, and performing specific works of sacred music for religious occasions. Two lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in music.

387. Advanced Studies in Music Literature. Analytical and historical studies of a particular repertoire. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in music and consent of instructor.

Topic 1: Topics in the Solo Song.
Topic 2: Topics in Music for Keyboard Instruments.
Topic 4: Topics in Music for String Instruments.
Topic 5: Topics in Music for Wind Instruments.
Topic 6: Topics in Choral Music.
Topic 7: Topics in Orchestral Music.
Topic 8: Topics in Band Music.
Topic 9: Topics in Opera.
Topic 10: Topics in Jazz. Additional prerequisite: Music 343J or consent of instructor.

Topic 11: Topics in Music Literature.

688. Seminar in Theory and Composition. Three class hours a week for two semesters. May be repeated for credit when the topics vary. Prerequisite: For 688A, graduate standing in music and consent of instructor; for 688B, Music 688A.

Topic 1: Pedagogy of Music Theory. Prerequisite: For 688A, graduate standing in music and consent of instructor; for 688B, Music 688A.

Topic 5: Analytical Techniques. Prerequisite: For 688A, graduate standing in music and consent of instructor; for 688B, Music 688A.

Topic 6: Composition in Larger Forms. Prerequisite: For 688A, graduate standing in music and consent of instructor; for 688B, Music 688A.
Topic 8: Score Reading. Prerequisite: For 688A, graduate standing in music and consent of instructor; for 688B, Music 688A.

Topic 9: Contemporary Styles and Techniques. Prerequisite: For 688A, graduate standing in music and consent of instructor; for 688B, Music 688A.

Topic 10: Instrumental Music. Prerequisite: For 688A, graduate standing in music and consent of instructor; for 688B, Music 688A.

Topic 11: Heinrich Schenker's Theory of Tonal Music. Prerequisite: For 688A, graduate standing in music and consent of instructor; for 688B, Music 688A.

Topic 12: Special Topics in Analysis. Prerequisite: For 688A, graduate standing in music and consent of instructor; for 688B, Music 688A.

Topic 13: Directed Research in Music Theory. Prerequisite: For 688A, graduate standing in music and consent of instructor; for 688B, Music 688A.

Topic 14: Atonal Theory. Prerequisite: For 688A, graduate standing in music and consent of instructor; for 688B, Music 688A.

Topic 15: Improvisational Styles and Techniques. Prerequisite: For 688A, graduate standing in music and consent of instructor; for 688B, Music 688A.

Topic 16: Psychological aspects of music, emphasizing perception, experimental aesthetics, music function, and the nature of musical ability. Prerequisite: Graduate standing.

Topic 17: Directed Research. Prerequisite: For 688A, graduate standing in music and consent of instructor; for 688B, Music 688A.

Topic 18: Electronic Composition. Prerequisite: For 688A, graduate standing in music and consent of instructor; for 688B, Music 688A.

Topic 19: Electronic Media Projects. Prerequisite: For 688A, graduate standing in music and consent of instructor; for 688B, Music 688A.

388P. Jazz Pedagogy. Research and study of the methods and materials essential to teaching and planning a comprehensive curriculum in jazz studies. Prerequisite: Graduate standing in music and consent of instructor.

391. Foundations of Music Education. Introduction to graduate study, history, philosophy, and basic concepts in music education. Required of all music and human learning majors. Prerequisite: Graduate standing.

392. Psychology of Music. Psychological aspects of music, emphasizing perception, experimental aesthetics, music function, and the nature of musical ability. Prerequisite: Graduate standing.

393. Special Problems in Music Education. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: General Music.

Topic 2: Elementary School Music.

Topic 3: Choral Technique.

Topic 5: Directed Research.

194, 394, 694. Directed Reading. Readings in the literature of music. The equivalent of one, three, or six lecture hours a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in music and consent of the graduate adviser.

395W. Writing about Music. Designed to develop and improve writing skills through required readings and through writing concert reviews, opinion pieces, essays, and articles about music. May be repeated for credit, but only three semester hours may be counted toward the Doctor of Musical Arts degree. Prerequisite: Graduate standing in music.

397W. Introduction to Treatise Writing. Study of the techniques used to identify and develop a DMA treatise proposal. May be repeated for credit, but only three semester hours may be counted toward the Doctor of Musical Arts degree. Prerequisite: Graduate standing, Music 381, and consent of instructor.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in music and consent of the graduate adviser; for 698B, Music 698A.

398M. Master's Report. Preparation of a report to fulfill the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in music and consent of the graduate adviser.

698R. Master's Recital. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698RA, graduate standing in performance or music literature and pedagogy, and course 380 or 480 in the appropriate instrument; for 698RB, Music 698RA.

398T. Supervised Teaching in Music. Supervised teaching for graduate students in music; two semesters under supervision; weekly meetings with instructor, consultations, reports throughout the teaching period. Prerequisite: Graduate standing and appointment as a teaching assistant.
399. **Treatise.** A research paper of a scholarly nature. Offered on the credit/no credit basis only. **Prerequisite:** Passage of preliminary and comprehensive examinations for the Doctor of Musical Arts degree.

399N. **Nontreatise Lecture Recital Document.** Restricted to students pursuing the nontreatise option for the Doctor of Musical Arts degree. A research paper of a scholarly nature. Offered on the credit/no credit basis. **Prerequisite:** Passage of preliminary and comprehensive examinations for the Doctor of Musical Arts degree.

399R, 699R, 999R. **Dissertation.** Offered on the credit/no credit basis only. **Prerequisite:** Admission to candidacy for the doctoral degree.

399W, 699W, 999W. **Dissertation.** Offered on the credit/no credit basis only. **Prerequisite:** Music 399R, 699R, or 999R.

**Performance: Conducting: CON**

280, 380, 480. **Graduate Course in Performance: Advanced Conducting.** One lesson and two laboratory hours a week for one semester. May be repeated for credit. **Prerequisite:** Graduate standing; and Music 262 (for instrumental conductors) or 263K (for choral conductors), or conducting experience and consent of the graduate adviser.

Topic 1: Orchestra.
Topic 2: Band.
Topic 3: Chorus.
Topic 4: Opera.

280, 380, 480. **Advanced Graduate Course in Performance: Advanced Conducting.** Two half-hour lessons or one one-hour lesson and at least twelve practice hours a week for one semester. May be repeated for credit. **Prerequisite:** Admission to a Doctor of Musical Arts degree program in performance and consent of the graduate adviser.

Topic 1: Orchestra.
Topic 2: Band.
Topic 3: Chorus.
Topic 4: Opera.

**Performance: Opera, Voice, Instruments**

The abbreviations used for these courses are included in the appendix.

280, 380, 480. **Graduate Course in Performance.** Offered in opera (280, 480) and in the following instruments: bassoon (280, 480), clarinet (280, 480), double bass (280, 380, 480), euphonium (280, 480), flute (280, 480), French horn (280, 480), guitar (280, 380, 480), harp (280, 380, 480), oboe (280, 480), organ (280, 480), percussion (280, 480), piano (280, 380, 480), saxophone (280, 480), trombone (280, 480), trumpet (280, 480), tuba (280, 480), viola (280, 380, 480), violin (280, 380, 480), violoncello (280, 380, 480), and voice (280, 380, 480). May be repeated for credit. **Prerequisite:** For Opera 280, 480, graduate standing in music and consent of the graduate adviser; for other fields, graduate standing in music, course 462 in the same instrument, and consent of the graduate adviser.

280J, 480J. **Graduate Course in Performance: Jazz Improvisation.** Individual instruction in jazz improvisation in the following instruments: double bass, drum set, guitar, piano, saxophone, trombone, trumpet, and vibraphone. May be repeated for credit. **Prerequisite:** Graduate standing in music and consent of the graduate adviser.

290, 490. **Advanced Graduate Course in Performance.** Offered in opera and in the following instruments: bassoon, clarinet, double bass, flute, French horn, guitar, harp, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, violin, violoncello, and voice. May be repeated for credit. **Prerequisite:** Admission to a doctoral degree program in music and consent of the graduate adviser.

290J, 490J. **Advanced Graduate Course in Performance: Jazz Improvisation.** Individual instruction in jazz improvisation in the following instruments: double bass, drum set, guitar, piano, saxophone, trombone, trumpet, and vibraphone. May be repeated for credit. **Prerequisite:** Admission to a doctoral degree program in music and consent of the graduate adviser.
STUDIO ART

Master of Fine Arts

FACILITIES FOR GRADUATE WORK

Graduate studios are available in most areas of concentration, and studio art majors have access to the specialized equipment and tools required for each area.

The sculpture laboratory has foundry and fabrication facilities, welding equipment, saws, sanders, drill presses, and an array of other hand and power tools. Students of ceramics have access to twenty-six powered potter’s wheels, eighteen high- and low-fire kilns, clay-making equipment, and a complete glaze laboratory. The resources of the metals department include enameling kilns and equipment for fabrication, smithing, blacksmithing, and vacuum and centrifugal casting. There is also a large inventory of specialized hand tools. Transmedia students have access to computer image processors, video cameras, video mixers with chroma key functions, 16-mm film and digital multimedia equipment, and audio equipment.

In photography, students have access to complete darkrooms for black and white and color development, a digital darkroom, and four film processing rooms. The Harry Ransom Humanities Research Center houses one of the world’s outstanding collections of historical photography. The printmaking department offers students the opportunity to work with four large lithographic presses, 130 stones of various sizes, and equipment for aluminum plate lithography, including photolithography. The intaglio area is equipped with four large printing presses, a large vented acid room, and flat file storage. Serigraphers are provided with a well-ventilated work area, vacuum screen tables for works as large as 3’ × 5’, and a fully equipped photomechanical reproduction facility for works up to 20” × 24”. Most other stencil methods are also available. Students of painting have access twenty-four hours a day to twelve individual studios.

All students have access to a fully furnished wood shop for frame construction and other projects. The shop is open in the evening and on weekends.

AREAS OF STUDY

The studio art program comprises the following areas of concentration: painting, sculpture, printmaking (intaglio, lithography, and serigraphy), photography, transmedia (performance art, nontraditional video, and installations), ceramics, and metals. The program focuses on the student’s mastery of visual and verbal forms of expression through a course of study that stimulates originality, intellectual accomplishment, and critical thinking. With emphases on studio practice and the development of individuality and self-discipline, the program offers students a foundation for a successful professional life in the visual arts.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Robert D. Anderson  Mark Goodman
Troy D. Brauntuch  Kenneth J. Hale
Sarah A. Canright  Donald D. Herron
Michael Ray Charles  Timothy High
Lee R. Chesney  Teresa Hubbard
Thelma Coles  Richard Moxley Jordan
Stephen J. Daly  Janet E. Kastner
ADMISSION AND DEGREE REQUIREMENTS

To be admitted to the MFA degree program in studio art, the applicant must have a bachelor's degree with either a major in studio art or a sufficient amount of coursework in studio art. Students are admitted only to the following concentrations: painting, sculpture, ceramics, metals, photography, printmaking (intaglio, lithography, and serigraphy), and transmedia (performance art, nontraditional video, and installations). The student must submit a slide portfolio as part of the admission application; information about this requirement is available from the Department of Art and Art History. The applicant is not required to submit Graduate Record Examinations scores.

The program requires the completion of sixty semester hours of coursework and is designed to be completed in a three-year period. The program requirements consist of the following:

1. Twenty-seven hours of studio coursework in the area of concentration.
2. Six hours in contemporary art history or criticism.
3. Six hours in studio seminar courses.
4. Six hours in a non–studio art minor.
5. Nine hours in elective work.
6. Three hours in a master's report and three in a master's exhibition.

The student must take a diagnostic oral examination in the semester in which he or she is registered for the thirtieth semester hour of the program and must pass a final oral examination upon completion of the coursework. The candidate must exhibit studio work in partial fulfillment of the degree requirements. The report consists of a text and documentation of major works completed in the studio art graduate program. These works, as well as finished classwork, may be exhibited by the Department of Art and Art History and retained by it for instructional use.

FOR MORE INFORMATION

Campus address: Art Building (ART) 3.344, phone (512) 471-3377; campus mail code: D1300

Mailing address: The University of Texas at Austin, Graduate Program in Studio Art, Department of Art and Art History, 1 University Station D1300, Austin TX 78712

URL: http://www.utexas.edu/cofa/a_ah/aca/studiodiv.html
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Studio Art: ART

380. Graduate Studio. Lecture hours and laboratory hours to be arranged. May be repeated for credit. Students must take this course when it is offered in their area of concentration, for a total of nine semester hours of credit. When Studio Art 380 is not offered in the student’s concentration, he or she may take Studio Art 380 in another concentration or Studio Art 381; these courses may be counted toward the required total of nine semester hours. Prerequisite: Graduate standing in studio art and consent of the graduate adviser.

Topic 1: Required MFA Sculpture Studio.

381, 681. Graduate Studio Projects in Student’s Concentration. Independent study in the student’s area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: Graduate standing in studio art and consent of instructor and the graduate adviser.

382. Seminar in Studio Art. May be repeated for credit. Prerequisite: Graduate standing in studio art and consent of the graduate adviser.

383. Graduate Studio Projects outside Student’s Concentration. Independent study in an area other than the student’s area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: Graduate standing in studio art and consent of instructor and the graduate adviser.

384F. Master of Fine Arts Forum. Restricted to first-semester graduate students in studio art. Designed to help students develop and practice skills of art theory and criticism and to encourage and define effective and consistent habits for working in the studio. The equivalent of three lecture hours a week for one semester. Prerequisite: Graduate standing in studio art and consent of the graduate adviser.

398R. Master’s Report. Written discussion of the work undertaken in the graduate program, addressing concepts of and influences on the work, and including a digital portfolio of major works. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in studio art, passage of the required thirty-hour oral diagnostic examination, concurrent enrollment in Studio Art 398S, and consent of the graduate adviser.

398S. Master’s Exhibition. Exhibition of work undertaken in the graduate program, including display of an original copy of the Master of Fine Arts exhibition statement. The sixty-hour MFA oral examination is conducted prior to the exhibition. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in studio art, passage of the thirty-hour MFA oral examination, concurrent enrollment in Studio Art 398R, and consent of the graduate adviser.

398T. Supervised Teaching in Studio Art. Training in teaching methods and procedures for studio art classes, including weekly group meetings with the instructor and individual consultations. Prerequisite: Graduate standing in studio art, or graduate standing and appointment as a teaching assistant.
THEATRE AND DANCE

Master of Arts (Theatre)
Master of Fine Arts (Theatre and Dance)
Doctor of Philosophy (Theatre)

FACILITIES FOR GRADUATE WORK

The rare and unique materials in the Performing Arts Collection of the Harry Ransom Humanities Research Center, along with the collections in the Fine Arts Library and other units of the University Libraries, constitute one of the most extensive research facilities in the country. The Department of Theatre and Dance also maintains a collection of historical clothing for research purposes. The theatrical production facilities of the Performing Arts Center, described on page 261, are unsurpassed.

AREAS OF STUDY

Master of Arts. The Master of Arts with a major in theatre is offered in two areas: theatre history/criticism and teacher training. In theatre history/criticism, this degree is appropriate preparation for doctoral study. In teacher training, the Master of Arts is an appropriate terminal degree.

Master of Fine Arts. The Master of Fine Arts is offered in theatre and in dance. The major in theatre includes six areas: acting, drama and theatre for youth, directing, playwriting, technical production, and theatrical design. The MFA provides advanced training for those specializing in one of the performing arts. It is an appropriate terminal degree in these areas.

Doctor of Philosophy. The doctoral degree in theatre is offered in historical, theoretical, and critical studies. The program requires competence in research and allows the student to develop both a broad understanding of the field, including practical skills, and knowledge in depth of a specialized area.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Lee Abraham
Oscar G. Brockett
Andrew J. Campbell
Charlotte Canning
Pamela D. Christian
Ann Daly
Douglas J. Dempster
Kent De Spain
Jill S. Dolan
Franchelle Dorn
Stephen T. Gerald
James J. Glavan
Sharon A. Grady
Barney Hammond
Richard M. Isackes
Coleman A. Jennings

Joni L. Jones
David Justin
Joan Lazarus
Amarante Lucero
Susan E. Mickey
Lynn C. Miller
David Nancarrow
Deborah A. Paredez
Robert N. Schmidt
Andee Scott
Yacov Sharir
Holly Williams
Lyn C. Elam Wiltshire
Stacy Wolf
Suzan L. Zeder
ADMISSION REQUIREMENTS

Master's degrees. The applicant must have a bachelor's degree and must have demonstrated interest and experience in theatre, drama, and/or dance. The Graduate Record Examinations General Test (GRE) is required for admission to these areas: drama and theatre for youth, teacher training, playwriting, and theatre history/criticism. The GRE is not required for admission to acting, dance, directing, technical production, and theatrical design.

Doctoral degree. A master's degree or equivalent coursework in theatre or a related field and demonstrated competence in research and writing are the primary prerequisites for beginning work toward the doctoral degree. All applicants must submit GRE scores.

DEGREE REQUIREMENTS

Master of Arts. Of the thirty semester hours required for the degree, no more than nine hours may be in upper-division courses. At least fifteen hours must be in the major; at least six must be outside the major. A written thesis is required, for which the student earns six hours of credit in Theatre and Dance 698. Other coursework is determined following an evaluation of the student's background and preparation.

Master of Fine Arts. Of the sixty semester hours required for the degree, no more than fifteen may be in upper-division courses. A minor of at least six hours in a supporting subject or subjects outside the major field is required. A thesis is required, for which the student earns six hours of credit in Theatre and Dance 698. Other coursework is determined following an evaluation of the student's background and preparation.

The requirements of the Master of Fine Arts are based on the assumption that the entering student has a Bachelor of Arts degree in theatre or dance. Students with degrees in other disciplines may not have the necessary training or proficiency for some areas of the MFA program. They may be required to take additional upper-division coursework in those areas.

Students with a Bachelor of Fine Arts degree may have training and proficiency beyond those of Bachelor of Arts graduates. These students may be granted waivers of some credit hours. Waivers are awarded only after careful evaluation by the faculty of the student’s previous training and experience. No more than twenty semester hours of credit may be waived.

Doctor of Philosophy. The student’s program of study, including coursework and other requirements to be met, must be approved by a committee appointed by the chair of the Graduate Studies Committee. Each student must have a reading knowledge of two foreign languages or knowledge in depth of one language. The student must pass qualifying examinations, write an acceptable dissertation, and pass an oral examination related to the dissertation. Detailed information about the requirements is available from the graduate adviser.

FOR MORE INFORMATION

Campus address: F. Loren Winship Drama Building (WIN) 1.142, phone (512) 471-5793, fax (512) 471-0824; campus mail code: D3900

Mailing address: The University of Texas at Austin, Graduate Program, Department of Theatre and Dance, 1 University Station D3900, Austin TX 78712

URL: http://www.utexas.edu/cofa/theatre/
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Theatre and Dance: T D

280G. Production Skills for Actors. Laboratory hours as required. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, a major in acting, and consent of instructor.

680M. Performance Studio. Exploration and practice in the skills and craft of acting, voice, dance, directing, and playwriting. Twenty laboratory hours a week for one semester, with additional laboratory hours as required. May be repeated for credit when the projects vary. Prerequisite: Graduate standing and consent of instructor.

380N. Topics in Acting. Topics, restricted or broad in scope, related to the theory of acting, stage combat, movement, and voice. Laboratory hours as required. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

180P, 280P, 380P. Advanced Projects in Performance. Projects inappropriate to organized courses but pertinent to students' training and development in acting, directing, dance, and playwriting. For each semester hour of credit earned, the equivalent of one class hour a week for one semester, with laboratory hours as required. May be repeated for credit when the projects vary. Prerequisite: Graduate standing and consent of instructor.

381D. Seminar in Directing Theory. Application of aesthetic and creative principles to directing theory; application of directing theory to textual analysis and production concept. Three lecture hours a week for one semester, with additional laboratory hours as required. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

381E. Topics in Directing Theory. Topics, restricted or broad in scope, related to the theory of directing. Three lecture hours a week for one semester, with additional laboratory hours as required. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

381F. Advanced Acting and Directing. Problems in the theory and practice of acting and directing for the theatre. Three lecture hours a week for one semester, with additional laboratory hours as required. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, a major in acting, and consent of instructor.

Topic 1: Advanced Acting. Full exploration of the sources of dramatic action that reside in the self.

Topic 2: Classical Acting. Training in the acting skills needed for the performance of Shakespeare and other verse dramatists.

Topic 3: Voice Studies I. Training the actor in vocal coaching, voice anatomy, muscularity of speech, and vocal health.


481G. Advanced Acting and Directing Laboratory. Practical application of acting and directing techniques for the theatre. Twelve laboratory hours a week for one semester. May be repeated for credit when the topics vary; any topic may also be repeated for credit. Prerequisite: Graduate standing, a major in acting, and consent of instructor.

Topic 1: Voice, Speech, and Movement I. The basics of speech, phonetics, and mind and body awareness for the actor.

Topic 2: Voice, Speech, and Movement II. The physical side of acting, and articulation as it is applied to various types of text. Additional prerequisite: Theatre and Dance 481G (Topic 1).


Topic 6: Acting Showcase. Scenes and monologues to be used in the New York and Los Angeles evaluation showcases.

Topic 7: Directing. Practical application of directing techniques for the theatre.

381J. Directing: Modern Drama. Theory, analysis, and practice in directing plays from the modern period. Three lecture hours a week for one semester, with laboratory hours as required. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

381L. Directing: Period Drama I. Theory, analysis, and practice in directing plays from historical periods of drama. Three lecture hours a week for one semester, with laboratory hours as required. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

381M. Directing: Period Drama II. Continuation of Theatre and Dance 381L. Theory, analysis, and practice in directing plays from historical periods of drama. Three lecture hours a week for one semester, with laboratory hours as required. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

382K. Seminar in Secondary School Theatre Curriculum. Theory and design of secondary school theatre curriculum. May be repeated for credit. Prerequisite: Graduate standing, secondary school teacher certification, and consent of instructor.

383M. Topics in Theatre Outreach. Topics, restricted or broad in scope, related to the theory and practice of theatrical outreach. Three lecture hours a week for one semester, with laboratory hours as required. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Theatre Outreach Methods. Theory and design of a variety of outreach offerings.

183N, 283N, 383N. Theatre Outreach Practicum. Practical application of theatre outreach methods in communities. For each semester hour of credit earned, the equivalent of one class hour a week for one semester, with laboratory hours as required. May be repeated for credit when the projects vary. Prerequisite: Graduate standing and consent of instructor.

383P. Topics in Drama and Theatre for Youth. Topics pertinent to students’ training and development in drama and theatre for youth. Three lecture hours a week for one semester, with laboratory hours as required. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.


Topic 5: Creative Drama. Advanced theory and practice of creative drama in field and educational settings.

Topic 6: Practicum in Drama and Theatre for Youth. Practical applications of approaches to drama and theatre for youth.


Topic 9: Special Problems: Directing for Young Audiences. Challenges in staging plays for young audiences.

Topic 10: Myth, Legend, and Tale.

Topic 11: Creative Drama in the Museum. The application of creative drama methods in museum settings.

184, 284, 384. Special Problems in Theatre and Dance. For each semester hour of credit earned, the equivalent of one class hour a week for one semester, with laboratory hours as required. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

385C. Topics in Theatre History. Topics, restricted or broad in scope, chosen from the history of theatre, both Western and non-Western. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Theatre History, 1660–1900.

Topic 2: Medieval and Renaissance Theatre History. European theatrical history from the Medieval and Renaissance periods.

Topic 3: Classical and Asian Theatre History. Survey of ancient Greek, Roman, and Asian theatrical history.

Topic 4: 20th-Century Theatre History.


Topic 6: Contemporary Theatre History.
385D. **Topics in Dramaturgy.** Topics pertinent to students’ training and development in dramaturgical theory and practice. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor.

- **Topic 1:** Dramaturgy
- **Topic 2:** New Play Dramaturgy
- **Topic 3:** Production Dramaturgy

386. **Topics in Dance.** Topics pertinent to students’ training and development in dance and choreography. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor.

- **Topic 1:** Dance in Academia

386C. **Topics in the History, Theory, and Criticism of Dance.** Topics pertinent to students’ training and development in the history and theory of dance and choreography. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor.

- **Topic 1:** Dance in Academia

386D, 386D, 386D, 386D. **Dance Technique.** Training in ballet, modern, and other forms of dance. For each semester hour of credit earned, the equivalent of one class hour a week for one semester, with laboratory hours as required. May be repeated for credit when the projects vary. **Prerequisite:** Graduate standing and consent of instructor.

387D. **Topics in Performance Studies.** Topics, restricted or broad in scope, related to performance studies. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor.

- **Topic 1:** Applied Drama and Theatre. Survey of various applications of drama theatre for communitarian and educational purposes.
- **Topic 2:** Performance Analysis
- **Topic 3:** Performance Ethnography
- **Topic 4:** Performing Autobiography. The overlapping territory between performing the self and performing the biographical other.
- **Topic 5:** Seminar in Theatre History and Performance Studies
- **Topic 6:** Historical Case Studies
- **Topic 8:** Women and American Performance
- **Topic 9:** Adaptation for Stage and Screen
- **Topic 10:** Performance and Politics in the 1960s
- **Topic 11:** Performative Criticism
- **Topic 12:** Performing Black Feminisms
- **Topic 13:** Theatre of the Oppressed. Overview of the movement inspired by Augusto Boal’s *Theatre of the Oppressed*

387M. **Topics in Dramatic Theory and Criticism.** Topics, restricted or broad in scope, concerning theory and criticism as they relate to drama or theatre. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor.

- **Topic 1:** Dramatic Theory and Criticism, Ancient Greece to the Eighteenth Century
- **Topic 2:** Dramatic Theory and Criticism, the Eighteenth Century to 1960
- **Topic 3:** World Theatre in Context. Practical application of dramaturgical case study for the actor

387N. **Topics in Dramatic Form and Structure.** May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor.

387P. **Playwriting Workshop.** Theory and practice of dramatic writing. May be repeated for credit. **Prerequisite:** Graduate standing and consent of instructor.

387R. **Playwriting For Youth.** Advanced study and practice of writing plays for children and youth. **Prerequisite:** Graduate standing and consent of instructor.

388. **Research Methods and Resources.** Theory and practice of academic research for theatre artists. **Prerequisite:** Graduate standing and consent of instructor.

388J. **Advanced Design and Technology Studio.** Problems in the theory of scenic design, costume design, lighting design, and theatre technology. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor.

- **Topic 1:** Costume Design
- **Topic 2:** Costume Technology
- **Topic 3:** Lighting Design
- **Topic 4:** Scenic Design. Designed primarily for students studying scenic design. Fundamentals of scenic design.
- **Topic 5:** Theatre Technology. Theory and application of the technical direction process.
488K. Advanced Design and Technology Laboratory. Practical applications of production theory for theatrical designers and technicians. Laboratory hours as required. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Lighting Laboratory. Practical and individual design experience in lighting.
Topic 2: Technology Laboratory. Practical and individual design experience in theatrical technology.
Topic 3: Scenery Laboratory. Practical and individual design experience in scenery.
Topic 4: Costuming Laboratory. Practical and individual design experience in costuming.

388L. Advanced Topics in Design and Technology. Topics that are related to and support the study of theatrical design and technology. Three lecture hours a week for one semester, with laboratory hours as required. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 7: Fabric Painting and Dyeing I. Fundamentals of textile surface design.
Topic 8: Scene Design. Designed primarily for students studying costume design, costume technology, lighting design, or technical direction. Basic methodology for designing scenery.
Topic 9: Draping I. Basic clothing construction for theatrical productions.
Topic 10: Draping II. Advanced clothing construction for theatrical productions.
Topic 11: Mask Making II. Mask theory, design, construction for theatrical and live productions.
Topic 13: Scenic Rendering.
Topic 14: Millinery I. Fundamentals of hat design, fitting, and construction techniques.
Topic 16: Rigging for the Theatre. Historical and modern practices of theatrical rigging systems.

Topic 17: Tailoring I. Fundamental theory and technique in the construction, repair, and alteration of garments.
Topic 18: Tailoring II. Advanced theory and technique in the construction, repair, and alteration of garments.
Topic 23: Fabric Painting and Dyeing II. Advanced textile surface design.
Topic 24: Millinery II. Advanced hat design, fitting, and construction techniques.

188M, 288M, 388M. Advanced Projects in Design and Technology. Advanced independent study projects in scenic design, costume design, lighting design, and theatre technology. For each semester hour of credit earned, the equivalent of one class hour a week for one semester, with laboratory hours as required. May be repeated for credit when the projects vary. Prerequisite: Graduate standing and consent of instructor.

388R. Research and History for the Visual Theatre. Study of the development of dress and decor, as seen in a general historical context, with an introduction to research methods appropriate for theatrical designers and technicians. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

390. Advanced Playwriting Workshop. Advanced study and practice of dramatic writing. May be repeated for credit. Prerequisite: Graduate standing, Theatre and Dance 387P (or Drama 387P), and consent of instructor.

190K. Play Readings. Weekly readings of plays in various stages of development. One lecture hour a week for one semester, with laboratory hours as required. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

390L. New Playwriting Studio. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.
391. **Topics in Performance as Public Practice.** Topics, restricted or broad in scope, related to performance as public practice. Three meeting hours a week for one semester. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor.

- **Topic 1:** Historiography. The history of history in practice, as a discipline, and in writing.
- **Topic 2:** Proseminar: Performance as Public Practice.
- **Topic 3:** Public Intellectuals and the Arts.
- **Topic 4:** Community-Based Theatre. The practice of theatre as a tool for community and social change.
- **Topic 5:** Cultural Policy and the Arts.

392, 692, 992. **Graduate Internship in Theatre.** Participation and observation as a working member of a theatre or theatre-related organization. Laboratory hours as required by the sponsor. The amount of credit awarded is commensurate with the duties of the internship. **Prerequisite:** Completion of one year of a graduate degree program in the Department of Theatre and Dance, consent of instructor, approval of the faculty of the student’s area of study, and approval of the Internship Committee of the Graduate Studies Committee.

393. **Seminar in Theory, Criticism, and Analysis.** May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor.

395. **Readings in History, Theory, Criticism, and Performance Studies.** In-depth exploration of literature in specialized areas of interest, primarily as preparation for doctoral examinations and dissertation proposals. Conference course equivalent to three lecture hours a week for one semester. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor.

195P, 295P, 395P. **Advanced Projects in Performance Studies.** Advanced independent study projects in performance studies, theatre history, theory, criticism, performance as public practice, drama and theatre for youth, theatre outreach, and dramaturgy. For each semester hour of credit earned, the equivalent of one class hour a week for one semester, with laboratory hours as required. May be repeated for credit when the projects vary. **Prerequisite:** Graduate standing and consent of instructor.

698. **Thesis.** The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. **Prerequisite:** For Theatre and Dance 698A, graduate standing and consent of the graduate adviser; for 698B, Theatre and Dance 698A (or Drama 698A).

398T. **Supervised Teaching in Theatre and Dance.** Theory and practice of pedagogy in theatre and dance. **Prerequisite:** Graduate standing.

399R, 699R, 999R. **Dissertation.** Offered on the credit/no credit basis only. **Prerequisite:** Admission to candidacy for the doctoral degree.

399W, 699W, 999W. **Dissertation.** Offered on the credit/no credit basis only. **Prerequisite:** Theatre and Dance 399R, 699R, or 999R (or Drama 399R, 699R, or 999R).
GEOLOGICAL SCIENCES

Master of Arts
Master of Science in Geological Sciences
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

Austin provides an ideal base from which to conduct research projects in all aspects of geological science. The University’s central Texas location gives students ready access to exposures of Phanerozoic siliciclastic and carbonate strata and Precambrian igneous and metamorphic basement rocks. The presence of a karst aquifer beneath the city of Austin allows students to study issues related to urbanization, the demand for water, and contamination. Field-intensive studies for master’s and doctoral degrees are continually in progress, in Texas and in many other states. Field research is currently being conducted on every continent and ocean basin.

Analytical facilities are comprehensive and up-to-date. The electron-microbeam laboratory houses a JEOL JXA-8200 electron microprobe with five wavelength-dispersive spectrometers and an energy-dispersive spectrometer, as well as a Phillips/FEI XL30 environmental scanning electron microscope and a JEOL T330A scanning electron microscope, both with energy-dispersive spectrometers and cathodoluminescence detectors with RGB color filtration. Two Micromass inductively coupled plasma mass spectrometers are available for chemical and isotope analysis of diverse geologic materials: the IsoProbe, a magnetic-sector multicollector device with nine faraday cups, a daly ion-counting channel, and three ion-counting channeltrons; and the Platform, a quadrupole device. Both instruments can be interfaced with a Merchantek 213-nm-wavelength laser-ablation unit for spatially resolved analysis. These instruments are complemented by a Finnigan-MAT 261 thermal ionization mass spectrometer with seven faraday cups and one ion-counting channel. Ultraclean laboratories support preparation of samples for rubidium-strontium, uranium-lead, U-series disequilibrium dating, samarium-neodymium, and other isotopic analysis. Additional geochemical instrumentation includes two VG gas-source mass spectrometers for hydrogen, oxygen, nitrogen, and carbon stable-isotope analysis, and a Micromass Multiprep automated preparation system for water and carbonate analyses; a gas-source mass spectrometer for conventional potassium-argon dating; a Jobin Yvon 70P optical-emission inductively coupled plasma spectrometer; and a Perkin-Elmer atomic absorption spectrophotometer.

4. Final approval is pending to establish the Jackson School as a campus-level unit rather than a part of the College of Natural Sciences.
The Department of Geological Sciences houses a dual high-resolution x-ray computed tomographic scanner used for nondestructive three-dimensional visualization and analysis of the internal structure of geologic samples; a Siemens D500 x-ray diffractometer with Datascan automation software and JADE pattern analysis; and a paleomagnetic laboratory with a shielded room, 2G cryogenic magnetometer, Bartington susceptibility meter, and ASC impulse magnetizer. Special microscopy facilities incorporate an Edge R400 real-time high-resolution three-dimensional light microscope; a USGS-type gas-flow fluid inclusion stage; and a Technosyn luminoscope. Among additional facilities are a 1-m × 1.5-m × 10-m flume for sediment transport studies and an experimental petrology laboratory containing hydrothermal pressure apparatus and one-atmosphere gas-mixing furnaces.

Geophysical research employs portable multichannel seismographs with vertical and three-component geophones; a ground-penetrating radar system; a LaCoste-Romberg gravimeter; an airborne Optech LIDAR system for fine-scale topographic mapping; an Optech ILRIS tripod-mounted laser scanning system for very-high-resolution outcrop topography; five portable broadband Guralp seismographs for teleseismic studies; two Vibroseis seismic sources, for both low- and high-frequency three-axis shaking; ten dual-frequency geodetic-quality GPS receivers with choke-ring antennas; portable field magnetometers; and an aerogeophysical instrument package (radar, gravity, LIDAR, magnetometers) most often used in Antarctica. A field site south of San Antonio is available for calibration and testing of seismic instruments and techniques. Graduate students are frequent members of scientific crews on vessels of the University-National Oceanographic Laboratory System and of other nations, and students regularly conduct fieldwork in Antarctica using National Science Foundation Polar Programs facilities.

Facilities for data processing, data interpretation, and numerical simulation are extensive. There are multiple workstation clusters with Sun and SGI hardware, as well as Windows and Macintosh systems. Most major commercial software packages for seismic data processing and interpretation are available, along with software for GIS, potential field, synthetic aperture radar, and other applications.

Reference materials include the 165,000-item Joseph C. and Elizabeth C. Walter Geology Library and Tobin International Map Collection, both located in the John A. and Katherine G. Jackson Geological Sciences Building. Research collections of about one million vertebrate paleontology specimens and about four million nonvertebrate specimens, including a type collection of about five thousand specimens, are housed at the J.J. Pickle Research Campus. The Bureau of Economic Geology maintains three major core storage facilities, containing nearly two million boxes of core and cuttings, mostly from North American sedimentary basins. The bureau also maintains a collection of nearly one million electric logs from Texas oil and gas wells.

Research support is provided by a well-equipped petrographic laboratory with a separate thin-section laboratory for student use, a machine shop, and an electronics shop. The department’s staff includes two analytical chemists, two computer support specialists, a petrographic section technician, an electronics technician, a computer graphics specialist, a photographer, and a machinist.

AREAS OF STUDY

Areas of active research in the Department of Geological Sciences include studies in sedimentary depositional systems; hydrogeology; climatology; structural geology; regional tectonics; seismology; paleomagnetism; seismic reflection and refraction;
isotope and aqueous geochemistry; sedimentary geochemistry; geomicrobiology; igneous, sedimentary, and metamorphic petrology; high-temperature geochemistry; ore deposits and industrial mineral resources; and vertebrate and invertebrate paleontology. Cooperative research projects are underway with the Center for Space Research, the Institute for Geophysics, and the Bureau of Economic Geology.

**GRADUATE STUDIES COMMITTEE**

The following faculty members and research scientists served on the Graduate Studies Committee in the spring semester 2004–2005.

James A. Austin Jr.  Robert G. Loucks  
Jay L. Banner  Floyd J. Lucia  
Christopher J. Bell  William P. Mann  
Philip C. Bennett  Randall A. Marrett  
Donald Blankenship  Earle F. McBride  
William D. Carlson  Kitty L. Milliken  
Mark P. Cloos  Sharon Mosher  
James N. Connelly  Yosio Nakamura  
Ian W. D. Dalziel  Timothy B. Rowe  
Shirley P. Dutton  Bridget R. Scanlon  
Robert J. Ferguson  Mrinal K. Sen  
Clifford A. Frohlich  Thomas H. Shipley  
James E. Gardner  James T. Sprinkle  
Stephen P. Grand  Ronald J. Steel  
Bob A. Hardage  Libby A. Stern  
Martin P. Jackson  Paul L. Stoffa  
Charles Kerans  Robert H. Tatham  
Gary A. Kocurek  Scott W. Tinker  
J. Richard Kyle  W. C. J. van Rensburg  
John C. Lassiter  Clark R. Wilson  
Stephen E. Laubach  Lesli J. Wood  
Leon E. Long  Zong-Liang Yang

**ADMISSION AND DEGREE REQUIREMENTS**

The preliminary education of students who intend to become candidates for a graduate degree in geological sciences usually includes coursework in general geology, paleontology, mineralogy, petrology, structural geology, and field geology, as well as physics, chemistry, and calculus. Geophysicists are expected to have a sound foundation in both mathematics and physics; paleontologists and biostratigraphers should include suitable preparation in the comparative morphology and genetics of living organisms. Students without the necessary foundation for advanced study and research may be required to take additional coursework.

The department offers both the Master of Science in Geological Sciences and the Master of Arts. The Master of Science in Geological Sciences requires twenty-four semester hours of coursework and a thesis; it is designed for those planning doctoral study or seeking employment in which research and problem-solving skills are essential.

The Master of Arts degree program requires thirty hours of coursework and a report; it is designed for students who wish to enhance their technical education. The programs in hydrogeology and petroleum geology require the student to take courses chosen from a list available from the graduate adviser. In other disciplines, Master of Arts degree programs are designed by petition to the graduate adviser.
Degree programs for the Master of Science in Geological Sciences and the Doctor of Philosophy are designed for each student by his or her committee. Additional requirements, policies, and procedures are described in a brochure available from the graduate adviser’s office.

FOR MORE INFORMATION

Campus address: John A. and Katherine G. Jackson Geological Sciences Building (GEO) 2.312, phone (512) 471-6098, fax (512) 471-9425; campus mail code: C1100
Mailing address: The University of Texas at Austin, Graduate Program, Department of Geological Sciences, 1 University Station C1100, Austin TX 78712
E-mail: geograd@maestro.geo.utexas.edu
URL: http://www.geo.utexas.edu/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog. Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Geological Sciences: GEO

380C. Advanced Structural Geology. Origin of earth structures, solution of advanced structural problems, newest techniques, field techniques, and field problems. Normally offered in the fall semester only. Prerequisite: Graduate standing and consent of instructor.

380E. Sedimentary Processes. Examination of basic fluid mechanics in relation to the dynamics of bedforms and the origin of sedimentary structures. Normally offered in the spring semester only. Prerequisite: Graduate standing.

380F. Introduction to Seismology, Earthquakes, and Earth Structure. Basic seismology theory and its application to the study of the interior of the earth (crust, mantle, and core), earthquakes, and plate tectonics. Offered irregularly. Prerequisite: Graduate standing, and Mathematics 408C or the equivalent.

380N. Sequence Stratigraphy. Use of seismic reflection systems for quantitative stratigraphic characterization of the subsurface. Three lecture hours and two laboratory hours a week for one semester. Normally offered in the spring semester only. Prerequisite: Graduate standing, and Geological Sciences 416M and 465K or their equivalents.

381C. Structural Petrology. Deformation processes from atomic to macroscopic level, resultant textures and fabrics, and conditions required to produce such deformation. Three lecture hours and three laboratory hours a week for one semester. Normally offered in the spring semester only, in alternate years. Prerequisite: Graduate standing and an undergraduate course in structural geology and petrology.

381E. Brittle Structure. Quantitative analysis of folding, faulting, and fracturing at all scales in the upper crust, with emphasis on cross-section construction, subsurface mapping, and fracture analysis. Three lecture hours a week for one semester, and several field trips. Normally offered in the spring semester only, in alternate years. Prerequisite: Graduate standing and a course in structural geology.

381K. Tectonic Problems. Origin of regional structural features, complex and controversial structures; tectonic control of ore deposits. Offered irregularly. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in geological sciences and consent of instructor.

381P. Plate Margins. Study of the tectonics of the earth. Topics include history of early concepts, ocean spreading ridges and ophiolites, rifting, core complexes, passive margins, subduction zones, trenches, volcanic arcs, collisional orogeny, and transform margins. Normally offered in the spring semester only. Geological Sciences 381P and 391 (Topic: Plate Margins) may not both be counted. Prerequisite: Graduate standing in geological sciences.

290  Fields of Study
381R. Regional Studies in Mineral Resources Geology. Geologic evolution of a region, with emphasis on factors that control the origin of selected mineral resources. Study area varies according to the interests of participants and other factors. Normally offered in the spring semester only. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

382C. Groundwater Field Methods. Basic field methods used in evaluation of groundwater conditions, with emphasis on field interpretation and on hands-on experience with geophysical, geochemical, stream-gauging, and pump test methods. Forty-five hours of field and laboratory work in a three-week period. Normally offered in the summer session only. Prerequisite: Graduate standing, and Geological Sciences 391C or consent of instructor.

382F. Fractured Rock Hydrology and Mechanics. Introduction to the physics of flow in fractured rocks and soils; fracture mechanics; fracture skins; analysis of solute transport; and methods of characterizing and modeling fractured systems. Class field trips are an integral part of the class. Three lecture hours a week for one semester, with field trips to be arranged. Offered irregularly. Geological Sciences 382F and 391 (Topic: Fractured Rock Hydrology) may not both be counted. Prerequisite: Graduate standing in geological sciences and consent of instructor. Previous coursework in hydrogeology (such as Geological Sciences 476K or the equivalent) is recommended.

382G. Global Hydrology. Essential aspects of modern global hydrology and its interactions within climate systems, studied in the context of multidisciplinary earth system science. Three lecture hours and two laboratory hours a week for one semester. Normally offered in the spring semester only, in alternate years. Geological Sciences 382G and 391 (Topic: Global Hydrology) may not both be counted. Prerequisite: Graduate standing in geological sciences, or graduate standing and consent of instructor.

382S. Physical Hydrology. Comprehensive treatment of modern conceptual and methodological approaches to hydrological science. Combines qualitative understanding of hydrological processes with quantitative representation, approaches to measurement, and treatment of uncertainty. Major components of the hydrological cycle. Three lecture hours and two laboratory hours a week for one semester. Normally offered in the fall semester only. Geological Sciences 382S and 391 (Topic: Physical Hydrology) may not both be counted. Prerequisite: Graduate standing in geological sciences, or graduate standing and consent of instructor.

383. Depositional Systems: Terrigenous Clastics. The processes, characteristics, and relationships among fluvial, deltaic, shore-zone, shelf, and slope depositional systems; depositional basin analysis used in stratigraphy and economic geology. Four lecture hours a week for one semester, with two weekend field trips. Normally offered in the fall semester only. Prerequisite: Graduate standing and consent of instructor.

383C. Geology and Hydrology. Study of the interaction of fluids with the rock matrix, with emphasis on the role of hydrology in geologic processes and the role of geology in affecting hydrologic processes. Three lecture hours a week for one semester, and several field trips. Offered irregularly. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and a course in hydrogeology or hydrology.

383D. Numerical Methods I: Computational Methods in Geological Sciences. FORTRAN programming, applications to geological problems, linear algebra, elementary signal processing, UNIX and microcomputer operating systems. Two lecture hours and two laboratory hours a week for one semester. Normally offered in the fall semester only. Prerequisite: Graduate standing.

383E. Digital Methods in Hydrogeology. Introduction to the basic finite-difference and finite-element methods; the application of digital methods to problems of hydrogeology and geophysics. Offered irregularly. Prerequisite: Graduate standing, and Geological Sciences 391C or the equivalent.

383G. Geochemistry of Sedimentary Rocks. The hydrologic cycle, the early diagenesis, carbonate sediments, chemical sediments, and burial processes. Three lecture hours a week for one semester, with laboratory hours to be arranged. Offered irregularly. May be repeated for credit. Prerequisite: Graduate standing.

383K. Paleoecology. Relationships of fossil animals and plants to their environments and to the sedimentary deposits in which they occur. Three lecture hours a week for one semester, with one optional field trip. Normally offered in the spring semester only, in alternate years. Prerequisite: Graduate standing.

383L. Petrography of Sandstones. Mineralogy of sedimentary rocks; thin-section examination of sandstones, with emphasis on paleogeographic, tectonic, and environmental interpretation. Two lecture hours and three laboratory hours a week for one semester. Offered irregularly. Prerequisite: Graduate standing in geological sciences.
383M. Petrography of Carbonates. Thin-section and hand-specimen study of mudrocks, carbonate rocks, and chemical sediments, with emphasis on paragenetic and environmental interpretation. Three lecture hours and two laboratory hours a week for one semester. Offered irregularly. Prerequisite: Graduate standing.

383N. Carbonate and Evaporite Facies and Stratigraphy. Interpretation of genesis of evaporite and biogenic rocks from sedimentary structures, facies analyses, and vertical sequences. Three lecture hours and three laboratory hours a week for one semester. Offered irregularly. Prerequisite: Graduate standing and consent of instructor.

383R. Reservoir Geology and Advanced Recovery. Analysis of geologic controls on composition and architecture of oil and gas reservoirs, with emphasis on reservoir heterogeneity resulting from depositional and diagenetic processes. Geological and petrophysical determinants of fluid flows and behavior. Normally offered in the fall semester only. May be repeated for credit. Prerequisite: Graduate standing; and credit or registration for Geological Sciences 380N, 383, and 383N, or consent of instructor.

383S. Sedimentary Basin Analysis. In-depth analysis of selected topics in sedimentary systems and basin analysis. Specific topics vary from year to year. Students have the opportunity to conduct research and make presentations on assigned topics. Normally offered in the spring semester only. Prerequisite: Graduate standing, and Geological Sciences 383 or the equivalent.

384C. Geophysics I: Exploration Geophysics. Seismic, gravity, magnetic, electrical, and electromagnetic methods of exploration for petroleum and minerals. Three lecture hours and two laboratory hours a week for one semester. Normally offered in the fall semester only. Prerequisite: Graduate standing.

384D. Geophysics II: Global Geophysics. Geophysics of the whole earth: seismic methods of inferring earth structure, chemical makeup of the earth, tides and rotational variations, geomagnetism, heat flow, earthquakes, and seismicity. Normally offered in the spring semester only. Prerequisite: Graduate standing.

384E. Seismic Migration and Inversion. Use of the acoustic or elastic wave equation to construct subsurface images in seismic processing. Different methods of solution and data domains employed in routine applications. Investigations integral, implicit, and explicit finite differences and Fourier methods for the imaging and inversion of seismic reflection data. Offered irregularly. Geological Sciences 384E and 391 (Topic: Seismic Migration and Inversion) may not both be counted. Prerequisite: Graduate standing in geological sciences.

384M. Inverse Theory. The representation of geophysical data, including one-, two-, and three-dimensional earth models and sampled, truncated data in one to seven dimensions. Emphasis on practical applications; application of increasingly complex data to several different problems. Three lecture hours and two laboratory hours a week for one semester. Normally offered in the fall semester only. May be repeated for credit. Prerequisite: Graduate standing.

384R. Data Processing I. Convolution, Fourier transforms, probability and statistical inference, digital filters, spectral analysis, time-series modeling, linear estimation methods for over- and under-determined problems. Normally offered in the fall semester only. Prerequisite: Graduate standing, and Geological Sciences 384R or the equivalent.

384S. Data Processing II. Reduction of seismic and other geophysical data from field data to final geologic cross sections, using real data sets and modeling programs. Three lecture hours and two laboratory hours a week for one semester. Offered irregularly. Prerequisite: Graduate standing, and Geological Sciences 384R or the equivalent.

385C. Geodynamics I: Plate Tectonics and Paleomagnetism. Global tectonics; rigid plate theory; heat flow, paleomagnetic data interpretation, including field methods; marine geophysics. Offered irregularly. Prerequisite: Graduate standing.

385D. Geodynamics II: Basin Subsidence. Modeling of basin development, including gravity, flexure, subsidence, rheology, and back-stripping methods. Normally offered in the spring semester only. Prerequisite: Graduate standing.
385E. Geodynamics III: Geodesy. Gravity field of the whole earth, tides, rotational variation, space geodetic methods for crustal strain studies. Offered irregularly. **Prerequisite:** Graduate standing, and Geological Sciences 384R or the equivalent.

185G. Geophysics Colloquium. Open to non-geological sciences majors, but registration priority is given to geological sciences majors. Exploration of a variety of problems in modern geophysics. Two lecture hours a week for one semester, and at least one weekend field trip. May be repeated for credit. Offered on the credit/no credit basis only. Geological Sciences 185G and 194 (Topic: Geophysics Colloquium) may not both be counted. **Prerequisite:** Graduate standing.

385K. Micropaleontology. Morphology, classification, stratigraphic ranges, and paleoecology of Foraminifers, Ostracodes, conodonts, and other microfossils, with emphasis on economic applications to petroleum geology. Two lecture hours and four laboratory hours a week for one semester. Normally offered in the fall semester only. **Prerequisite:** Graduate standing in geological sciences, twelve semester hours of upper-division coursework in geological sciences, and consent of instructor.

385P. Paleophycology. Survey of calcareous and fossil algae from the earliest record to the present. Three lecture hours and two laboratory hours a week for one semester. Offered irregularly. **Prerequisite:** Graduate standing.

386. Metamorphic Petrology. Effects of heat, pressure, and solution in rock changes; metamorphic facies concept. Two lecture hours and four laboratory hours a week for one semester. Offered in alternate years. **Prerequisite:** Graduate standing and consent of instructor.

386E. Economic Geology. Origin of economic mineral concentrations within the context of their overall geologic settings; geologic aspects of economic evaluation, mining, and mineral processing; and mineral exploration. Three lecture hours and two laboratory hours a week for one semester. Normally offered in the fall semester only. May be repeated for credit. **Prerequisite:** Graduate standing and consent of instructor.

386G. Geographic Information System and Global Positioning System Applications in Earth Sciences. Theory and practice of geographic information system (GIS) and Global Positioning System (GPS) technologies, and their applications to problems in earth sciences. Laboratories and field trips provide hands-on experience with the collection, mapping, and analysis of geologic and other field data using GPS equipment and GIS software. Topics include map projections; datums and reference frames; cartographic principles; remotely sensed data (satellite and aerial photos, image radar); vector- and raster-based image formats; geospatial data resources; GIS software applications; surveying principles; GPS constellation and data structure; differential GPS; data logging schemes; GPS postprocessing software; integration of GPS and GIS in mapmaking; extant GIS applications in geology and hydrogeology. Three lecture hours and two laboratory hours a week for one semester, and two weekend field trips. Offered in the fall semester only. Geological Sciences 386G and 391 (Topic: Geographic Information System and Global Positioning System Applications in Earth Sciences) may not both be counted. **Prerequisite:** Graduate standing in geological sciences and consent of instructor.

386K. Igneous Petrology. Origin, differentiation, and crystallization of igneous rocks. Three lecture hours and three laboratory hours a week for one semester. Offered in alternate years. May be repeated for credit. **Prerequisite:** Graduate standing and consent of instructor.

387C. Chemical Hydrogeology. Introduction to the chemistry of water in the subsurface. Topics include basic thermodynamics and kinetics of rock-water interaction, acid-base theory, redox, and coordination chemistry. Three lecture hours and two laboratory hours a week for one semester. Normally offered in the spring semester only. May be repeated for credit. **Prerequisite:** Graduate standing, a graduate course in hydrogeology, and two semesters of college chemistry.
387E. Environmental Organic Geochemistry. Environmental and organic chemistry of organic contaminants in groundwater and soils. Three lecture hours and one laboratory hour a week for one semester. Offered irregularly. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

387H. Physical Climatology. Investigates the nature of Earth’s climate and examines the physical processes that maintain the climate system. Topics include the energy balance, the hydrological cycle, general atmosphere circulation and how they all interact and vary at various spatial and temporal scales. Discusses human-induced modifications to the climate system, such as urbanization, anthropogenic global warming, desertification, and tropical deforestation. Focuses on descriptive, analytical, programming, and modeling skills. Prerequisite: Graduate standing and Computer Sciences 303E, Geography 301K, Mathematics 408D, and Physics 303K.

388G. Global Biogeochemical Cycles. Examination of the major reservoirs, fluxes, and processes controlling the distribution of biologically active chemical constituents of the earth. The importance of these biogeochemical cycles in the geologic past and the effects of human perturbation of these cycles. Normally offered in the fall semester only. Geological Sciences 388G and 391 (Topic: Global Biogeochemical Cycles) may not both be counted. Prerequisite: Graduate standing in geological sciences, or graduate standing and consent of instructor.

388H. Environmental Isotope Geochemistry. The application of the isotope and trace element geochemistry of natural waters and sediments to studies of the hydrologic cycle. Stable, radiogenic, and cosmogenic isotopes are used as tracers of the evolution of groundwater, surface water, and ocean water. Three lecture hours a week for one semester, with laboratory hours to be arranged. Normally offered in the spring semester only. May be repeated for credit. Prerequisite: Graduate standing.

388L. Isotope Geology. Relation of isotope fractionation to earth processes; age determinations from ratios of unstable isotopes to daughter products; techniques of mass spectrometry. Normally offered in the fall semester only. Prerequisite: Graduate standing and consent of instructor.

388R. Radiogenic Isotopes and Tectonic Processes. Offered in alternate years. Prerequisite: Graduate standing.

389K. Paleontologic Nomenclature and Techniques. Rules of nomenclature: preparation, illustration, and description of Paleozoic invertebrate fossils. Normally offered in the spring semester only, in alternate years. Prerequisite: Graduate standing in geological sciences and consent of instructor.

389M. Vertebrate Paleontology: Mammals. Comparative osteology and phylogenetic history of the living and extinct mammals. Two lecture hours and four laboratory hours a week for one semester. Offered in alternate years. Geological Sciences 389M and 397 may not both be counted. Prerequisite: Graduate standing in geological sciences and Geological Sciences 389V (or 396).

389P. Digital Methods in Paleontology. The use of digital multimedia for analysis of paleontological problems, with emphasis on three-dimensional high-resolution CT data. One lecture hour and three laboratory hours a week for one semester. Normally offered in the spring semester only, in alternate years. Prerequisite: Graduate standing in geological sciences.

389R. Morphology of the Vertebrate Skeleton. Identification of skeletal elements from the major vertebrate taxa, and aspects of skeletal functional morphology, with emphasis on extant taxa. Topics include the skeletal systems of fish, amphibians, reptiles, birds, and mammals. Three lecture hours and four laboratory hours a week for one semester. Normally offered in the fall semester only, in alternate years. Only one of the following may be counted: Geological Sciences 322V, 371C (Topic: Morphology of the Vertebrate Skeleton), 389R, 391 (Topic: Morphology of the Vertebrate Skeleton). Prerequisite: Graduate standing in geological sciences; and Biology 214, Geological Sciences 404C, 405, or the equivalent, or consent of instructor.

389S. Systematics and Paleontology. Seminar course focusing on current issues in digital/instructional technologies. Provides students with an opportunity to explore, discuss, and demonstrate issues designing, acquiring, manipulating, authoring, and publishing digital content. Students work toward completing a specific project. Offered in alternate years. Geological Sciences 389S and 391 (Topic: Systematics and Paleontology) may not both be counted. Prerequisite: Graduate standing in geological sciences and consent of instructor.

389V. Vertebrate Paleontology. Comparative osteology and phylogenetic history of the living and extinct fishes, amphibians, and reptiles. Two lecture hours and four laboratory hours a week for one semester. Normally offered in the spring semester only, in alternate years. Geological Sciences 389V and 396 may not both be counted. Prerequisite: Graduate standing in geological sciences, and Biology 349 or the equivalent.
390D. Seismology II: General Seismology. Advanced treatment of elastic wave propagation, ray methods, body and surface waves. Offered irregularly. Prerequisite: Graduate standing, and Geological Sciences 384R or the equivalent.

390M. Thermodynamics of Geologic Processes. Applications of physical chemistry to natural systems; interactions of minerals, solutions, and the atmosphere. Offered in alternate years. Prerequisite: Graduate standing and consent of instructor.

390R. Analytical Methods: Electron-Microbeam Techniques. An introduction to electron-microbeam instruments and their applications in the earth sciences. Lectures on relevant theory and concepts are supplemented by hands-on experience. Two lecture hours and three laboratory hours a week for one semester. Prerequisite: Graduate standing in geological sciences or graduate standing and consent of instructor.

390S. Analytical Methods: Mass Spectrometry. An introduction to mass spectrometers and their applications in the earth sciences. Lectures on relevant theory and concepts are supplemented by hands-on experience. Two lecture hours and three laboratory hours a week for one semester. Prerequisite: Graduate standing in geological sciences or graduate standing and consent of instructor.

191, 291, 391, 491, 591, 791, 891, 991. Seminar in Geological Sciences. For each semester hour of credit earned, the equivalent of one class hour a week for one semester; additional hours may be required for some topics. Offered irregularly. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in geological sciences. Some topics require additional prerequisites; these are identified in the Course Schedule.

391C. Physical Hydrogeology. Geological controls on groundwater resources; evaluation of aquifers, geothermal systems, and contamination problems; natural hazards caused by human use of groundwater. Three lecture hours a week for one semester, with discussion hours to be arranged. Normally offered in the fall semester only. Prerequisite: Graduate standing and concurrent enrollment in Geological Sciences 191W.

391D. Regional Tectonics. Development of tectonic theory culminating in the new global tectonics, and application of theory to selected orogenic areas. Offered irregularly. Prerequisite: Graduate standing in geological sciences.

391Q. Topics in Quaternary Geology. Interdisciplinary analysis of Quaternary chronology, environments, climatic changes, and erosional-depositional processes. Offered irregularly. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

391S. Current Topics in Paleobiology. Seminar reviewing recent publications on evolutionary and ecologic theories applied to the fossil record. Normally offered in the fall semester only. Prerequisite: Graduate standing.

391T. Paleobiogeography. Geographic distribution of fossil organisms, history of marine communities, speciation models, and diversity analysis. Normally offered in the fall semester only. Prerequisite: Graduate standing in geological sciences.

191W. Aquifer Testing. Techniques of aquifer evaluation, including pumping tests, laboratory techniques, field mapping, and numerical analysis. Two laboratory hours a week for one semester. Normally offered in the fall semester only. Prerequisite: Graduate standing and concurrent enrollment in Geological Sciences 391C.

392M. Modern Geological Sciences. General discussion of the entire spectrum of geological sciences. Offered in the fall semester only. Offered on the credit/no credit basis only. Geological Sciences 391 (Topic: Modern Geological Sciences) and 392M may not both be counted. Prerequisite: Graduate standing in geological sciences.

193. Technical Sessions. Attendance required of all graduate students in geological sciences. Two lecture hours a week for one semester. Additional hours may be required. Normally offered in the fall and spring semesters only. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing.

194, 294, 394, 494, 594, 694, 794, 894, 994. Research in Geological Sciences. For each semester hour of credit earned, the equivalent of one class hour a week for one semester. Offered every semester. May be repeated for credit when the topics vary. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in geological sciences.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in geological sciences and consent of the graduate adviser; for 698B, Geological Sciences 698A.
398R. **Master’s Report.** Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. **Prerequisite:** Graduate standing in geological sciences and consent of the graduate adviser.

298T. **Supervised Teaching in Geological Sciences.** Open to graduate students engaged in laboratory instruction under close supervision of the course instructors. Two lecture hours a week for one semester. Normally offered in the fall semester only. Offered on the credit/no credit basis only. **Prerequisite:** Graduate standing and appointment as a teaching assistant.

399R, 699R, 999R. **Dissertation.** Offered on the credit/no credit basis only. **Prerequisite:** Admission to candidacy for the doctoral degree.

399W, 699W, 999W. **Dissertation.** Offered on the credit/no credit basis only. **Prerequisite:** Geological Sciences 399R, 699R, or 999R.

**Related Courses**

The following courses are described in the section “Marine Science,” which begins on page 472. Marine Science 180, 380, 680. *Research in Marine Science.*

INFORMATION STUDIES

Master of Science in Information Studies
Doctor of Philosophy

ACCREDITATION

The University's program for the degree of Master of Science in Information Studies is accredited by the American Library Association. (The ALA does not concern itself with accrediting programs at levels other than the master's degree.) The programs for the certification of learning resources personnel are accredited by the National Council for Accreditation of Teacher Education and approved by the State Board for Educator Certification.

FACILITIES FOR GRADUATE WORK

Facilities for students in the School of Information include a fully networked Information Technology Laboratory, a computer classroom, a Conservation Laboratory, a video-editing suite, multimedia teaching stations in all classrooms, and access to a usability and accessibility laboratory. The school is also home to the Kilgatlin Center for Preservation of the Cultural Record, where students may engage in a number of research activities related to information preservation.

Students have access to advanced computer equipment and software for instructional and research use, supplementing the school's physical and wireless network and computer facilities. Students receive a full-service Internet account and have access to various computer operating systems, such as Macintosh, Windows, and Linux.

The school has developed ongoing, competitive student positions with the University Libraries, the Tarlton Law Library, and the Harry Ransom Humanities Research Center to provide students with work and study opportunities.

AREAS OF STUDY

The School of Information offers the following broad areas of study. Students may select coursework from any area to best suit their career plans.

*Information architecture and design.* This area is designed for students with an interest in creating and managing digital information resources. Students study usability, user behavior, information architecture, and digital media design. Graduates develop skills to work in software companies, consultancies, and multiuser organizations to help design and implement useful and acceptable information systems.

*Librarianship.* The school’s program in librarianship develops students’ competencies for practice in academic, public, corporate, or special libraries. Students interested in public school librarianship can earn the Standard School Librarian Certificate as approved by the State of Texas Board of Education. The master’s degree is fully accredited by the American Library Association (ALA).
**Preservation of the cultural record.** The preservation area combines courses in archives and manuscripts with courses in records management and digital preservation. The school’s advanced certificate programs in preservation administration and conservation studies prepare professionals to respond to the preservation and conservation needs of libraries, archives, and historical societies.

All students must register for Information Studies 180J, *Introduction to Information Studies*, during their first semester in the program. An orientation to the breadth and depth of the dynamic realm of information studies, this course introduces students to established and emerging areas within the field.

**GRADUATE STUDIES COMMITTEE**

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Randolph Bias
Hsin-liang (Oliver) Chen
Donald G. Davis Jr.
Andrew Dillon
Philip Doty
Miles J. Efron
Patricia K. Galloway
David B. Gracy II
E. Glynn Harmon
Barbara Immroth
W. Bernard Lukenbill
Francis L. Miksa
Irene Owens
Loriene Roy
Don Turnbull
Jo L. Westbrook
Emilio Zamora

**ADMISSION AND DEGREE REQUIREMENTS**

**Master of Science in Information Studies**

A student seeking to enter the program must submit an application for admission to the Graduate and International Admissions Center. He or she must also supply the School of Information with satisfactory letters of reference from three persons attesting to the applicant’s character, scholarly ability, and professional promise. For more information on admission procedures, visit [http://www.ischool.utexas.edu/admissions/](http://www.ischool.utexas.edu/admissions/).

Facility in the use of computers and networked communication is essential in professional work in information studies. This facility may be acquired through coursework in the school, but prior knowledge of computer applications is important to success in the program. Computer and Internet application tutorials are available online. A working knowledge of statistics and applied psychology is a practical necessity for positions involving administrative responsibilities in information service organizations.

The master’s degree program entails forty semester hours of graduate and upper-division coursework (not more than nine hours of the latter). At least twenty-eight hours must be in information studies courses, including certain required courses. Up to twelve hours, depending on the student’s background and objectives, may be in closely related courses in other subject areas. These courses must augment professional preparation; they do not ordinarily constitute a minor field in the degree program. A student’s choice of courses must have the approval of the student’s adviser.

Students conclude their studies with a capstone experience designed to enable them to integrate their professional education with the intellectual and institutional vocations toward which they are striving. Most students fulfill this requirement by engaging in experiences that result in completion of one of three options: the professional experience and project, Information Studies 388L; a master’s report, Information Studies 398R; or a thesis, Information Studies 698.
Applicants for degree candidacy are required to have an overall grade point average of at least 3.00 in their MSInfoStds coursework. Within the overall grade point average, applicants must have an average of at least 3.00 in all information studies courses, including those not listed on the Application for Degree Candidacy. High grades in courses outside information studies do not serve to offset an average of less than 3.00 in information studies. However, high grades in information studies may raise the overall average. With the exception of Information Studies 180J, 388L, 698, and 398R, information studies courses that are to be listed on the Application for Degree Candidacy may not be taken on the credit/no credit basis.

Doctor of Philosophy

To be admitted to the doctoral degree program, an applicant ordinarily should possess either a master’s degree from a school of information studies accredited by the American Library Association, or a master’s degree in a related field, or an equivalent degree from an institution outside the United States. Admission without an appropriate master’s degree is possible in exceptional circumstances. Information about additional requirements is available from the School of Information.

The objective of the doctoral program is to prepare graduates to contribute to the discipline through research and creative leadership. Emphasizing research, the program allows students to pursue advanced studies in the information discipline and in related subject areas, to study appropriate method and theory, and to learn to engage in advanced research by carrying out a guided and supervised dissertation project. The program is interdisciplinary; students may take courses from a variety of University offerings to supplement those in the School of Information.

Students must complete at least thirty-nine semester hours of coursework, consisting of six hours of required theory seminars, twelve hours of methods courses, twelve hours of required electives in the student’s major area within the school, and nine hours of elective courses from outside the school.

Students must also pass a qualifying examination before being admitted to candidacy. Finally, students must complete and defend a dissertation representing an original contribution to knowledge in the discipline.

Detailed information is available from the School of Information.

Certificate Programs

The school offers a general certificate of advanced study, and specialized certificates of advanced study in preservation administration, conservation studies, and school librarianship. Admission to the certificate of advanced study program ordinarily requires a master’s degree in information studies or a related field, and at least two years of successful professional-level experience. Other admission requirements include letters of recommendation and an interview. Certificates may be completed while studying for the MSInfoStds. Students interested in pursuing a certificate program must have their plan of study approved by the graduate adviser.

Specific course requirement for all certificates are available from the School of Information.
DUAL DEGREE PROGRAM

Master of Science in Information Studies/
Master of Arts with a Major in Middle Eastern Studies

The Center for Middle Eastern Studies and the School of Information offer a dual program leading to the Master of Arts with a major in Middle Eastern studies and the Master of Science in Information Studies. The program combines training in information studies and study of the cultures and societies of the Middle East and North Africa.

Students seeking admission to the dual degree program must apply through the Graduate and International Admissions Center. Students must be accepted by each individual program in order to be admitted to the dual program. Like all other graduate applicants, the student is responsible for submitting any additional information required by the Graduate Studies Committee for each program.

Students must complete at least seventy-three semester hours of coursework, including a professional report co-supervised by a faculty member from the School of Information and a faculty member from the Center for Middle Eastern Studies. Students must also demonstrate proficiency in Arabic, Hebrew, Persian, or Turkish equal to that shown by completion of two years of coursework; students who are native speakers of one of these languages must demonstrate proficiency in a second Middle Eastern language.

Details are available from the graduate adviser of either program.

FOR MORE INFORMATION

Campus address: George I. Sánchez Building (SZB) 564, phone (512) 471-2742, fax (512) 471-3971; campus mail code: D7000

Mailing address: The University of Texas at Austin, School of Information, 1 University Station D7000, Austin TX 78712

E-mail: info@ischool.utexas.edu

URL: http://www.ischool.utexas.edu/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Information Studies: INF

180j. Introduction to Information Studies. Overview of the field of information studies, including library science, information science, archives and records, preservation and conservation of materials, and communications and technology as applied to the work of information professionals. Five three-hour meetings each semester. Information Studies 180j and Library and Information Science 180j may not both be counted. Offered on the credit/no credit basis only. Required of all new students in their first semester of the program. Prerequisite: Graduate standing.

380k. Information Technologies and the Information Professions. Overview of innovations and technology that have shaped the culture of the information professions. Focus on information technology skills as well as critical assessment of the use of technology in the professions. Only one of the following may be counted: Information Studies 380k, 380w, Library and Information Science 386 (Topic 13: Information Technologies and the Information Professions). Prerequisite: Graduate standing.
380W. Information Technologies and the Information Professions. Overview of innovations and technologies that have shaped the culture of the information professions, including information technology skills and critical assessment of the use of technology in the professions. Web-based instruction; no class meetings. Only one of the following may be counted: Information Studies 380K, 380W, Library and Information Science 386 (Topic 13: Information Technologies and the Information Professions). Prerequisite: Graduate standing.

181, 281, 381. Individual Studies. In-depth study of a problem or topic related to information studies, usually culminating in an examination or a scholarly written report. With consent of the graduate adviser, may be repeated for credit. May be counted by students with credit for Library and Information Science 181, 281, or 381 only with consent of the graduate adviser. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

381W. Advanced Problems in Information Studies. Study of a problem or topic related to information studies. Web-based instruction; no class meetings. With consent of the graduate adviser, may be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

382C. Understanding and Serving Users. Overview of authentication of information, understanding client groups, human-computer interaction, information filters, information literacy and information-seeking behavior, as well as user studies and usability testing. Information Studies 382C and Library and Information Science 382L (Topic 20: Understanding and Serving Users) may not both be counted. Prerequisite: Graduate standing.

382D. Introduction to Information Resources and Services. Major reference resources and techniques useful for providing information services in libraries and other information agencies. Only one of the following may be counted: Information Studies 382D, 382W, Library and Information Science 382L (Topic 12: Introduction to Information Resources and Services). Prerequisite: Graduate standing.

382E. Materials for Children. Materials in all formats suitable for use by and with children. Selection aids, application of selection and evaluation criteria, and planning for the use of materials. Information Studies 382E and Library and Information Science 382L (Topic 9: Materials for Children) may not both be counted. Prerequisite: Graduate standing.

382F. Materials for Young Adults. Evaluation, selection, and use of books and other media to meet the needs of young adults of middle-school and high-school age. Information Studies 382F and Library and Information Science 382L (Topic 10: Materials for Young Adults) may not both be counted. Prerequisite: Graduate standing.

382G. Information Resources and Services for Children and Young Adults. May be repeated for credit when the topics vary. Information Studies 382G and Library and Information Science 382L (Topic 17: Seminar in Information Resources and Services for Children and Young Adults) may not both be counted. Prerequisite: Graduate standing, and Information Studies 382E or 382F (or Library and Information Science 382L [Topic 9: Materials for Children] or 382L [Topic 10: Materials for Young Adults]). Topic 1: Visual Resources for Youth. The history and criteria of the Caldecott Award, the history of picture books and publishing, professional literature about children's materials, and selection criteria for picture books, including evaluating children's literature, and developing the tools to analyze picture books for narrative, artistic, and compositional elements. Illustrative techniques and their effectiveness in relation to particular texts.

Topic 2: Electronic Resources for Children and Youth. Exploration of electronic information resources available for children and youth, including the range of content and availability, how networked information resources are conceptualized and created, and the implications of these resources for school and public libraries.

382H. Legal Information Resources. Identification of relevant legal information resources, efficient retrieval of legal information, and the role of technology in legal information access. Information Studies 382H and 382L (Topic: Legal Information Resources) may not both be counted. Prerequisite: Graduate standing.

382J. Electronic Information Resources and Services. Concepts, principles, and practice in the preparation, conduct, and interpretation of an online information search. Information Studies 382J and Library and Information Science 382L (Topic 18: Electronic Information Resources and Services) may not both be counted. Prerequisite: Graduate standing.
382K. Information Resources in the Health Sciences. Evaluation of conventional and online health information resources used by consumers and health care professionals for health promotion and disease and disorder prevention, diagnosis, treatment, and management. Includes traditional and alternative approaches, genetic clinical information approaches, and evidence-based approaches to the use of resources. Information Studies 382K and 382L. (Topic: Information Resources in the Health Sciences) may not both be counted. Prerequisite: Graduate standing.

382L. Information Resources and Services. Evaluation and use of printed online information resources and services in specialized areas, with emphasis on new information technologies. Information-seeking behavior of users, document delivery, new roles of the information specialist in user support, and information needs of a variety of clients. May be repeated for credit when the topics vary. Information Studies 382L and Library and Information Science 382L may not both be counted unless the topics vary. Prerequisite: Graduate standing.

Topic 1: Information Resources in the Humanities. Communication patterns, bibliographic organization, and information resources of the humanities, including fine arts, literature, music, performing arts, philosophy, and religion. Additional prerequisite: Information Studies 382D is strongly recommended.

Topic 2: Information Resources in the Social Sciences. Communication patterns, bibliographic organization, and information resources of the social sciences, including anthropology, economics and business, education, geography, history, political science, psychology, and sociology. Additional prerequisite: Information Studies 382D is strongly recommended.

382M. Government Information. Government information resources as providers of information services to others, and preparation for policy research and analysis in public and private enterprises, policy advocacy, research in information and media organizations, and legal research. Information Studies 382M and Library and Information Science 382L. (Topic 5: Government Information Resources) may not both be counted. Prerequisite: Graduate standing.

382N. Information Resources in Business. Communication patterns, bibliographic organization, and information resources in business and industry. Information Studies 382N and Library and Information Science 382L. (Topic 19: Information Resources in Business) may not both be counted. Prerequisite: Graduate standing, Information Studies 382D (or Library and Information Science 382L. [Topic 12: Introduction to Information Resources and Services]), and credit or registration for Information Studies 382C (or credit for Library and Information Science 382L. [Topic 20: Understanding and Serving Users]).

382P. Competitive Intelligence Resources and Strategies. Resources and strategies for market and competitive analysis. Research and analysis of market trends and financial, technical, and cultural strengths and weaknesses of companies. Online, print, and primary research and analytical techniques. Ethics, process, and presentation are emphasized. Information Studies 382P and Library and Information Science 382L. (Topic 21: Competitive Intelligence Resources and Strategies) may not both be counted. Prerequisite: Graduate standing, Information Studies 382J (or Library and Information Science 382L. [Topic 18: Electronic Information Resources and Services]), and Information Studies 382N (or Library and Information Science 382L. [Topic 19: Information Resources in Business]).

382R. Information Resources in Science and Technology. Communication patterns, bibliographic organization, and information resources in science and technology, including general science, astronomy, biological sciences, chemistry, earth sciences, engineering, mathematics, and physics. Information Studies 382R and Library and Information Science 382L. (Topic 4: Information Resources in Science and Technology) may not both be counted. Prerequisite: Graduate standing, Information Studies 382D (or Library and Information Science 382L. [Topic 12: Introduction to Information Resources and Services]), and credit or registration for Information Studies 382C (or credit for Library and Information Science 382L. [Topic 20: Understanding and Serving Users]).

382S. Library Instruction and Information Literacy. Information Studies 382S and Library and Information Science 382L. (Topic 13: Seminar in Information Resources and Services) may not both be counted. Prerequisite: Graduate standing. Information Studies 382D is strongly recommended.
382W. Introduction to Information Resources and Services. Major reference resources and techniques used for providing information services in libraries and other information agencies. Web-based instruction; no class meetings. Only one of the following may be counted: Information Studies 382D, 382W, Library and Information Science 382L (Topic 12: Introduction to Information Resources and Services). Prerequisite: Graduate standing.

384C. Organizing and Providing Access to Information. Introduction to general principles and features of organizing and providing access to information, including varieties and numbers of information-bearing objects, different traditions of practice, user concerns, subject access, and information system features and evaluation. Information Studies 384C and Library and Information Science 384K (Topic 17: Organizing and Providing Access to Information) may not both be counted. Prerequisite: Graduate standing.

384D. Collection Management. Philosophical and social context, objectives, and methodology of evaluating and selecting library materials. Information Studies 384D and Library and Information Science 384K (Topic 1: Collection Management) may not both be counted. Prerequisite: Graduate standing, Information Studies 382D (or Library and Information Science 382L [Topic 12: Introduction to Information Resources and Services]), and credit or registration for Information Studies 382C (or credit for Library and Information Science 382L [Topic 20: Understanding and Serving Users]).

384E. Descriptive Cataloging and Metadata. Standards, rules, and metadata formats for representing information entities in library catalogs and other bibliographic systems. Emphasis on the Anglo-American Cataloguing Rules and the MARC metadata format. Web-based instruction; no class meetings. Only one of the following may be counted: Information Studies 384E, 384W, Library and Information Science 384K (Topic 8: Description and Basic Metadata Structures for Informational Materials). Prerequisite: Graduate standing.

384F. Subject Cataloging and Indexing. The study of problems in the content analysis of information entities and their subject representation in library catalogs and indexing systems. Special emphasis on the Dewey Decimal Classification, the Library of Congress Classification, and the Library of Congress Subject Heading systems. Information Studies 384F and Library and Information Science 384K (Topic 3: Subject Cataloging, Indexing, and Categorization of Informational Materials) may not both be counted. Prerequisite: Graduate standing.

384G. Indexing and Thesaurus Construction. Standards, principles, and practices in the indexing of information entities. Covers both single-work indexing and multiple item-indexing systems, as well as issues and applications in building thesauri for such systems. Comparative work in both controlled and uncontrolled vocabularies. Prerequisite: Graduate standing.

384H. Concepts of Information Retrieval. Foundations and emerging areas of research in information retrieval and filtering, including system evaluation, major underlying models in the field, empirical methods of document classification, and applications of data mining techniques (such as clustering and dimensionality reduction) for information management. Information Studies 384H and 385T (Topic: Concepts of Information Retrieval) may not both be counted. Prerequisite: Graduate standing.

384K. Access to Information and Materials. Study of principles and theories of selecting, acquiring, organizing, indexing, and networking sources of information. Creation, processing, and management of automated and manual files for information access. May be repeated for credit when the topics vary. Information Studies 384K and Library and Information Science 384K may not both be counted unless the topics vary. Prerequisite: Graduate standing.

384W. Descriptive Cataloging and Metadata. Standards, rules, and metadata formats for representing information entities in library catalogs and other bibliographic systems. Emphasis on the Anglo-American Cataloguing Rules and the MARC metadata format. Web-based instruction; no class meetings. Only one of the following may be counted: Information Studies 384E, 384W, Library and Information Science 384K (Topic 8: Description and Basic Metadata Structures for Informational Materials). Prerequisite: Graduate standing.

385C. User-System Interface Design. Design of user-system interfaces, through advanced techniques. Information Studies 385C and Library and Information Science 385T (Topic 16: User-System Interface Design) may not both be counted. Prerequisite: Graduate standing.

385D. Web Information Retrieval, Evaluation, and Design. Reviews the theoretical foundations of information retrieval and information retrieval interfaces and applies these concepts to the development of lightweight text retrieval, designing novel search interfaces, and building customized or vertical search applications. Information Studies 385D and Library and Information Science 385T (Topic 20: Concepts of Information Retrieval) may not both be counted. Prerequisite: Graduate standing.
385E. Information Architecture and Design I. The theory and design of information architecture: models that provide structure and context for information to shape meaning, purpose, and utility toward understanding. Students present theoretical reviews; map and design; and develop novel information architectures using a variety of methods and software applications. Information Studies 385E and Library and Information Science 385T (Topic: Information Architecture and Design) may not both be counted. Prerequisite: Graduate standing.

385F. Information Architecture and Design II. Systems analysis and design of Web applications focusing on information architecture, interfaces, Web technologies, and development methods for creating information systems. Prerequisite: Graduate standing, and credit or registration for Information Studies 385E.

385G. Advanced Usability. The scientific and methodological underpinnings for the study of usability, including techniques to test the usability of any human computer interface or Web site and advocating user-centered design through advanced usability testing methods. Information Studies 385G and Library and Information Science 385T (Topic: Information Architecture and Usability Studies) may not both be counted. Prerequisite: Graduate standing and Information Studies 385F.

385H. Digital Media Design I. Design and use of learning materials involving the best practices as revealed through educational research. Production of graphic, audio, video, and multimedia materials for presentation. Techniques of presentation to large and small groups in educational and professional settings. Information Studies 385H and Library and Information Science 382L (Topic 15: Digital Media Design) may not both be counted. Prerequisite: Graduate standing.

385J. Digital Media Design II. Advanced concepts of digital media design and production, and their applications in information services. Information Studies 385J and Library and Information Science 382L (Topic: Advanced Multimedia Design) may not both be counted. Prerequisite: Graduate standing, and credit or registration for Information Studies 385H (or credit for Library and Information Science 382L [Topic 15: Digital Media Design]).

385K. Human Information Interaction. Overview of human information needs, seeking, and processing. Study of the role of human factors in the design, development, and evaluation of information services that use technology. Information Studies 385K and Library and Information Science 386 (Topic: Seminar: Human Factors in Information Seeking and Use) may not both be counted. Prerequisite: Graduate standing.

385L. Information Networks. Development, design, use, and evaluation of information networks. Information Studies 385L and Library and Information Science 384K (Topic 10: Information Networks) may not both be counted. Prerequisite: Graduate standing.

385M. Database Management Principles and Applications. Database management systems, including architecture, design, administration, and implementation. Information Studies 385M and Library and Information Science 384K (Topic 11: Database Management Principles and Applications) may not both be counted. Prerequisite: Graduate standing.

385N. Informatics. Investigation of user-driven information science and technology movements in professional and disciplinary areas, in contrast to the information science and technology associated with typical information professionalism. Focus includes informatics educational and research programs in the US and abroad. Areas covered may include medical, nursing, engineering, and legal informatics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

385P. Introduction to Usability. The basics of user-centered design through the lifecycle of a software product. Includes perceptual, psychological, and other scientific underpinnings of usability and the justification for the application of usability engineering in software development. Prerequisite: Graduate standing.

385Q. Knowledge Management Systems. Survey of knowledge management systems that enable the access and coordination of knowledge assets, including intranets, groupware, Weblogs, instant messaging, content management systems, and e-mail in both individual and organizational contexts. Information Studies 385Q and 385T (Topic: Knowledge Management Systems) may not both be counted. Prerequisite: Graduate standing.

385R. Survey of Digitization. Explores the purposes for which digitization is used in a range of information agencies, and the technologies of digitization for a variety of formats (print documents, photographic media, audio, video). Prerequisite: Graduate standing.

385S. Digital Library Principles and Development. Research, development, and evaluation issues in digital libraries, including collection development and digitization; provision of access to multimedia materials; access strategies and interfaces; metadata and interoperability; and the implications of digital libraries with respect to policy and social issues. Information Studies 385S and 385T (Topic: Digital Libraries) may not both be counted. Prerequisite: Graduate standing.
385T. Information Science and Knowledge Systems. Study of the properties and behavior of information; forces governing the flow and use of information; technology affecting information processing and management; information production, transmission, selection, storage, and use. May be repeated for credit when the topics vary. Information Studies 385T and Library and Information Science 385T may not both be counted unless the topics vary. **Prerequisite:** Graduate standing.

386. History of Library and Information Studies. Topics on the philosophical foundations, the history, and the development of archives, books, libraries, and information service. Topics vary from general introductory treatments to advanced seminars; most stress wide reading and independent research papers. May be repeated for credit when the topics vary. Information Studies 386 and Library and Information Science 386 may not both be counted unless the topics vary. **Prerequisite:** Graduate standing.

Topic 7: Seminar in History for Information Studies. Problems, issues, and trends, historical and current, in libraries, librarianship, information science, knowledge systems, and relevant technologies. Additional prerequisite: Consent of instructor.

Topic 8: History of Printing. The advent of movable-type printing in the West; its antecedents, preconditions, pioneers, and progress.

Topic 10: Books, Libraries, and Civilization to 1500. Review and exploration of the role and significance of collections of recorded knowledge—their creation, organization, preservation, and use—in the context of cultural and social history; the development of various forms of manuscript and print communication and efforts to mediate for information seekers.

Topic 14: Books, Libraries, and Civilization since 1500. Review and exploration of the role and significance of collections of recorded knowledge—their creation, organization, preservation, and use—in the context of cultural and social history; development of knowledge institutions that serve various populations and societies in the modern world.

386C. Archives, Records, and Preservation in the Modern World. Progress of archival enterprise, records management, and preservation administration from the Renaissance to the present. Information Studies 386C and Library and Information Science 386 (Topic 11: Archives and Records in the Modern World) may not both be counted. **Prerequisite:** Graduate standing.

387. Administration. Theory and practice in the design, behavior, evaluation, and administration of libraries and other information agencies and systems. Marketing of information organizations and resources. Administrative applications of technology. May be repeated for credit when the topics vary. Information Studies 387 and Library and Information Science 387 may not both be counted unless the topics vary. **Prerequisite:** Graduate standing.

Topic 1: Information Management. Management of information resources for profit or nonprofit organizations.

Topic 2: Information Marketing. Marketing of information agencies, systems, services, publications, software, and hardware.

Topic 3: Planning and Management of Library Technology. Current library technologies and technologies that may become popular. Focus on how the technologies work, familiarity with technical jargon, and the ability to communicate ideas to technical staff. Topics may include integrated library systems, networking and telecommunications, Internet technology and applications, case law and legislation, assistive technologies, and technical training and trends. Additional prerequisite: Credit or registration for Information Studies 180J (or credit for Library and Information Science 180J) and credit or registration for Information Studies 384E (or credit for Library and Information Science 384K) [Topic 8: Description and Basic Metadata Structures for Informational Materials].

387C. Managing Information Services and Organizations. Management theory, concepts, processes, and practices as applied to information agencies and systems. Only one of the following may be counted: Information Studies 387C, 387W, Library and Information Science 387 (Topic 1: Managing Information Services and Organizations). **Prerequisite:** Graduate standing.

387D. Systems Analysis and Evaluation. Information Studies 387D and Library and Information Science 387 (Topic 5: Systems Analysis and Evaluation) may not both be counted. **Prerequisite:** Graduate standing and credit or registration for Information Studies 382C (or credit for Library and Information Science 382L) [Topic 20: Understanding and Serving Users].
387W. Managing Information Services and Organizations. Management theory, concepts, processes, and practices as applied to information agencies and systems. Web-based instruction; no class meetings. Only one of the following may be counted: Information Studies 387C, 387W, Library and Information Science 387 (Topic 1: Managing Information Services and Organizations). Prerequisite: Graduate standing.

388C. School Library Management. Philosophy, objectives, and management of the learning resources center. Only one of the following may be counted: Information Studies 388C, 388W, Library and Information Science 388K (Topic 1: Learning Resources Programs). Prerequisite: Graduate standing; and credit or registration for Information Studies 382E or 382F, 382D, and 384D (or credit for Library and Information Science 382I). [Topic 9: Materials for Children] or 382L. [Topic 10: Materials for Young Adults], 382L. [Topic 12: Introduction to Information Resources and Services], and 384K [Topic 1: Collection Management].

388D. Planning and Management of Programs for Children and Young Adults. Designing and planning effective services and programs for children and young adults: technologies, information need analysis, and trends. Information Studies 388D and Library and Information Science 388K (Topic 16: Planning and Management of Programs for Children and Young Adults) may not both be counted. Prerequisite: Graduate standing.

388E. Historical Museums: Context and Practice. The process of exhibit creation in historical museums, from planning through development to opening and maintenance, as a negotiation among stakeholders for influence on the story that is told. The institutional position of the museum, including its history and resources; the concerns of museum employees; the influence of the audience and of those who are directly affected or represented by an exhibit and the role of contractual professionals. Information Studies 388E and Library and Information Science 388K (Topic: Historical Museums: Context and Practice) may not both be counted. Prerequisite: Graduate standing and consent of instructor.

388F. Special Libraries. Development and management of special libraries and information centers. Web-based instruction; no class meetings. Information Studies 388F and 388K (Topic 3: Special Libraries) may not both be counted. Prerequisite: Graduate standing.

388K. Organizational Environments. Mission, goals, and objectives of specific library and information science settings in relation to the services they provide and to the larger institutions of which they are part. Unique features of a particular setting in staffing, facilities, finances, and clientele. Issues, trends, and problems. May be repeated for credit when the topics vary. Information Studies 388K and Library and Information Science 388K may not both be counted. Prerequisite: Graduate standing, and credit or registration for Information Studies 382C (or credit for Library and Information Science 382I) may not both be counted. Prerequisite: Graduate standing. [Topic 20: Understanding and Serving Users].


Topic 2: Academic Libraries. The relationship of academic library management to trends in postsecondary education, to the institution the library serves, and to the research community at large.


Topic 5: Rare Book and Special Collections. Administration of rare book and manuscript collections. Introduction to analytical bibliography.

Topic 6: Law Libraries. Overview of law librarianship, the discipline of law, and the culture of the legal environment, including the context in which law librarians, legal publishers, and other legal information professionals work.

388L. Professional Experience and Project. Study of a practical problem, current phenomenon, or professional issue in an institutional setting. Students prepare a final project intended for publication. Conference course. Offered on the credit/no credit basis only. Information Studies 388L and Library and Information Science 388L may not both be counted. Prerequisite: Graduate standing and completion of at least thirty-two semester hours of coursework in the graduate program in information studies. Participants will not receive monetary compensation.
388Q. Practicum in Information Services and Organizations. At least 125 hours of supervised fieldwork for one semester. Offered on the credit/no credit basis only. Only one of the following may be counted: Information Studies 388Q, 388R, 388S, Library and Information Science 388P (Topic 1: Practicum in Information Services and Organizations), 388P (Topic 2: Practicum in School Libraries), 388P (Topic 3: Practicum in Preservation Planning). May not be counted toward any degree in the School of Information. Prerequisite: Graduate standing, credit or registration for Information Studies 382C (or credit for Library and Information Science 382I [Topic 20: Understanding and Serving Users]), and credit or registration for Information Studies 384C (or credit for Library and Information Science 384K [Topic 17: Organizing and Providing Access to Information]). Participants will not receive monetary compensation.

388R. Practicum in School Libraries. Fieldwork in a school library under the supervision of qualified personnel. At least 125 hours of supervised fieldwork for one semester. Offered on the credit/no credit basis only. Only one of the following may be counted: Information Studies 388Q, 388R, 388S, Library and Information Science 388P (Topic 1: Practicum in Information Services and Organizations), 388P (Topic 2: Practicum in School Libraries), 388P (Topic 3: Practicum in Preservation Planning). Prerequisite: Graduate standing, credit or registration for Information Studies 382D (or credit for Library and Information Science 382L [Topic 12: Introduction to Information Resources and Services]), credit or registration for Information Studies 382E or 382F (or credit for Library and Information Science 382L [Topic 9: Materials for Children] or 382L [Topic 10: Materials for Young Adults]), credit or registration for Information Studies 384E (or credit for Library and Information Science 384K [Topic 8: Description and Basic Metadata Structures for Informational Materials]), credit or registration for Information Studies 388C (or credit for Library and Information Science 388K [Topic 1: Learning Resources Programs]), and consent of the school library practicum coordinator. Participants will not receive monetary compensation.

388S. Practicum in Preservation Planning. At least 125 hours of supervised fieldwork for one semester. Offered on the credit/no credit basis only. Only one of the following may be counted: Information Studies 388Q, 388R, 388S, Library and Information Science 388P (Topic 1: Practicum in Information Services and Organizations), 388P (Topic 2: Practicum in School Libraries), 388P (Topic 3: Practicum in Preservation Planning). Prerequisite: Graduate standing, credit or registration for Information Studies 392D or 392F (or credit for Library and Information Science 392P [Topic 1: Introduction to Preservation] or 392P [Topic 6: The Protection and Care of Records Materials]), and consent of instructor. Participants will not receive monetary compensation.

388T. Internship in Libraries and Other Information Agencies. At least 125 hours of supervised fieldwork for one semester. Offered on the credit/no credit basis only. Information Studies 388T and Library and Information Science 388P (Topic 4: Internship in Libraries and Other Information Agencies) may not both be counted. May not be counted toward any degree in the School of Information. Prerequisite: Graduate standing and consent of the student’s adviser. Participants must receive monetary compensation.

388W. School Library Management. Philosophy, objectives, and management of the learning resources center. Web-based instruction; no class meetings. Only one of the following may be counted: Information Studies 388C, 388W, Library and Information Science 388K (Topic 1: Learning Resources Programs). Prerequisite: Graduate standing; and credit or registration for Information Studies 382E or 382F, 382D, and 384D (or credit for Library and Information Science 382L [Topic 9: Materials for Children] or 382L [Topic 10: Materials for Young Adults]), credit or registration for Information Studies 384E (or credit for Library and Information Science 384K [Topic 8: Description and Basic Metadata Structures for Informational Materials]), credit or registration for Information Studies 388C (or credit for Library and Information Science 388K [Topic 1: Learning Resources Programs]), and consent of the school library practicum coordinator. Participants will not receive monetary compensation.

389C. Archival and Records Enterprise. Theory and practice of archival administration, records management, and preservation administration. Problems in acquiring, organizing, and providing for use of archives and office records; issues in deterioration and care of paper, books, photographic material, magnetic records, and other media through preservation programs for libraries and archives. May be repeated for credit. Information Studies 389C and Library and Information Science 389C may not both be counted. Prerequisite: Graduate standing.
389D. Introduction to Archival Enterprise. Principles and practice of appraisal, acquisition, arrangement and description, preservation, reference service, and administration of institutional and collected archives. Information Studies 389D and Library and Information Science 389C (Topic 1: Introduction to Archival Enterprise) may not both be counted. Prerequisite: Graduate standing.

389E. Introduction to Records Management. Systems for controlling recorded information in an organizational setting. Information Studies 389E and Library and Information Science 389C (Topic 4: Introduction to Records Management) may not both be counted. Prerequisite: Graduate standing.

389F. Organization of Records Information. Theory and practice of grouping and ordering records information for use in various environments. Information Studies 389F and Library and Information Science 389C (Topic 17: Organization of Records Information) may not both be counted. Prerequisite: Graduate standing.

389G. Introduction to Electronic and Digital Records. Issues in management of records information in the electronic environment. Information Studies 389G and Library and Information Science 389C (Topic 14: Introduction to Electronic and Digital Records) may not both be counted. Prerequisite: Graduate standing.

389J. Appraisal and Selection of Records. Theory and practice of determining categories of value of records information and selecting records information for retention. Information Studies 389J and Library and Information Science 389C (Topic 16: Appraisal and Selection of Records) may not both be counted. Prerequisite: Graduate standing.

389K. Life Cycle Metadata for Digital Objects. Constructing the “metadata continuum” in order to understand how metadata may function as an authenticating wrapper for an electronic record. Analysis of the elements of the continuum, including records surveys and inventories, creation metadata, active management metadata, records schedules, accession records, cataloging and description metadata, maintenance records, and usage records. Information Studies 389K and Library and Information Science 389C (Topic 20: Lifecycle Metadata for Digital Objects) may not both be counted. Prerequisite: Graduate standing and consent of instructor.

389L. Photograph and Cinema Archives. History and characteristics of photographic processes, organization of photographic materials, and administration of collections of photographs and movies. Information Studies 389L and Library and Information Science 389C (Topic 2: Photograph and Cinema Archives) may not both be counted. Prerequisite: Graduate standing.

389M. Introduction to Issues in Records Information. Exploration of the fundamentals of records information and their role in society. Prerequisite: Graduate standing.

390N. Information Policy. Critical examination of issues and trends in information policy in public- and private-sector organizations on the local, state, federal, and international levels. May be repeated for credit when the topics vary. Information Studies 390N and Library and Information Science 390N may not both be counted unless the topics vary. Prerequisite: Graduate standing.

Topic 1: Federal Information Policy. Identification and understanding of roles of major stakeholders in federal information policy; development of policy analysis techniques.

Topic 2: Seminar in Information Policy. Analysis of issues and trends in information policy in various environments.

391D. Fundamentals of Inquiry in Information Studies. Topics in the theoretical, methodological, and practical aspects of library and information science. The equivalent of three lecture hours a week for one semester. May be repeated for credit when the topics vary. Information Studies 391D and Library and Information Science 391D may not both be counted unless the topics vary. Prerequisite: Admission to the doctoral program and consent of the graduate adviser.

Topic 6: Directed Readings. Offered on the credit/no credit basis only.

Topic 7: Directed Research. Offered on the credit/no credit basis only.

Topic 8: Introduction to Doctoral Research and Theory I. Foundations of inquiry in the humanities, social sciences, and natural sciences, and a review of theories and methods of inquiry in information studies in particular.

Topic 9: Introduction to Doctoral Research and Theory II. Epistemological concepts and processes of theory generation and testing in information studies, with special attention to specific problems of interest to the student.
392D. Introduction to Preservation. Administration of preservation programs for students not enrolled in the preservation and conservation program. Information Studies 392D and Library and Information Science 392P (Topic 1: Introduction to Preservation) may not both be counted. Prerequisite: Graduate standing.


392F. The Protection and Care of Records Materials. Causes of deterioration and their control. Information Studies 392F and Library and Information Science 392P (Topic 6: The Protection and Care of Records Materials) may not both be counted. Prerequisite: Graduate standing.

392G. Management of Preservation Programs. Information Studies 392G and Library and Information Science 392P (Topic 7: Management of Preservation Programs) may not both be counted. Prerequisite: Graduate standing.

392H. Digitization for Preservation and Access. Explores the rationale for creating digital collections and the role of digitization for preservation, as well as collection development issues, project development and management, and varying standards for digitization projects. Prerequisite: Graduate standing.

392K. Problems in Permanent Retention of Electronic Records. Media refreshment, conversion to neutral formats vs. emulation to retain original format, migration, and electronic records repository construction and administration. Case studies from government agency projects. Existing practices in the information technology field and their appropriateness to archival requirements: code vaulting and escrow, data warehousing; knowledge management. The issues of authenticity and reauthentication in the long-term preservation of electronic records. Issues of access, including privacy and open records, in the context of World Wide Web standards and digital library initiatives. Information Studies 392K and Library and Information Science 392P (Topic 12: Problems in Permanent Retention of Electronic Records) may not both be counted. Prerequisite: Graduate standing and consent of instructor.

392L. Introduction to Audio Preservation and Reformatting. Chronological examination of the development of recording; treatment of issues in the care and preservation of recordings, especially the economics of audio preservation and reformatting, noise reduction and stabilization, and stability concerns of modern storage media. Prerequisite: Graduate standing.

392M. Advanced Audio Preservation and Reformatting. Changing concepts about the nature of information in different formats; issues of access within the context of preservation; criteria for choosing materials to be reformatted; invasive vs. minimal restoration; rare formats; means of recovering the most information from a recording. Prerequisite: Graduate standing and credit or registration for Information Studies 392L.

393C. Conservation of Library and Archival Material. Theory, policy, and practice of conservation treatment in documentary repositories; materials science, housing, and preventive and curative treatment. Some topics may require additional hours; these are identified in the Course Schedule. May be repeated for credit when the topics vary. Information Studies 393C and Library and Information Science 393C may not both be counted unless the topics vary. Prerequisite: Graduate standing and admission to preservation and conservation studies.


Topic 2: Book Laboratory II. Paper repair, conservation, and library bookbinding.

Topic 3: Book Laboratory III. Examination, documentation, and treatment in the conservation of book textblocks; technical criteria and specifications for the maintenance of circulating collections.

Topic 4: Conservation Treatment Laboratory IV. Individual projects that explore special problems in book treatment and protection.

Topic 6: Paper Laboratory I. Documentation of condition; identification of media; treatments.

Topic 7: Paper Laboratory II. Technical and aesthetic considerations in the conservation of paper objects.

Topic 8: Conservation Science I. Physical and chemical properties of materials used in books, photographs, manuscripts, and related objects.
Topic 9: Conservation Science II. Research investigation of a typical conservation problem. Offered on the letter-grade basis only.

394C, 994C. Fieldwork in Conservation. For 394C, fifteen hours of fieldwork a week for one semester; for 994C, forty hours of fieldwork a week for one semester. May be repeated for credit when the topics vary. Offered on the credit/no credit basis only. Only one of the following may be counted unless the topics vary: Information Studies 394C, 994C, Library and Information Science 394C, 994C. Prerequisite: Graduate standing, Information Studies 393C (Topic 1: Book Laboratory I) (or Library and Information Science 393C [Topic 1: Book Laboratory I]), Information Studies 393C (Topic 2: Book Laboratory II) (or Library and Information Science 393C [Topic 2: Book Laboratory II]), and consent of instructor and the graduate adviser.

Topic 1: Fieldwork in Conservation. Fieldwork in a research or rare book library, an archives, or a historical society, with emphasis on planning and executing broad collections care. This topic is offered as 394C and in the summer session only. Additional prerequisite: Completion of all conservation courses other than fieldwork.

Topic 2: Conservator Internship I. Development of binding or other treatment skills under professional supervision in the working environment of a recognized book or document conservation laboratory. Additional prerequisite: Information Studies 394C (Topic 1) (or Library and Information Science 394C [Topic 1: Fieldwork in Conservation]).

Topic 3: Conservator Internship II. Continuation of Information Studies 994C (Topic 2). Additional prerequisite: Information Studies 394C (Topic 2) or 994C (Topic 2) (or Library and Information Science 994C [Topic 2: Fieldwork in Conservation]).

397. Research in Information Studies. Methods and subjects of research in information studies. May be repeated for credit when the topics vary. Information Studies 397 and Library and Information Science 397 may not both be counted unless the topics vary. Prerequisite: Graduate standing.

Topic 1: Bibliography and Methods in Historical Research. Sources of information for, and techniques of conducting, investigations in history.

Topic 2: Practicum in Research. Offered on the credit/no credit basis only. Additional prerequisite: Consent of instructor and the graduate adviser.


397C. Introduction to Research in Information Studies. Nature of social science research and its role in information studies. Information Studies 397C and Library and Information Science 397 (Topic 1: Introduction to Research in Library and Information Science) may not both be counted. Prerequisite: Graduate standing.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Information Studies 698A and Library and Information Science 698A may not both be counted; Information Studies 698B and Library and Information Science 698B may not both be counted. Prerequisite: For 698A, graduate standing in information studies, Information Studies 397C (or Library and Information Science 397 [Topic 1: Introduction to Research in Library and Information Science]), and written consent of the graduate adviser; for 698B, Information Studies 698A (or Library and Information Science 698A).

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Information Studies 398R and Library and Information Science 398R may not both be counted. Prerequisite: Graduate standing in information studies, Information Studies 397C (or Library and Information Science 397 [Topic 1: Introduction to Research in Library and Information Science]), and written consent of the graduate adviser.

398T. Supervised Teaching in Information Studies. History and present status of education for librarianship and information studies. Curriculum design, systematic course design and management, teaching methodologies, and evaluation of learning. May be repeated for credit as a teaching practicum. Prerequisite: Graduate standing and consent of instructor.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

AMERICAN STUDIES

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

The University offers several unique resources for research on America. The Harry Ransom Humanities Research Center includes celebrated rare book and manuscript collections in American and modern literature; the Gernsheim Collection, one of the world’s largest archives of photographs, negatives, and books related to the history of photography; the Performing Arts Collection, with material related to the theatre, movies, vaudeville, the circus, and the history of magic; and the New York Journal-American photographic archive. The Nettie Lee Benson Latin American Collection is one of the world’s great archives of materials about and from Latin America, and the Center for American History contains the early archives of Texas, the largest collection now extant of historical manuscripts dealing with Texas, and an extensive collection of rare and scarce books, pamphlets, and broadsides related to Texas and Southwestern history. The holdings of the Jack S. Blanton Museum of Art include the Mari and James A. Michener Collection of American Painting and the C. R. Smith Collection of Art of the American West. Winedale, an outdoor museum of restored nineteenth-century Texas buildings, is a center for research in historic preservation and material culture.

Convenient to the University are other research facilities, including the Lyndon Baines Johnson Library and Museum, the State Library and Archives of Texas, the United Daughters of the Confederacy Library, the Catholic Archives of Texas, the Episcopal Archives of the United States, the Daughters of the Republic of Texas Museum, and a United States Geological Survey research library.

AREAS OF STUDY

American studies is an area studies program focused on the cultural and intellectual life of the United States of America. Its students analyze the American past and present from the perspectives of several disciplines, learn to synthesize their knowledge, and acquire the habits of mind needed for cultural analysis.

The program offers concentrations in American intellectual, cultural, and artistic life; race, ethnicity, and gender; cultural geography and material culture; the public arts and popular culture; and the West and its role in American culture. The program also invites students to take advantage of the resources of the Center for African and African American Studies, the Center for Asian American Studies, the Center for Mexican American Studies, the Center for Women’s and Gender Studies, and the Américo Paredes Center for Cultural Studies.

The courses that American studies students take outside the program train them in areas of expertise relevant to their central interests. With the approval of the graduate adviser in American studies, these courses may be in any of the liberal arts or in architecture, business, communication, education, fine arts, law, or public affairs.
GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Robert H. Abzug
Ricardo C. Ainslie
Walter D. Burnham
Janet M. Davis
Ozro Luke Davis Jr.
Elizabeth Engelhardt
Douglas E. Foley
Neil F. Foley
William E. Forbath
William H. Goetzmann
Don Graham
Linda Dalrymple Henderson
Steven D. Hoelscher
Nhi T. Lieu
Jeffrey L. Meikle

Julia L. Mickenberg
Richard H. Pells
Elspeth D. Rostow
Thomas G. Schatz
Mark C. Smith
Denise A. Spellberg
Janet Staiger
Thomas F. Staley
William M. Stott
Pauline T. Strong
Sharon L. Strover
Janice S. Todd
Ron C. Tyler
Seth L. Wolitz

ADMISSION REQUIREMENTS
The American studies program seeks students of demonstrated ability and ambition. In general, students entering the program have a strong undergraduate record—a grade point average of 3.50 in upper-division or major-related coursework and a combined (verbal and quantitative) Graduate Record Examinations General Test score of 1250. These scores are by no means absolute minimums, however, and students who have proven they can do excellent work in some way not reflected by grade point average and test score are encouraged to apply. All applicants must have three letters of recommendation sent directly to the graduate adviser.

DEGREE REQUIREMENTS
Master of Arts
The student’s program must total thirty semester hours of credit and must have the approval of the graduate adviser. Requirements are twelve semester hours in American studies, consisting of six hours in the research course (American Studies 390) and six hours in the required methodology courses (American Studies 393 and 394); six semester hours in a field of concentration outside American studies; an additional six semester hours in that field, another field or fields, or American studies; and a six-semester-hour thesis requiring interdisciplinary research in the general area of American culture.

In lieu of a master’s thesis, a student may, with the permission of the graduate adviser, submit a research report, special fieldwork, or an experimental project. The six hours of credit otherwise earned in the thesis course must be made up in additional coursework, and the student must also take American Studies 398R, raising the master’s degree requirement under this option to thirty-three hours.

Doctor of Philosophy
To obtain the doctoral degree, a student must demonstrate reading competence in a foreign language, pass the American studies oral qualifying examination, and write and defend a dissertation that is an original contribution to knowledge about American culture and involves interdisciplinary research.
A student prepares for the qualifying examination by taking courses in American studies and other disciplines of interest; these courses must have the approval of the graduate adviser. Through such coursework, the student masters four fields in different disciplines; these fields, one of which must be American studies, are those on which the student is questioned in the oral qualifying examination.

While preparing for the oral examination, a student with a master’s degree or the equivalent must take courses that include at least twelve semester hours of American studies beyond work done for the master’s degree. Six of these hours must be in research courses; the other six must be methodology courses, American Studies 393 and 394, unless the student has already taken such courses while working on the master’s degree. The graduate adviser may require additional courses beyond the twelve-hour minimum, depending on the student’s preparation.

FOR MORE INFORMATION

Campus address: Garrison Hall (GAR) 303, phone (512) 471-7277, fax (512) 471-3540; campus mail code: B7100

Mailing address: The University of Texas at Austin, Graduate Program, Department of American Studies, 1 University Station B7100, Austin TX 78712

E-mail: cfrese@mail.utexas.edu

URL: http://www.utexas.edu/cola/depts/ams/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

American Studies: AMS

390. Research Seminar in American Studies. Research on selected topics in American studies. May be repeated for credit when the topics vary. 
Prerequisite: Graduate standing and consent of the graduate adviser.

391. Reading Seminar in American Studies. A survey of the general literature of American studies; readings or topics on special problems. May be repeated for credit when the topics vary. 
Prerequisite: Graduate standing and consent of the graduate adviser.


392. Conference Course in American Studies. Individual directed readings and conferences on selected problems or topics in American studies. May be repeated for credit. Offered on the credit/no credit basis only. 
Prerequisite: Graduate standing and consent of the graduate adviser.

393. Bibliography and Methods. Seminar to acquaint the graduate student with the nature and extent of materials for interdisciplinary research on American culture and the methodologies of such research. 
Prerequisite: Graduate standing and consent of the graduate adviser.

394. The Literature of American Studies. Reading seminar on the classics of interdisciplinary research on American culture. 
Prerequisite: Graduate standing and consent of the graduate adviser.

395C. The Brazilian Left, 1900 to the Present. Same as Latin American Studies 381 (Topic 9: The Brazilian Left, 1900 to the Present). 
Prerequisite: Graduate standing and consent of the graduate adviser.

395D. Recent Brazil, 1919 to the Present. Same as Latin American Studies 381 (Topic 10: Recent Brazil, 1919 to the Present). 
Prerequisite: Graduate standing and consent of the graduate adviser.
ANTHROPOLOGY

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

Facilities available to graduate students in anthropology include the Center for American History, the Benson Latin American Collection, the Américo Paredes Center for Cultural Studies, and the Texas Archaeological Research Laboratory. The J. J. Pickle Research Campus and the Department of Anthropology offer facilities for research in antiquities conservation; radiocarbon dating; physical anthropology; archaeomagnetic research; and primate behavior, with emphasis on prosimians and Old World monkeys. The department also maintains research facilities in archaeology, social anthropology, and linguistic anthropology.

AREAS OF STUDY

Graduate study in anthropology is offered in the areas of physical anthropology, archaeology, folklore and public culture, linguistic anthropology, and social anthropology, with emphasis on North, Central, and South America, Micronesia, South and Southeast Asia, Europe, the Middle East, and Africa.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Kamran Asdar Ali
Jafari S. Allen
Michael R. Bever
James Brow
Karl W. Butzer
James R. Denbow
Nora C. England
Veit F. Erlmann
Richard R. Flores
Douglas E. Foley
Maria Franklin
Edmund T. Gordon
Charles R. Hale
John M. Hartigan Jr.
Thomas R. Hester

John W. Kappelman
Elizabeth L. Keating
Ward Keeler
E. Christopher Kirk
Laura Lein
José E. Limón
Martha Menchaca
James A. Neely
Deborah J. Overdorff
Enrique R. Rodriguez
Liza Shapiro
Joel Sherzer
Shannon Speed
Kathleen C. Stewart
Pauline T. Strong

314 Fields of Study
Graduate Studies Committee in Folklore and Public Culture

Kamran Asdar Ali
Jafari S. Allen
Jill S. Dolan
Veit F. Erlmann
Richard R. Flores
Maria Franklin
John M. Hartigan Jr.

Mariah D. Wade
Keith Walters
Samuel Wilson
Anthony C. Woodbury

DEGREE REQUIREMENTS

Master of Arts

Students must complete either twenty-four semester hours of courses and seminars (including at least six hours outside anthropology) and a thesis, or thirty semester hours of courses and seminars and a report. The student must complete two of the following core courses: Anthropology 392K, 392L, 392M, 392N, and 392P, including the core course in his or her subdiscipline of archaeology, folklore and public culture, linguistic anthropology, social anthropology, or physical anthropology. Recommended minors include art history, biology, communication, comparative literature, computer sciences, economics, English, geography, geological sciences, government, history, linguistics, philosophy, psychology, sociology, statistics, Middle Eastern studies, Asian studies, Latin American studies, American studies, women’s and gender studies, cultural studies, and ethnomusicology.

Doctor of Philosophy

A Master of Arts or an equivalent degree in anthropology or a closely related field is required for admission to the doctoral program. The student must complete three of the following core courses: Anthropology 392K, 392L, 392M, 392N, and 392P, including the core course in his or her subdiscipline of archaeology, folklore and public culture, linguistic anthropology, social anthropology, or physical anthropology; students with an extensive background in a subfield may petition the Graduate Studies Committee for exemption from core courses in that area.

Students in the folklore and public culture subdiscipline must include Anthropology 392M and 392P among their core courses and must complete the doctoral portfolio in cultural studies. Doctoral portfolio programs are described on page 7. Additional information about the doctoral portfolio in cultural studies is published by the Américo Paredes Center for Cultural Studies at http://www.utexas.edu/cola/depts/culturalstudies/.

All students must fulfill a foreign language requirement; information about this requirement is available from the graduate adviser. A comprehensive examination is given in three areas of specialization. The topics are selected by the student in consultation with an examination committee. The student must also write and defend a detailed prospectus on his or her dissertation research. After completing the comprehensive examination(s), the student files an application for candidacy and writes and defends the dissertation.
GRADUATE COURSES
The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Anthropology: ANT

380K. Topics in Archaeological Method and Theory. A major category of archaeological topics in which the emphasis is on anthropological theory pertinent to archaeological data and its interpretation. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Conference Course.
Topic 6: Ethnography of the Andes.
Topic 7: Systems of Archaeological Classification.

381C. Quechua Language and Society in the Andes I. Same as Latin American Studies 381C. Beginning spoken Quechua; Quechua folklore. Taught in English. Only one of the following may be counted: Anthropology 324L (Topic: Quechua Language and Society in the Andes), 351C, 381C, 389 (Topic: Quechua Language and Society in the Andes), Latin American Studies 324L (Topic: Quechua Language and Society in the Andes), 391 (Topic: Quechua Language and Society in the Andes). Prerequisite: Graduate standing and consent of instructor.

381D. Quechua Language and Society in the Andes II. Same as Latin American Studies 381D. Intermediate spoken Quechua; Quechua folklore. Taught in English. Only one of the following may be counted: Anthropology 324L (Topic: Advanced Quechua Language and Society in the Andes), 351D, 381D, 389 (Topic: Advanced Quechua Language and Society in the Andes), Latin American Studies 324L (Topic: Advanced Quechua Language and Society in the Andes), 391 (Topic: Advanced Quechua Language and Society in the Andes). Prerequisite: Graduate standing and consent of instructor.

382N. Geo-Archaeology and Environmental History. Same as Geography 382K. Long-term ecology as reconstructed from settlement and land-use histories. Empirical case studies in environmental history from the Mediterranean region, the Near East, and Mesoamerica. Applications to degradation, desertification, sustainability, and global change. Only one of the following may be counted: Anthropology 382N, Geography 356 (Topic: Geo-Archaeology), 356C. Prerequisite: Graduate standing.

383M. Topics in Archaeological Techniques and Procedures. A major category of archaeological topics in which the emphasis is on techniques and procedures pertinent to the analysis of prehistoric data. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Conference Course.
Topic 2: Technological Analysis: Lithics.
Topic 4: Technological Analysis: Ceramics.
Topic 6: Field Projects.
Topic 7: Quantitative Analysis in Archaeology.

683N. Field Archaeology. Two hundred forty hours of fieldwork. Prerequisite: Graduate standing and consent of instructor.

384M. Topics in Regional Archaeology. Prehistoric cultural developments of a major geographical area; comparative cultural developments in ecologically similar areas. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Conference Course.
Topic 2: South America.
Topic 4: Mesoamerica. Same as Latin American Studies 391 (Topic 2: Mesoamerica).
388. Topics in Physical Anthropology. Constitutes one of two principal categories of courses in physical anthropology covering substantive studies in primate behavior, primate anatomy and evolution, human evolution, and growth and development. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

   Topic 1: Conference Course.
   Topic 5: Primate Evolution.
   Topic 7: Human Evolution.
   Topic 8: Primate Anatomy.
   Topic 9: Primate Behavior.
   Topic 11: Hominid Paleoecology.

388K. Topics in General Anthropology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

   Topic 1: Conference Course.
   Topic 2: Anthropology of Education. Same as Curriculum and Instruction 380G. A study of social life in contemporary American schools from an anthropological perspective. Additional prerequisite: Twelve semester hours of upper-division coursework in education or consent of instructor.
   Topic 5: Ethnographic and Qualitative Research Methods.

389. Topics in Unwritten Languages. Intensive instruction in selected unwritten, usually aboriginal, languages. Three lecture hours and five laboratory hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

   Topic 1: Conference Course.

389K. Topics in Regional Ethnography. Anthropological surveys and analyses of societies and cultures of distinctive world areas. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

   Topic 1: Conference Course.
   Topic 10: Indo-European Culture and Religion.

391. Topics in Social Anthropology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

   Topic 1: Conference Course.
   Topic 2: Social Anthropological Theory.
   Topic 3: Native and Reflexive Anthropology.
   Topic 4: Cultural Construction of Masculinity.
   Topic 5: Symbolic Anthropology.
   Topic 7: Researching Women in Institutions.
   Topic 15: History and Anthropology.
   Topic 22: Representation and Signification.
   Topic 27: Consciousness and Resistance.
   Topic 32: Gender, Ethnicity, and Nationalism. Same as Asian Studies 391 (Topic 4: Gender, Ethnicity, and Nationalism).

391L. Topics in Research Methods in Physical Anthropology. In this second major category of courses in physical anthropology are listed those that have research techniques as their principal focus. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

   Topic 4: Field Methods in Primatology.
   Topic 5: Analysis of Primate Behavior.
   Topic 6: Analysis of Primate Anatomy.
392K. Introduction to Graduate Archaeology. Core course. Prerequisite: Graduate standing.

392J. Introduction to Graduate Physical Anthropology. Core course. Prerequisite: Graduate standing.

392M. Introduction to Graduate Social Anthropology. Core course. Prerequisite: Graduate standing.

392N. Introduction to Graduate Linguistic Anthropology. Same as Linguistics 396 (Topic 2: Introduction to Graduate Linguistic Anthropology). Core course. Prerequisite: Graduate standing and consent of instructor.

392P. Introduction to Graduate Folklore and Public Culture. Core course. Prerequisite: Graduate standing.

392Q. Introduction to Graduate Anthropology. Core course. Prerequisite: Graduate standing.

393. Topics in Linguistic Anthropology. Training and individual research in subjects concerning the relations between language and culture. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Conference Course. Additional prerequisite: Consent of instructor.


Topic 7: Discourse Analysis. Additional prerequisite: Consent of instructor.

Topic 8: Ethnography of Speaking. Same as Linguistics 396 (Topic 3: Ethnography of Speaking). Additional prerequisite: Consent of instructor.

Topic 11: Ethnographic Description of Language and Speech. Additional prerequisite: Consent of instructor.

Topic 14: Language and Power. Additional prerequisite: Consent of instructor.

Topic 15: Symbolism and Iconography. Additional prerequisite: Consent of instructor.

Topic 16: Introduction to Diachronic Linguistics: Germanic. Same as Classical Civilization 383 (Topic 2: Introduction to Diachronic Linguistics: Germanic), German 381 (Topic 3: Introduction to Diachronic Linguistics: Germanic), and Linguistics 383 (Topic 8: Introduction to Diachronic Linguistics: Germanic). Additional prerequisite: Twelve semester hours of upper-division coursework in German or consent of instructor.

Topic 17: Older Germanic Languages. Same as German 393K (Topic 2: Older Germanic Languages) and Linguistics 383 (Topic 9: Older Germanic Languages). Additional prerequisite: Twelve semester hours of upper-division coursework in German or consent of instructor.


394M. Topics in Folklore, Public Culture, and Cultural Studies. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Conference Course.

Topic 4: Anthropology of the Performing Arts.

Topic 13: Cultural Poetics.


Topic 20: Field Methods in Ethnomusicology.

Topic 26: Marxism and Expressive Culture.

Topic 30: Object, Matter, and Desire. Examines various questions regarding matter and meaning.

Topic 42: Affect. A survey of theories of affect, including those of Freud, Foucault, and Deleuze, feminist theory, phenomenology, globalization theory, and ethnography.

Topic 31: Public Culture. Introduction to the theory and ethnography of public culture.

Topic 32: Deleuze. The major works of Gilles Deleuze, including the study of the ontology of differences and flow, resonance, affect, vitality, lines of flight, and assemblage.

Topic 33: Cultural Critique. Various forms of cultural critique, including culture jamming, speed theory, experimental ethnographic writing, post-humanism, postpositivism, and the memoir.

Topic 34: New Ethnographic Writing. Reading and writing new forms of ethnography, including experimental writing, performative writing, new journalism, and the memoir.


Topic 36: Representational Practices. Theories of representation and representational practices, including the representation of collective selves and others in colonial and ethnographic narratives, collections, and displays.
Topic 37: Cultural Analysis: The Case of Class. The development of class analysis in history, sociology, and anthropology, including innovative approaches to the reproduction and performance of class identities.

Topic 38: Cultural Analysis: The Case of Race. Current uses of cultural analysis across a range of disciplines, focusing on how race is accounted for in a variety of invocations of culture.

Topic 39: Cities in Time and Space. The difficulties associated with making cities intelligible in terms of their distinctive historical and cultural dynamics.

Topic 40: Anthropology and Mass Media. Anthropology and mass media both inside and outside the West. Includes television, film, and popular music.

Topic 41: Anthropology of Science. Anthropological perspective on the position of scientific disciplines within their broader social contexts and the transformations of social orders based on developments of scientific knowledge.

Topic 42: Foucault and Cultural Studies. Examination of Foucault’s major works, including an assessment of his theoretical and methodological contributions to scholarly research and political activism.

Topic 43: Black Queer Studies.

Topic 44: Advanced Topics in Black Feminisms. Theory and practice of black and Third-World feminisms, including as political space, activist methodology, artistic inspiration, and scholarly choice.

Topic 45: Contemporary Cuban Public Culture(s). The major preoccupations and tensions of public culture in the state of Cuba and the nation of individual Cubans.

Topic 46: Black Public Culture: Diasporic Texts and Contexts. Survey of cultural expressions and political moments of African-descended people since the social, cultural, and political upheavals of the 1970s.

395K. Cultural Adaptation and Change. Same as Geography 395. A graduate-level introduction to cultural behavior, adaptation, evolution and transformation, with emphasis on demography, diffusion, migration, ethnicity, and institutions. Prerequisite: Graduate standing in anthropology or a related field, and consent of instructor.

397. Conference Course in Anthropology. Individual instruction for graduate students on specialized problems of advanced research. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

397F. Doctoral Forum. Development of skills in writing, revision, and presentation of papers and grant proposals, and in job hunting. Prerequisite: Graduate standing.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in anthropology and consent of the graduate adviser; for 698B, Anthropology 698A.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in anthropology and consent of the graduate adviser.

398T. Supervised Teaching in Anthropology. Offered on the credit/no credit basis only. Prerequisite: Graduate standing.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Anthropology 399R, 699R, or 999R.
ASIAN STUDIES

Master of Arts (in Asian Studies)
Master of Arts (in Asian Cultures and Languages)
Doctor of Philosophy (in Asian Cultures and Languages)

FACILITIES FOR GRADUATE WORK

The Perry-Castañeda Library contains more than 300,000 volumes of Chinese, Hindi, Japanese, Pali, Prakrit, Sanskrit, and Urdu material, related chiefly to the history, cultures, languages, literatures, politics, governments, and social and economic conditions of South and East Asia. The Benson Latin American Collection contains significant holdings on diasporic communities of East and South Asians, and the Fine Arts Library acquires material on the arts, music, and theatre throughout Asia, including videocassettes, DVDs, and sound recordings. Both the Wasserman Public Affairs Library and the Lyndon Baines Johnson Library and Museum include material related to Asian history and international relations, while the Harry Ransom Humanities Research Center holds photographs and rare manuscripts from or about Asia.

AREAS OF STUDY

The Master of Arts with a major in Asian studies is an interdisciplinary professional degree with a regional concentration on Asia. The degree is intended primarily for those preparing for a career in business, communication, government, information studies, law, the military, or community college teaching. There is considerable flexibility in meeting degree requirements. Each student, in consultation with the graduate adviser, designs an individual program within the framework of the requirements given on page 322.

The Master of Arts and Doctor of Philosophy degrees with a major in Asian cultures and languages are intended for students pursuing an academic career. For these degrees, students concentrate in Chinese, Hindi, Japanese, Malayalam, Sanskrit, Tamil, or Urdu.

With the approval of the graduate adviser and the graduate dean, students may design special programs that include courses outside the Department of Asian Studies that are related to the major area of study.

Graduate courses are offered regularly in Chinese, Hindi, Japanese, Malayalam, Sanskrit, Tamil, and Urdu languages and literatures. The study of these languages and literatures may also be included in programs leading to master’s or doctoral degrees in other disciplines.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Zoltan D. Barany
Gordon A. Bennett
Avron A. Boretz
Joel P. Brereton
James Brow
Kirsten Cather
Sung-Sheng Yvonne Chang
Ozro Luke Davis Jr.
David J. Eaton
Toni L. Falbo
Oliver Freiberger
Kate Gillespie
Ian F. Hancock
Kathryn Hansen
Robert L. Hardgrave
Roger Hart
Geraldine Heng
Syed Akbar Hyder
John W. Kappelman
Ward Keeler
ADMISSION REQUIREMENTS

Master of Arts with a Major in Asian Studies

Students who plan to specialize in the study of China or Japan must have completed at least two years of college-level Chinese or Japanese with a grade of at least B, or must demonstrate equivalent competence, before admission to the program. Second-year college-level language coursework may be taken after admission but will not be counted toward the master's degree.

Students who plan to specialize in the study of South Asia are strongly encouraged but not required to have studied Hindi, Malayalam, Sanskrit, Tamil, Urdu, or another South Asian language before applying for admission. First- and second-year college-level language coursework may be taken after admission but will not be counted toward the master's degree.

Ideally, applicants will also have completed some coursework in the desired area of specialization.

Master of Arts with a Major in Asian Cultures and Languages

This program is designed for students whose career objective is college or university teaching. Students who wish to specialize in China or Japan normally have a Bachelor of Arts in Chinese or Japanese language and literature or an area studies degree with a concentration in China or Japan. The applicant must also have demonstrated third-year–level language ability in Chinese or Japanese.

Students who wish to concentrate on South Asia normally have a Bachelor of Arts in area studies with a concentration on South Asia that includes significant language work in Hindi, Malayalam, Sanskrit, Tamil, or Urdu. Applicants with bachelor's degrees in religious studies with a concentration in South Asia that includes significant language work have also been accepted into the program.

Doctor of Philosophy with a Major in Asian Cultures and Languages

Students who plan to specialize in China or Japan normally have a Master of Arts in Chinese or Japanese language and literature or an area studies degree with a concentration in China or Japan. The applicant must also have demonstrated ability to use Chinese or Japanese sources in research.

Students who wish to be admitted to the doctoral program with a concentration on South Asia should have a Master of Arts in area studies or a related discipline that includes significant coursework in a relevant South Asian language.
DEGREE REQUIREMENTS

Master of Arts with a Major in Asian Studies

It is important to note that the principal language of a student’s program may not be his or her native language.

Students may choose either the report option or the thesis option. The report option consists of at least thirty-three semester hours of work, including the report course, a three-hour, one-semester project in which the student conducts research and writes a report on a given topic or body of material. The thesis option consists of at least thirty semester hours of work, including the thesis course, a six-hour, two-semester project in which the student analyzes or interprets a body of material. Core courses required of all students in the program are six semester hours of upper-division or graduate coursework in history and six semester hours of upper-division or graduate coursework in a language of the area of specialization, normally Chinese, Hindi, Japanese, Malayalam, Sanskrit, Tamil, or Urdu. Another Asian language may be substituted with the approval of the graduate adviser. Students are expected to complete three years of language study or pass a proficiency examination in the Asian language of their choice to complete the degree program.

Students who have fulfilled the core requirements in history and language before admission to the program must substitute twelve additional hours of Asian studies coursework: the required subject matter is waived but not the hours. Up to nine hours of upper-division coursework, including no more than six hours in language, may be counted toward the degree.

Students who choose the thesis option must take at least twelve hours of designated electives related to the area of specialization, with no more than six hours in any one discipline. Students who choose the report option must take at least eighteen hours of such electives, with no more than nine hours in any one discipline. The minor of six hours normally consists of the required language courses. Students fluent in an Asian language upon admission may designate another six hours of supporting coursework for the minor.

Master of Arts with a Major in Asian Cultures and Languages

This program requires thirty semester hours of coursework, including six hours in the thesis course. Up to nine of the thirty hours may be in upper-division courses. Students must take at least three courses in their area of specialization—in Japanese culture, Indian religion, or Chinese literature, for example. They must also take one graduate course that introduces them to research methods of the appropriate discipline—for example, in historiography or literary theory or criticism—and another course on the general historical or cultural background of the major area. The remaining courses must include six hours of language courses at or above the third-year level. Students planning doctoral study in Asian cultures and languages should begin the thesis course in their third semester.

Doctor of Philosophy with a Major in Asian Cultures and Languages

At least thirty semester hours of coursework are required beyond master's-degree work, in addition to six hours in the dissertation courses. The student must choose a geographic area of focus (China, Japan, or South Asia). Within this area, the student must complete courses in three different areas of specialization—a major and two minors. At least five courses must be taken in the major area, and three courses should be taken in the first minor area. For the second minor area the student must take two courses in the methodology of the major area (or areas, if recommended by the academic adviser).
Areas of specialization must be approved by the adviser. Examples of acceptable area combinations are available at http://www.utexas.edu/cola/depts/asianstudies/graduate/phd/.

To be admitted to candidacy for the doctoral degree, the student must take a comprehensive examination covering the three areas in which he or she has done coursework. The examination is usually taken one semester after completion of coursework. The examination committee consists of a chair and three other members and includes at least one faculty member in each of the student’s three areas. The reading list for the examination must include core items assigned by the committee. The comprehensive examination consists of four written tests and one oral test. Questions on the oral test may be based partially on the student’s answers on the written tests.

After passing the comprehensive examination, the student, in consultation with the graduate adviser, selects five faculty members to form a dissertation committee; the chair of the committee is the student’s dissertation supervisor. The student then prepares a dissertation prospectus under the guidance of the chair for submission to the committee. The committee reviews the prospectus at a prospectus hearing. Suggestions given at the hearing must be incorporated in the student’s revision of the prospectus, which is resubmitted to the committee for approval. The student then drafts a shorter dissertation proposal based on the approved prospectus and submits it to the Graduate School as part of the application for admission to candidacy.

Competence is required in at least two foreign languages in addition to the language of the student’s specialized area. The first must be a modern foreign language that will be used for research, such as French, German, or Japanese. The second may be either another research language or a second language in the broad area of the student’s specialization that is pertinent to the student’s professional development, such as classical Chinese for students specializing in modern China or Hindi or Malayalam for students in religious studies whose first major language is Sanskrit. The languages and the required level of proficiency are determined by the faculty in each area.

**DUAL DEGREE PROGRAMS**

A student seeking admission to a dual degree program must apply through the Graduate and International Admissions Center. He or she must be accepted by each individual program in order to be admitted to the dual program. Like all other graduate applicants, the student is responsible for submitting any additional information required by the Graduate Studies Committee for each program.

**Master of Arts/Master of Public Affairs**

The Department of Asian Studies and the Lyndon B. Johnson School of Public Affairs offer a dual degree program leading to the Master of Arts with a major in Asian studies and the Master of Public Affairs. The program combines advanced policy studies with interdisciplinary area studies, responding to an increased need in both the public and the private sector for policy specialists with a thorough understanding of Asian politics and cultures.

Students must complete at least sixty-nine semester hours in public affairs and Asian studies, including a professional report and summer internship. They are expected to show proficiency in an Asian language (Chinese, Hindi, Japanese, Malayalam, Tamil, Urdu, or, with special approval, another Asian language) equal to that shown by completion of three years of coursework.
Master of Arts/Master of Business Administration

This dual degree program is offered by the McCombs School of Business and the Department of Asian Studies. The program is designed to provide students with the skills and perspective necessary to work effectively in business, particularly in its application to Asia. Students pursue the Master of Business Administration and the Master of Arts with a major in Asian studies.

Upon admission to the program, the student must pay a nonrefundable enrollment deposit to indicate that he or she accepts the offer of admission. The deposit serves to confirm the student’s intention of enrolling in both programs and is applied to the payment of fees when the student enrolls. Students who demonstrate financial need may qualify for assistance to cover the deposit.

Students must complete seventy-five to seventy-eight semester hours of coursework in business and Asian studies, including a thesis or professional report. In addition, they are expected to demonstrate proficiency in an Asian language (normally Chinese, Hindi, Japanese, Malayalam, Tamil, or Urdu) equal to that shown by completion of three years of coursework.

FOR MORE INFORMATION

Campus address: Will C. Hogg Building (WCH) 4.134, phone (512) 471-5811, fax (512) 471-4469; campus mail code: G9300

Mailing address: The University of Texas at Austin, Graduate Program, Department of Asian Studies, 1 University Station G9300, Austin TX 78712

URL: http://www.utexas.edu/cola/depts/asianstudies/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Asian Studies: ANS

180C, 280C, 380C. Conference Course in Asian Studies. Supervised individual study of selected problems in Asian studies. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

381. Topics in Chinese Culture and Society. Study of various aspects and periods of Chinese culture and society. May be repeated for credit when the topics vary. Only one of the following may be counted unless the topics vary: Asian Studies 380S, 380T, 381, 387. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.


Topic 2: Confucian Texts.

Topic 3: Daoist Texts.

383. Topics in Japanese Culture and Society. Study of various aspects and periods of Japanese culture and society. May be repeated for credit when the topics vary. Only one of the following may be counted unless the topics vary: Asian Studies 380S, 380T, 383, 387. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

384. Topics in South Asian Culture and Society.
Study of various aspects and periods of South Asian culture and society. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.
Topic 1: Buddhist Studies: The Indian Monastery.
Topic 2: Communalism in Colonial India. Same as History 382N (Topic 4: Communalism in Colonial India). Asian Studies 384 (Topic 2) and History 381 (Topic: Communalism in Colonial India) may not both be counted.
Topic 4: Historiography in Premodern India. Same as History 382N (Topic 5: Historiography in Premodern India). Asian Studies 384 (Topic 4) and History 381 (Topic: Historiography in Premodern India) may not both be counted.
Topic 5: Social and Religious Reform in Modern India. Same as History 382N (Topic 1: Social and Religious Reform in Modern India). Asian Studies 384 (Topic 5) and History 388K (Topic: Social and Religious Reform in Modern India) may not both be counted.
Topic 6: South Asian Diaspora.
385. Topics in Chinese Language and Literature.
Study of various aspects and periods of Chinese language and literature. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.
Topic 1: Chinese Film and Literature.
Topic 2: Contemporary Chinese Literature.
Topic 3: Modern Chinese Literature.
Topic 4: The Dream of the Red Chamber. The novel Hong Lou Meng (The Dream of the Red Chamber).
386. Topics in Japanese Language and Literature.
Study of various aspects and periods of Japanese language and literature. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.
Topic 1: Fantasy and Reality in Modern Japanese Literature.
388. Topics in South Asian Language and Literature.
Study of various aspects and periods of South Asian language and literature. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.
Topic 1: Archaeology of Buddhism.
Topic 2: Authoritarian Political Systems. Asian Studies 390 (Topic 2) is same as Government 390L (Topic 7: Authoritarian Political Systems). Comparative study of authoritarian and totalitarian patterns of government, past and present, Western and non-Western; special emphasis on Communist and Fascist systems. Additional prerequisite: Twenty-four semester hours of coursework in government or related fields, and consent of the graduate adviser.
Topic 4: Families and Education in Three Cultures. Asian Studies 390 (Topic 4) and Educational Psychology 381M (Topic 6: Families and Education in Three Cultures) may not both be counted. Additional prerequisite: Twelve semester hours of upper-division coursework in education or behavioral science, and consent of instructor.
391. Asia and the World. Study of various subjects with Asian studies–related content. May be repeated for credit when the topics vary. Some topics are offered on the letter-grade basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.


Topic 3: European Imperialism: British Empire. Same as History 380L (Topic 1: European Imperialism: British Empire) and Middle Eastern Studies 381 (Topic 12: European Imperialism: British Empire). Study of the British empire in the Middle East, Asia, and Africa. Additional prerequisite: Consent of the graduate adviser.

Topic 4: Gender, Ethnicity, and Nationalism. Same as Anthropology 391 (Topic 32: Gender, Ethnicity, and Nationalism).


Topic 6: International Business Fellows Seminar. Same as Latin American Studies 381 (Topic 8: International Business Fellows Seminar); Middle Eastern Studies 380; and Russian, East European, and Eurasian Studies 380. Multidisciplinary seminar for students in area studies, business administration, law, and public policy. The faculty includes both academics and business leaders. Offered on the letter-grade basis only. Asian Studies 391 (Topic 6) and International Business 395 (Topic: International Business Fellows Seminar) may not both be counted.

394. Tools and Methods in Asian Research. Study of the major research tools and methods used in current Asian scholarship. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.


698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in Asian studies and consent of the graduate adviser; for 698B, Asian Studies 698A.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in Asian studies and consent of the graduate adviser.

398T. Supervised Teaching in Asian Studies. Teaching under the close supervision of a faculty member; weekly group meetings with the instructor, individual consultation, and reports throughout the teaching period. Prerequisite: Graduate standing and appointment as a teaching assistant.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Asian Studies 399R, 699R, or 999R.

Bengali: BEN

381. Conference Course in Bengali Language and Literature. Supervised individual study in Bengali language or culture. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

Chinese: CHI

381. Conference Course in Chinese Language and Culture. Supervised individual study in Chinese language or culture. The equivalent of three lecture hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.
384. **Topics in Chinese Language and Culture.** Study of various aspects and periods of Chinese language or culture. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

- **Topic 1:** Chinese Film and Literature.
- **Topic 2:** Confucian Texts.
- **Topic 3:** Contemporary Chinese Literature.
- **Topic 4:** Daoist Texts.
- **Topic 5:** Modern Chinese Literature.
- **Topic 6:** The Dream of the Red Chamber. The novel *Hong Lou Meng* (The Dream of the Red Chamber).
- **Topic 7:** Readings in Chinese Journals.

**Hindi: HIN**

381. **Conference Course in Hindi Language and Culture.** Supervised individual study in Hindi language or culture. May be repeated for credit. **Prerequisite:** Graduate standing and consent of instructor.

384. **Topics in Hindi Language and Culture.** Study of various aspects and periods of Hindi language and culture. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor. Additional prerequisites vary with the topic and are given in the Course Schedule.

- **Topic 1:** Advanced Reading, Composition, and Conversation I.
- **Topic 2:** Advanced Reading, Composition, and Conversation II. Additional prerequisite: Hindi 384 (Topic 1).
- **Topic 3:** Readings in Hindi.

**Japanese: JPN**

381. **Conference Course in Japanese Language and Culture.** Supervised individual study in Japanese language or culture. May be repeated for credit. **Prerequisite:** Graduate standing and consent of instructor.

384. **Topics in Japanese Language and Culture.** Study of various aspects and periods of Japanese language and culture. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing, and six semester hours of upper-division coursework in Japanese or consent of instructor. Additional prerequisites vary with the topic and are given in the Course Schedule.

- **Topic 1:** Classical Japanese. Only one of the following may be counted: Japanese 322, 340 (Topic: Classical Japanese), 380 (Topic 1: Classical Japanese), 384 (Topic 1).
- **Topic 2:** Fantasy and Reality in Modern Japanese Literature.

**Malayalam: MAL**

381. **Conference Course in Malayalam Language and Culture.** Supervised individual study in Malayalam language or culture. May be repeated for credit. **Prerequisite:** Graduate standing and consent of instructor.

384. **Topics in Malayalam Language and Culture.** Study of various aspects and periods of Malayalam language and culture. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing, and six semester hours of upper-division coursework in Malayalam or consent of instructor.

**Sanskrit: SAN**

381. **Conference Course in Sanskrit Language and Culture.** Supervised individual study in Sanskrit language or culture. May be repeated for credit. **Prerequisite:** Graduate standing and consent of instructor.

3845. **Topics in Sanskrit Language and Culture.** Study of various aspects and periods of Sanskrit language and culture. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and Sanskrit 507.

- **Topic 1:** Advanced Readings in Sanskrit.
- **Topic 2:** Readings in Classical Sanskrit Prose and Literature.

**Tamil: TAM**

381. **Conference Course in Tamil Language and Culture.** Supervised individual study in Tamil language or culture. May be repeated for credit. **Prerequisite:** Graduate standing and consent of instructor.

384. **Topics in Tamil Language and Culture.** Study of various aspects and periods of Tamil language and culture. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing, and six semester hours of upper-division coursework in Tamil or consent of instructor. Additional prerequisites vary with the topic and are given in the Course Schedule.
381. Conference Course in Urdu Language and Culture. Supervised individual study in Urdu language or culture. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

384. Topics in Urdu Language and Culture. Study of various aspects and periods of Urdu language and culture. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and six semester hours of upper-division coursework in Urdu or consent of instructor. Additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Advanced Reading, Composition, and Conversation I.
Topic 2: Advanced Reading, Composition, and Conversation II.
Topic 3: Readings in Urdu.

CLASSICS
Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK
Library facilities, and a staff dedicated to assisting in research, reference, and collection needs, are located within the Department of Classics in Waggener Hall. Supporting material and staff are located in the Perry-Castañeda Library, the Architecture and Planning Library, the Fine Arts Library, and other branch units. The Classics Library holdings, totaling more than twenty-seven thousand volumes, cover all classical texts and most major commentaries, critical studies, archaeological and reference works, classical and archaeological periodicals, and standard electronic resources such as Dyabola, Gnomon, and DCB. Students also have access to the Swenson Coin Collection, the Meritt and Reinmuth squeeze collections, and a collection of original drawings, photographs, and notes on ancient architecture by Lucy Shoe Meritt. Holdings of the Harry Ransom Humanities Research Center include a collection of Greek papyri from Egypt and many Renaissance editions of classical texts. The Battle Collection of plaster casts is housed in the Harry Ransom Center. The department also has a computer laboratory with the TLG, Perseus, and other databases. The Program in Aegean Scripts and Prehistory has a complete photographic archive of Aegean and Cypriote prehistoric inscriptions and related research materials. The department also has a large, well-equipped slide library with over seventy thousand slides and its own slide librarian and darkroom; several thousand images are available in digitized form. The department also has a full-time instructional technology specialist.

Through the Institute of Classical Archaeology, the department sponsors archaeological fieldwork at Metaponto in southern Italy and at Chersonesus in the Crimea. The Institute for the Study of Antiquity and Christian Origins conducts fieldwork at Ostia in Italy. Participation is open to graduate students in the department.

AREAS OF STUDY
Classics is an interdisciplinary field of study that includes all areas of classical antiquity: literature, history, art, archaeology, linguistics, religion, philosophy, and so on. Within these wide limits, the only restrictions on possible programs are the interests of the student and the availability of competent specialists to direct the student's work. The department offers special concentrations in classical archaeology and ancient history, and the Departments of Classics and Philosophy offer a cooperative
doctoral program in ancient philosophy. The faculty also maintains close links with
the Departments of History, English, Linguistics, and Art and Art History and with
the Comparative Literature Program. A cooperative arrangement with the Institute of
Nautical Archaeology at Texas A&M University makes courses in nautical archaeology
and ancient seafaring available for University of Texas at Austin credit.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the

David Armstrong          M. Gwyn Morgan
Joseph Coleman Carter    Alexander P.D. Mourelatos
Lesley Ann Dean-Jones    Melissa Y. Mueller
Jennifer V. Ebbeler       William R. Nethercut
Ingrid E. M. Edlund-Berry Thomas G. Palaima
Michael Gagarin           Douglass Stott Parker
Karl Galinsky            Paula J. Perlman
R. J. Hankinson           Andrew M. Riggsby
Thomas K. Hubbard         Cynthia W. Shelmerdine
Lisa Kallet               L. Michael White
Lawrence Y. Kim           Stephen A. White
John H. Kroll             Paul B. Woodruff
Timothy J. Moore

DEGREE REQUIREMENTS

Master of Arts
Course requirements are thirty semester hours of coursework, including the thesis
course; or thirty-three semester hours, including the report course. No more than
nine hours of upper-division coursework may be included in the program. Eighteen
to twenty-four semester hours must be in the major program, which is planned indi-
vidually by the student in consultation with the graduate adviser. The minor consists
of at least six semester hours outside the major field; it is most often Latin for a Greek
major or Greek for a Latin major, but philosophy, history, archaeology, anthropology,
and linguistics are acceptable substitutes. By studying Greek and Latin the student
fulfills the department’s foreign language requirement. The master’s degree student
has no formal qualifying examinations prior to the report or thesis.

Doctor of Philosophy
Admission to the Doctor of Philosophy degree program is subject to the approval of
the Graduate Studies Committee.

Course requirements. There are no universal course requirements. One-semester
courses in Greek and Roman history are offered in alternate years to prepare classical
philology students for the history examinations. Students are further required to take
two topical seminars by their eighth semester of study.

Examination requirements. To be admitted to candidacy for the doctoral degree,
students concentrating in classical philology must pass the following examinations:
translation in Greek; translation in Latin; Greek history; Roman history; Greek litera-
ture (a written followed by an oral examination); Latin literature (a written followed
by an oral examination); and translation examinations in German and a second
modern language. Students must pass the translation examination in either Greek or
Latin by the end of their fourth semester of study and the examination in the other
classical language by the end of their sixth semester of study.
Students who concentrate in classical archaeology have more flexible ancient language requirements and special course requirements and must pass special examinations in archaeology in place of those in Greek and Latin literature. Students with a concentration in ancient history also have special course requirements and must pass special history examinations in place of one of the literature examinations and the general Greek and Roman history examinations. They may fulfill the other literature requirement by examination. Students with a particular interest in ancient philosophy may pursue a degree program under the joint auspices of the Department of Classics and the Department of Philosophy.

FOR MORE INFORMATION

Campus address: Waggener Hall (WAG) 123, phone (512) 471-5742, fax (512) 471-4111; campus mail code: C3400
Mailing address: The University of Texas at Austin, Graduate Program, Department of Classics, 1 University Station C3400, Austin TX 78712
E-mail: classics@mail.utexas.edu
URL: http://www.utexas.edu/depts/classics/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three hours a week for one semester.

Classical Civilization: C C

380. Seminar in Classical Archaeology. Topics given in recent years include Greek archaeology, Roman archaeology, and archaeology of the Black Sea. May be repeated for credit when the topics vary; other topics may also be taught. Prerequisite: Graduate standing.

380J. Proseminar in Classical Literature. Brief survey of the history of classical literature; orientation to the major periods and genres. Designed for first-year graduate students. Prerequisite: Graduate standing.

381. Conference Course in Classical Civilization. Studies in classical antiquity. A knowledge of the ancient languages is not required. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

382. Field Archaeology. Involves the participation of the student in an archaeological excavation; the study of field techniques includes excavation procedure, documentation, conservation, and interpretation. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

383. Studies in Classical Civilization. Studies in various aspects of Greek and Roman literature, history, and culture. May be repeated for credit when the topics vary. Topics other than those listed below may also be taught. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Roman Imperial Funerary Monuments.
Topic 2: Introduction to Diachronic Linguistics: Germanic. Same as Anthropology 393 (Topic 16; Introduction to Diachronic Linguistics: Germanic), German 381 (Topic 3: Introduction to Diachronic Linguistics: Germanic), and Linguistics 383 (Topic 8; Introduction to Diachronic Linguistics: Germanic). Additional prerequisite: Twelve semester hours of upper-division coursework in German or consent of instructor.

383K. Current Concepts and Research in Classics. Overview of important theories, issues, and research in classics. May be repeated for credit. Prerequisite: Graduate standing.

186K, 386K. Conference Course in Classical Literature. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.
Greek: GK

380J. Proseminar in Classical Literature. Brief survey of the history of classical literature; orientation to the major periods and genres. Designed for first-year graduate students. Prerequisite: Graduate standing.

180K. Proseminar. An introduction to the research methodology and the ancillary disciplines used in current classical studies, or to certain disciplines such as meter, textual criticism. One hour a week for one semester. May be repeated for credit when the topics vary. Offered on the credit/no credit basis only. Topics other than those listed below may also be taught. Prerequisite: Graduate standing.

Topic 2: Sight Translations.

383. Studies in Classical Greek Literature. Topics given in recent years include Sophocles, Greek oratory, Herodotus, and Homer. May be repeated for credit when the topics vary. Topics other than those listed below may also be taught. Prerequisite: Graduate standing.

Topic 1: Aeschylus.
Topic 2: Sophocles.
Topic 3: Thucydides.
Topic 4: Aristophanes.

383K. Current Concepts and Research in Greek. An overview of important theories, issues, and research in classics. May be repeated for credit. Prerequisite: Graduate standing.

385. Graduate Reading Course. Topics given in recent years include Hesiod and Homeric hymns, Menander and Hellenistic poetry. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

186K, 386K. Conference Course in Greek Literature. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

390. Seminar in Classical Studies. Selected topics in ancient philosophy, epigraphy, numismatics, papyrology, paleography. The equivalent of three hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

698. Thesis. The equivalent of three hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in Greek and consent of the graduate adviser; for 698B, Greek 698A.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in Greek and consent of the graduate adviser.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

Latin: LAT

380J. Proseminar in Classical Literature. Brief survey of the history of classical literature; orientation to the major periods and genres. Designed for first-year graduate students. Prerequisite: Graduate standing.

180K. Proseminar. An introduction to the research methodology and the ancillary disciplines used in current classical studies, or to certain disciplines such as meter, textual criticism. One hour a week for one semester. May be repeated for credit when the topics vary. Offered on the credit/no credit basis only. Topics other than those listed below may also be taught. Prerequisite: Graduate standing.

Topic 2: Sight Translations.

383. Graduate Reading. Topics given in recent years include Horace, Roman comedy, silver-age Latin epic, and Augustine. May be repeated for credit when the topics vary. Offered on the credit/no credit basis only. Topics other than those listed below may also be taught. Prerequisite: Graduate standing.

383K. Current Concepts and Research in Latin. An overview of important theories, issues, and research in classics. May be repeated for credit. Prerequisite: Graduate standing.

385. Studies in Classical Latin Literature. May be repeated for credit when the topics vary. Topics other than those listed below may also be taught. Prerequisite: Graduate standing.

186K, 386K. Conference Course in Latin Literature. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

698. Thesis. The equivalent of three hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in Latin and consent of the graduate adviser; for 698B, Latin 698A.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in Latin and consent of the graduate adviser.
390. Seminar in Classical Studies. Supervised study in a wide variety of writers and fields, under personal direction of members of the Graduate Studies Committee. The equivalent of three hours a week for one semester. May be repeated for credit when the topics vary. Topics other than those listed below may also be taught. Prerequisite: Graduate standing.

Topic 1: Cicero: Readings. Close reading of selected works, with emphasis on grammar and style.

698. Thesis. The equivalent of three hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in Latin and consent of the graduate adviser; for 698B, Latin 698A.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in Latin and consent of the graduate adviser.

398T. Supervised Teaching in Latin. Offered on the credit/no credit basis only. Prerequisite: Graduate standing.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Latin 399R, 699R, or 999R.

COGNITIVE SCIENCE

380. Advanced Topics in Cognitive Science. Three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.


COMPARATIVE LITERATURE

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

Comparative literature offers a core of courses in the discipline and draws on the teaching and scholarly resources of faculty members in more than twenty programs in language, literature, and area studies. In addition to the University Libraries facilities, special collections in the Harry Ransom Humanities Research Center and the Benson Latin American collection, for example, offer opportunities for research.

AREAS OF STUDY

Students seeking the Master of Arts degree are expected to develop a broad knowledge of the theory and practice of comparative literature both through coursework and through the completion of a report or thesis. In addition, they expand their acquaintance with a single national literature by studying it at the graduate level.

Students seeking the doctoral degree are expected to develop extensive knowledge of one national literature and broad knowledge of a second. They are required to complete, in effect, the equivalent of a master’s degree in one national literature. The program also prepares students in literary theory and criticism and in the scholarly and critical methods of studying the relationships among various literatures. Interdisciplinary study is also encouraged, as students explore the interrelationships between literature and other fields (such as art history, anthropology, film, philosophy, and psychology) as part of their programs of work. After fulfilling all requirements in the areas of literature, theory, and language and passing both qualifying and comprehensive examinations, students choose a period, genre, or historical, cultural, intellectual, or critical problem on which to write a dissertation.
Work toward the Master of Arts and Doctor of Philosophy is offered in collaboration with the Departments of Asian Studies, Classics, English, French and Italian, Germanic Studies, Middle Eastern Studies, Slavic and Eurasian Studies, and Spanish and Portuguese. Courses in support of the student's area of specialization are offered in various divisions, including the many interdisciplinary area studies centers within the College of Liberal Arts; the Departments of Anthropology, Art and Art History, History, Linguistics, and Philosophy; the School of Music; the College of Communication; and in other departments approved by the graduate adviser in comparative literature.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Kamran Asdar Ali
Samer Ali
Katherine M. Arens
Aaron Bar-Adon
Jeffrey Barnouw
Daniela Bini
Douglas Biow
Marc Bizer
Pascale R. Bos
Sung-Sheng Yvonne Chang
Dolora Chapelle Wojciehowski
Ann Lujà Cvetkovich
Robert L. Dawson
Alan W. Friedman
Michael Gagarin
Thomas J. Garza
Mohammad Ghanoonparvar
John M. González
Karen Grumberg
Susanne Hafner
Sabine Hake
Barbara Jane Harlow
Michael Paul Harney
Tony Hilfer
Neville W. Hoad
Syed Akbar Hyder
Ernest N. Kaulbach
John S. Kolsti

Wayne Lesser
Naomi Lindstrom
Lily Litvak
Carol Hanbery MacKay
Edward Manouelian
Monika Mehta
Timothy J. Moore
Susan Napier
Adam Zachary Newton
James R. Nicolopulos
Hana Pichova
Guy P. Raffa
Wayne A. Rebhorn
Cory A. Reed
Elizabeth Merle Richmond-Garza
Charles R. Rossman
César A. Salgado
Martha Ann Selby
Dina M. Sherzer
Janet Swaffar
Hélène Tissières
Jeffrey Walker
Alexandra K. Wettlaufer
Lynn R. Wilkinson
Jennifer M. Wilks
Seth L. Wolitz
Helena Woodard
Marjorie Curry Woods

DEGREE REQUIREMENTS

Master of Arts

To earn the Master of Arts degree with a major in comparative literature, the student must complete either thirty semester hours of coursework, including the six-hour thesis course, or thirty-three hours of coursework, including the three-hour report course. The student must also demonstrate a high degree of competence in one foreign language and sufficient competence in a second language. Additional information about these requirements is available from the graduate adviser.
Doctor of Philosophy

To be admitted to candidacy for the doctoral degree, the student must have earned a master's degree in comparative literature, in a single national language and literature, or in a related discipline such as art history, folklore, or philosophy. In addition, he or she must have passed the qualifying examination, which tests the student's knowledge of literary theory and critical methodology and of the first foreign language and literature.

The student is expected to take at least thirty semester hours of coursework beyond the Master of Arts level, including six semester hours for the dissertation. Each student must also pass a comprehensive examination, which is normally taken upon completion of coursework. The student must then write a dissertation, which may involve, for example, the comparison of works, traditions, themes, writers, or periods from two or more different literatures. It may involve the study of literature and some other discipline. It may be a substantial translation, equipped with a general introduction analyzing the work chosen and/or discussing the problems and theory of translation and provided with detailed, explanatory notes. It may be some other project that the student designs under the supervision of the dissertation committee and that satisfies the aims and interests of the program. Each student should develop a thorough command of two foreign languages, and proficiency either in a third foreign language or in another discipline related to the program of work.

Complete information about the foreign language requirement, course requirements, and the qualifying and comprehensive examinations is available from the graduate adviser.

FOR MORE INFORMATION

Campus address: Calhoun Hall (CAL) 217, phone (512) 471-1925; campus mail code: B5003

Mailing address: The University of Texas at Austin, Graduate Program in Comparative Literature, 1 University Station B5003, Austin TX 78712

URL: http://www.utexas.edu/cola/depts/complit/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Comparative Literature: C L

180K. Introduction to Comparative Literature. One-credit-hour proseminar in methods of study and research in comparative literature. One lecture hour a week for one semester. Offered on the credit/no credit basis only. Required of first-semester graduate students in comparative literature. Prerequisite: Graduate standing in comparative literature and consent of the graduate adviser in comparative literature.

380M. Problems in Translation. Detailed study of literary translations and of the translation process, and completion of one substantial translation. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser in comparative literature.
381. The Comparative Study of Literary Periods and Movements. The study of literary periods, aspects of periods, or movements from a comparative point of view; topics include mystical literature of the Middle Ages, Renaissance humanism. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

382. Topics in Comparative Literature. Study of genres, literary forms, the relationships of literature and other disciplines from a comparative point of view; topics include comedy, sensibility, East and West. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

385. Theories of Literary Criticism. Comparative study of theories of literary criticism in a broad historical perspective, including representative classic texts in critical theory. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

390. Comparative Literary Theory and Poetics. Comparative study of major modern critical schools and figures in literary and cultural theory and criticism. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

391L. Conference Course in Comparative Literature. Tutorial courses on individually designed basis available through the home departments of members of the comparative literature faculty. Prerequisite: Graduate standing and consent of the graduate adviser in comparative literature.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in comparative literature and consent of the graduate adviser; for 698B, Comparative Literature 698A and consent of the graduate adviser.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in comparative literature and consent of the graduate adviser.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree and consent of the graduate adviser in comparative literature.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Comparative Literature 399R, 699R, or 999R, and consent of the graduate adviser in comparative literature.
ECONOMICS

Master of Arts
Master of Science in Economics
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

In addition to the department resources described below, graduate students in economics may use the research facilities of the Teresa Lozano Long Institute of Latin American Studies, the Bureau of Business Research, the Population Research Center, and the Lyndon Baines Johnson Library and Museum, as well as those of the University Libraries and Information Technology Services. Also available in Austin are state government offices; regional offices of federal agencies, including the Internal Revenue Service; and the offices of several research institutions.

Computer facilities. In addition to a SPARCsystem 600 server and several SPARC workstations, the department has a computer laboratory equipped with twenty-five SPARCclassic X terminals and four multiprocessor servers running Solaris 2.5. These provide access to the X Window System, which allows users to run simultaneous applications on different hosts. Software available through each terminal and by remote access includes high-level programming languages, compilers, and debuggers for program development. Also installed are IMSL, LSSOL, and NPSOL libraries, several statistical and spreadsheet programs, and applications for symbolic mathematical manipulations, plotting, and word processing.

Center for Applied Research in Economics. The center maintains a local area network of Pentium Pro–based computers for empirical research by graduate students and faculty members. GAUSS, STATA, Mathematica, and word-processing and spreadsheet applications are installed, and the machines are available for student use at all times.

AREAS OF STUDY

The Department of Economics offers graduate study and research in the core areas of microeconomics, macroeconomics, and econometrics and in a broad selection of applied areas. Current area offerings are listed in the department’s graduate program brochure, available on request.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Svetlana Boyarchenko
Stephen G. Bronars
Harry Cleaver
Russell W. Cooper
Philip Dean Corbae
Douglas C. Dacy
Peter Debaere
Alfredo Di Tillio
Stephen Donald
Richard Dusansky
Don Fullerton
Li Gan
Vincent J. Geraci

William P. Glade
Daniel S. Hamermesh
Takashi Hayashi
Kenneth Hendricks
Melvin J. Hinich
Yingyao Hu
Wolfgang Keller
David A. Kendrick
Burhanettin Kurusçu
Robert P. Lieli
Stephen P. Magee
Alfred L. Norman
Gerald S. Oettinger
ADMISSION REQUIREMENTS
Applicants should have completed at least twelve semester hours of upper-division coursework in economics, including three hours each in intermediate-level microeconomic and macroeconomic theory. The applicant should also have a firm grounding in differential and integral calculus, with an emphasis on proofs; matrix algebra; and probability theory. Exposure to advanced calculus, analysis, and topology is also desirable. A student may be admitted without meeting these requirements if he or she has other exceptionally strong qualifications; the student must then remedy deficiencies in undergraduate preparation, without graduate credit, during the first year in the program.

DEGREE REQUIREMENTS
Master of Arts
The Master of Arts degree program requires completion of thirty semester hours of coursework, including Economics 387L (Topic 1: Microeconomics I), 387L (Topic 2: Macroeconomics I), and 698. At least eighteen semester hours, including the thesis, must be in the major area, and at least six hours must be in supporting work. The program may include no more than nine hours of upper-division undergraduate work, no more than six hours of which may be in either the major or the supporting work. The student must take at least twenty-one semester hours in economics and either six or nine hours of approved coursework outside economics. He or she must earn separate grade point averages in economics and in the supporting work of at least 3.00.

Master of Science in Economics
This degree program requires completion of at least thirty-six semester hours of coursework, including Economics 387L (Topic 1: Microeconomics I), 387L (Topic 2: Macroeconomics I), and 392M (Topic 2: Econometrics I). At least eighteen semester hours must be in the major area, and at least six hours must be in supporting work. The program may include no more than nine hours of upper-division undergraduate work, no more than six hours of which may be in either the major or the supporting work. In addition to the required courses listed above, the student must complete two courses in one of the areas of study offered by the department; he or she must also take either two courses in a second area or Economics 392M (Topic 3: Econometrics II). No more than six hours of work may be taken on the credit/no credit basis; neither the required courses nor the courses in the two areas may be taken on this basis. The student must earn separate grade point averages in economics and in the supporting work of at least 3.00.
Doctor of Philosophy

The doctoral degree is based on satisfactory performance in courses, examinations, writing requirements, and completion of a dissertation. The student seeking admission to candidacy for the doctoral degree is required to take nine core courses: Economics 387L (Topic 1: Microeconomics I), 387L (Topic 2: Macroeconomics I), 387L (Topic 3: Microeconomics II), 387L (Topic 4: Macroeconomics II), 387L (Topic 24: Mathematical Economics), 392M (Topic 1: Probability and Statistics), 392M (Topic 2: Econometrics I), 392M (Topic 3: Econometrics II), and 392M (Topic 18: Econometrics III). Comprehensive examinations in microeconomics and macroeconomics are administered in June and August. In order to continue in the doctoral program, students must pass at least one comprehensive examination by the summer following their first year and both by the June examination date following their second year.

The student’s program must include at least twenty-four semester hours of approved coursework taken in residence. In addition to the core courses, the student must complete two graduate courses in each of two elective fields of specialization. The elective fields are designed to prepare students to write a single-authored second-year paper to be submitted at the June examination date. A departmental graduate research committee evaluates the second-year paper, provides the student with written feedback for revision, and makes a final pass/fail decision by the August examination date. Students must receive a passing grade on the second-year paper to continue in the doctoral program. In the third year, students are required to take a writing seminar, Economics 387M, each semester in one of their fields, as well as two elective courses. By the beginning of the fourth year, the student is strongly advised to have formed a committee and planned chapters of his or her dissertation in order to declare candidacy. In the fourth year, students are required to take Economics 387M each semester to help them with their second major research paper. A suitably revised second-year paper, plus satisfactory papers produced in the writing seminars, can form part of the dissertation. A final oral defense completes the doctoral degree program.

FOR MORE INFORMATION

Campus address: Bernard and Audre Rapoport Building (BRB) 1.116, phone (512) 471-3211, fax (512) 471-3510; campus mail code: C3100

Mailing address: The University of Texas at Austin, Graduate Program, Department of Economics, 1 University Station C3100, Austin TX 78712

URL: http://www.utexas.edu/cola/economics/
GRADUATE COURSES
The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Economics: ECO

380. Research Course. With consent of instructor, may be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser in economics.

380K. Economic Development. Topics include theories of economic development; planning. With consent of instructor, may be repeated for credit when the topics vary. Prerequisite: Graduate standing, six semester hours of upper-division coursework in economics, and six additional semester hours of upper-division coursework in social science or business.
   Topic 1: Economic Development Theory.
   Topic 2: Economic Development Topics.
   Topic 3: Political Economy of Southeast Asia.

380L. Seminar in Economic Systems. Analyses of various types of economic systems, including comparative studies. With consent of instructor, may be repeated for credit when the topics vary. Prerequisite: Graduate standing, six semester hours of upper-division coursework in economics, and six additional semester hours of upper-division coursework in social science or business.

380M. Regional Economics. Survey of theoretical and empirical literature related to location theory, regional development, regional disparities, growth and function of cities, and political economy of spatial planning. Prerequisite: Graduate standing, six semester hours of upper-division coursework in economics, and six additional semester hours of upper-division coursework in social science or business.

380N. Urban Economics. Provides an economic analysis of pressing urban problems such as poverty, housing, transportation, environment, and finance. With consent of instructor, may be repeated for credit when the topics vary. Prerequisite: Graduate standing, six semester hours of upper-division coursework in economics, and six additional semester hours of upper-division coursework in social science or business.

381K. Seminar in Money and Banking. Topics include monetary policy and problems, theory of central banking, and money and banking history. The equivalent of three lecture hours a week for one semester. With consent of instructor, may be repeated for credit when the topics vary. Prerequisite: Graduate standing.

382L. Theories of Public Finance. Topics include public expenditure analysis and taxation. The equivalent of three lecture hours a week for one semester. With consent of instructor, may be repeated for credit when the topics vary. Prerequisite: Graduate standing, and Economics 387L (Topic 1: Microeconomics I) or consent of instructor.
   Topic 3: Local Public Finance.

383K. Seminar in General Economic History. Same as History 383L. A historical study of economic development and economic policy. The equivalent of three lecture hours a week for one semester. With consent of instructor, may be repeated for credit when the topics vary. Prerequisite: Graduate standing, six semester hours of upper-division coursework in economics or related history or government, and six additional semester hours of upper-division coursework in social science or business.

384K. Industrial Organization. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.
   Topic 1: Introduction to Industrial Organization.
   Topic 2: Industrial Organization and Regulation.
384N. Resource Economics. Definition, measurement, production, and conservation of renewable and exhaustible resources; models of economic growth and resources; world distribution and consumption; United States resource policy. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Natural Resource Economics.
Topic 2: Environmental Economics.

385K. Labor Economics. Analysis of the empirical and theoretical factors that influence labor markets. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Introduction to Labor Economics.
Topic 2: Topics in Labor Economics.

387K. Monetary Theory. Theories, based on microeconomic foundations, covering such topics as the usefulness of monetary exchange, optimal central bank policy, the interaction of monetary and fiscal policy, and the role of financial intermediation in the macroeconomy. Prerequisite: Graduate standing.

387L. Studies in Contemporary Economic Theory. With consent of instructor, may be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Microeconomics I.
Topic 2: Macroeconomics I.
Topic 3: Microeconomics II.
Topic 4: Macroeconomics II.
Topic 5: Dissertation Seminar I.
Topic 6: Dissertation Seminar II.
Topic 7: Research Seminar.
Topic 10: Endogenous Economic Growth.
Topic 14: Banking and Financial Intermediation.
Topic 15: Advanced Macroeconomic Analysis.
Topic 18: Introduction to Marxist Economics.
Topic 19: Marxist Theories of Economic Crisis.
Topic 20: Autonomous Marxism.
Topic 21: Marxist Theories of Socialism and Communism.
Topic 24: Mathematical Economics.
Topic 26: Advanced Microeconomic Analysis.

Topic 27: Introduction to Game Theory.
Topic 28: Applications of Game Theory.
Topic 29: Economics of Uncertainty and Information.
Topic 30: Research Seminar. Offered on the credit/no credit basis only.

387M. Writing Seminar in Economics. The equivalent of three lecture hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

187N. Survey of Fields in Economics. Introduction to the questions, methods, and scope of research in different fields in economics. One lecture hour a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

390L. Seminar in the History of Economic Thought. Survey and analysis of principal contributions and historical influences in the evolution of contemporary economic thought from the late eighteenth through the early twentieth century. With consent of instructor, may be repeated for credit when the topics vary. Prerequisite: Graduate standing, and completion of core courses in economic theory or consent of instructor.

391K. Seminar in Latin American Economics. Selected economic problems in Latin America, with particular reference to current developmental policy in specific national economies. With consent of instructor, may be repeated for credit when the topics vary. Prerequisite: Graduate standing, six semester hours of upper-division coursework in economics, and six additional semester hours of upper-division coursework in social science or business.

Topic 5: Privatization and Development in Latin America.
Topic 7: Latin American Marxism.
492L. *Quantitative Methods in Economics.* Topics include optimization methods, probability theory, and statistical inference. Four lecture hours a week for one semester. Economics 492L and 392M (Topic 1: Probability and Statistics) may not both be counted. **Prerequisite:** Graduate standing and consent of instructor.

392M. *Seminar in Quantitative Economics.* The equivalent of three lecture hours a week for one semester. With consent of instructor, may be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor.

Topic 2: *Econometrics I.*
Topic 3: *Econometrics II.*
Topic 4: *Applied Microeconometrics.*
Topic 5: *Time-Series Analysis.*
Topic 6: *Advanced Econometric Theory I.*
Topic 7: *Advanced Econometric Theory II.*
Topic 8: *Mathematics for Economists I.*
Topic 9: *Mathematics for Economists II.*
Topic 10: *Economics of Control Theory.*
Topic 14: *Stochastic Control Theory.*
Topic 15: *Applied Macroeconometrics.*
Topic 18: *Econometrics III.*
Topic 19: *Probability and Statistics.*

393. *Seminar in Industrial Organization.* The equivalent of three lecture hours a week for one semester. With consent of instructor, may be repeated for credit when the topics vary. **Prerequisite:** Graduate standing.

396. *Studies in Economic History.* The equivalent of three lecture hours a week for one semester. With consent of instructor, may be repeated for credit when the topics vary. **Prerequisite:** Graduate standing, six semester hours of upper-division coursework in economics, and six additional semester hours of upper-division coursework in social science or business.

397. *Seminar in International Economic Problems.* The equivalent of three lecture hours a week for one semester. With consent of instructor, may be repeated for credit when the topics vary. **Prerequisite:** Graduate standing.

698. *Thesis.* The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. **Prerequisite:** For 698A, graduate standing in economics, twelve semester hours of upper-division or graduate coursework in economics, and consent of the graduate adviser; for 698B, Economics 698A.

398T. *Supervised Teaching in Economics.* Teaching under the close supervision of the course instructor; weekly group meetings, individual consultations, and reports. Offered on the credit/no credit basis only. **Prerequisite:** Graduate standing and appointment as a teaching assistant.

399R, 699R, 999R. *Dissertation.* Offered on the credit/no credit basis only. **Prerequisite:** Admission to candidacy for the doctoral degree and consent of the graduate adviser.

399W, 699W, 999W. *Dissertation.* Offered on the credit/no credit basis only. **Prerequisite:** Economics 399R, 699R, or 999R.
ENGLISH

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

Facilities for graduate work include an excellent library system and a world-renowned research library, the Harry Ransom Humanities Research Center. The Ransom Center provides materials for critical, textual, and bibliographical studies, with its extensive holdings in earlier British literature (including the Pforzheimer Collection), modern British and American literature, theatre arts, photography, and other significant subjects for literary and cultural research. The Benson Latin American Collection is one of many campus resources for advanced work in non-European literature and language. The Division of Rhetoric and Composition offers rich opportunities for teaching and study; and the Computer Writing and Research Laboratory enjoys a national reputation for investigating the intersections among technology, language, and literature.

AREAS OF STUDY

Courses are offered in the following areas of concentration: American literature; bibliography and textual criticism; computers and English studies; creative writing; English language and linguistics; English literature; ethnic and Third World literatures; folklore, popular culture, and cultural studies; poetry and poetics; rhetoric; women, gender, and literature; and medieval and Renaissance literature.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Michael W. Adams       Lester L. Faigley
James B. Ayres          John P. Farrell
Samuel Baker           Linda Ferreira-Buckley
Janine Barchas          Alan W. Friedman
Jeffrey Barnouw         Kate Frost
Phillip Barrish        Laura Furrman
Lance Bertelsen        James D. Garrison
Daniel Birkholz        Zulfikar Ghose
Mary E. Blockley        John M. González
Brian A. Bremen         Don Graham
Joanna Brooks           Ian F. Hancock
Douglas S. Bruster      Barbara Jane Harlow
Jerome F. A. Bump       Elizabeth Harris
Elizabeth Butler Cullingford  Elizabeth A. Hedrick
Thomas Cable            Kurt Heinzelman
Mia E. Carter           Susan Heinzelman
Evan B. Carton          Geraldine Heng
Larry D. Carver         Jacqueline M. Henkel
Dolora Chapelle Wojciekowski  Tony Hilfer
Oscar H. Casares        R. Rolando Hinojosa-Smith
Davida H. Charnay       Neville W. Hoad
Andrew Cooper           Ernest N. Kaulbach
Ann Luja Cvetkovich     Martin W. Kevorkian
D. Diane Davis          Sara E. Kimball
DEGREE REQUIREMENTS

Master of Arts

A total of thirty-three semester hours of work is required, of which at least six must be in a related field outside the Department of English. The department does not admit literature students for a terminal master’s degree; however, students in the creative writing program receive the Master of Arts degree upon completion of their course of work and the master’s report. Students in all other concentrations are strongly encouraged to complete a master’s report. Details are available from the graduate adviser.

As preparation for the English graduate program, a strong undergraduate background in British and American literature and language is desirable, as well as advanced coursework in related fields.

Doctor of Philosophy

To enter the doctoral degree program, all master's-level students must pass the qualifying examination. With the consent of the graduate adviser, students who enter the program with a Master of Arts from another university may be eligible for exemption from the examination. Students who began their graduate work at the University must pass the examination in the spring semester of the second year of graduate study.

After passing the qualifying examination, the student completes from twenty-four to thirty-three semester hours of additional coursework; specific requirements are available from the graduate adviser. Students who began graduate study at another institution may petition the graduate adviser to transfer applicable credit to the Program of Work. Students seek admission to candidacy for the doctoral degree after completing their coursework and receiving approval of the dissertation prospectus on the basis of the doctoral three-area examination.
FOR MORE INFORMATION

Campus address: Calhoun Hall (CAL) 210, phone (512) 471-5132 or (512) 475-6356; campus mail code: B5000
Mailing address: The University of Texas at Austin, Graduate Program, Department of English, 1 University Station B5000, Austin TX 78712
E-mail: gradeng@uts.cc.utexas.edu
URL: http://www.en.utexas.edu/grad/

GRADUATE COURSES

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Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

English: E

380F. Literature for Writers. Readings in fiction, poetry, drama, literary criticism, biography, and autobiography from the point of view of a creative writer rather than that of a scholar. May be repeated for credit when the instructors vary. Prerequisite: Graduate standing and consent of the English graduate adviser.

382J. Studies in Linguistic Analysis. Lectures, textual analysis, outside readings. May count as linguistics. Prerequisite: Graduate standing and consent of the English graduate adviser.

382L. Studies in Linguistics and Literature. Intensive study of specialized subjects. May be repeated for credit when the topics vary. May count as linguistics. Prerequisite: Graduate standing and consent of the English graduate adviser.

383L. The Teaching of English Composition and Literature. A study of the major components of the English program in secondary school or college. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the English graduate adviser.

384K. Methods of Literary Research. Topics include bibliography, textual studies, history of the book, and materials of literary research. Three class hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the English graduate adviser.

Topic 1: Introduction to Research Methods. Only one of the following may be counted: English 384K (Topic 1), 384K (Topic: Methods of Literary Research), 384K (Topic: Research in Literary Methods).

385N. Creative Writing: Workshop in Fiction. May be repeated for credit when the instructors vary. Prerequisite: Graduate standing and consent of instructor and the English graduate adviser.

385P. Creative Writing: Advanced Workshop in Fiction. May be repeated for credit when the instructors vary. Prerequisite: Graduate standing and consent of instructor and the English graduate adviser.

386L. Creative Writing: Workshop in Poetry. May be repeated for credit when the instructors vary. Prerequisite: Graduate standing and consent of instructor and the English graduate adviser.

386M. Creative Writing: Advanced Workshop in Poetry. May be repeated for credit when the instructors vary. Prerequisite: Graduate standing and consent of instructor and the English graduate adviser.

387M. Studies in Rhetoric. Advanced study of topics in rhetorical theory and in ancillary disciplines. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the English graduate adviser.

387N. Methods of Research in Rhetoric and Composition. A study of the theory, practice, and history of research in rhetoric and composition. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the English graduate adviser.

387P. Productions in Rhetoric. Applications of rhetoric to professional writing. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the English graduate adviser.
387R. Rhetorical History. Topics include classical rhetoric, medieval and Renaissance rhetoric, eighteenth- and nineteenth-century rhetoric, and twentieth-century rhetoric. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the English graduate adviser.

388M. Studies in English and Computers. Seminar on research in English literature, language, and rhetoric. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the English graduate adviser.

389M. Studies in British and American Literature. Selected British and American writers and issues. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the English graduate adviser.

389P. Studies in Women, Gender, and Literature. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the English graduate adviser.

Topic 1: Film Analysis and Feminist Pedagogy.

390M. Studies in European Literature. A study of the impact of European writers on British or American literature. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the English graduate adviser.


390L. Conference Course on Special Topics. For each semester hour of credit earned, the equivalent of one class hour a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the English graduate adviser.

391M. Studies in Criticism, English and American. Historical and methodological approaches to literary criticism. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the English graduate adviser.

Topic 1: Introduction to Critical Theory.

395M. Studies in American Literature. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the English graduate adviser.

Topic 1: Old English. English 364P and 395N (Topic 1) may not both be counted.
Topic 2: Middle English.
Topic 3: Renaissance English.

396L. Studies in the English Language. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the English graduate adviser.

Topic 1: Prosody.
Topic 2: Middle English.

397M. Studies in the Literatures and Cultures of the English-Speaking World. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the English graduate adviser.

397N. Studies in Ethnic and Third-World Literatures. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the English graduate adviser.

398R. Master's Report. Preparation of a report to fulfill the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in English and consent of the graduate adviser.

398T. Supervised Teaching in English. Offered on the credit/no credit basis only. May be repeated once for credit. Prerequisite: Graduate standing, consent of the English graduate adviser, and appointment as a teaching assistant or assistant instructor in a lower-division English course in literature or writing.
399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: English 399R, 699R, or 999R.

EUROPEAN STUDIES

381. Advanced Topics in European Studies. Examination of recent developments in Europe, with emphasis on the role of the European Union in political, cultural, economic, and security matters. Three lecture hours a week for one semester or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing. Additional prerequisites may vary with the topic and are given in the Course Schedule.

FRENCH AND ITALIAN

Master of Arts (in French)
Doctor of Philosophy (in French)

FACILITIES FOR GRADUATE WORK

The libraries at the University are well equipped to serve the needs of graduate students in French and Italian. Among the outstanding collections are the Carlton Lake collection of manuscripts and rare editions of modern French writers from Baudelaire to Beckett, the papers of the Princess Bibesco, the Artinian collection of Guy de Maupassant material, and the Surrealist archive of reviews and original documents.

Several language laboratories, equipped with the latest audio aids, furnish excellent opportunities for technical and professional preparation for teaching and research in Romance languages and linguistics. A large collection of tape recordings of dialect materials in the Romance languages is also available.

AREAS OF STUDY

Graduate programs include concentrations in French literature, French linguistics, and Romance linguistics. Graduate courses in Italian may be counted toward a degree in comparative literature with a concentration in Italian.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Mary J. Baker
Daniela Bini
Douglas Biow
David P. Birdsong
Marc Bizer
Carl S. Blyth
Jean-Pierre Cauvin
Robert L. Dawson
François P. Lagarde
Knud P. Lambrecht
Jane N. Lippmann
Jean-Pierre Montreuil
Guy P. Raffa
Cinzia Russi
Dina M. Sherzer
Hélène Tissières
Alexandra K. Wettlaufer
Seth L. Wolitz

DEGREE REQUIREMENTS

Master of Arts

French. Master of Arts degree plans designed to lead to more advanced graduate work are available with a concentration in either literature or linguistics. Further information is available from the graduate adviser in French.
Both concentrations require an adequate command of oral and written French. Students may choose to minor in a subject outside the field of French, or they may major in French literature (or linguistics) and minor in French linguistics (or literature). Literature majors are required to take French 381M as well as courses in at least four literary periods; linguistics majors must include French 383K and 383M and Linguistics 380K or 380L in their program of study. A master’s thesis or an equivalent report is required.

The entering master’s degree student must have a bachelor’s degree with a major in French or must demonstrate equivalent knowledge. A student who is admitted without this background must acquire it by special reading and coursework before undertaking a regular degree program. The student must also have had the equivalent of at least the fourth-semester college course in one modern foreign language besides French. A deficiency in this area may be removed at any time before completion of other work for the Master of Arts.

Italian. A number of courses are taught at the graduate level and may be counted toward the minor in various master’s degree programs.

Romance linguistics. This program, offered in conjunction with the Department of Spanish and Portuguese, consists of approved coursework in two of the four major Romance languages, distributed as follows: (1) introduction to Romance linguistics; (2) four linguistics courses in the first language (French or Italian); and (3) three courses in a second Romance language. The student must complete either thirty hours of coursework, consisting of eight organized courses and the thesis; or thirty-three hours of coursework, consisting of ten organized courses and the report.

Doctor of Philosophy

French. The doctoral program is offered in either French literature or French linguistics. An examination committee is formed for each candidate; with the graduate adviser, the committee oversees the student’s progress and eventually administers a comprehensive examination based on coursework and reading lists.

Several courses are required of all doctoral candidates; information about them is available from the department. In addition, the candidate is expected to take at least two courses in areas outside French literature and linguistics, such as English, history, linguistics, philosophy, or other languages. Work done for the master’s degree may be counted toward this requirement. Literature students must complete at least two upper-division courses in a second modern foreign language or at least one upper-division Latin course, or they must demonstrate equivalent competence. At least two courses in French literature and/or culture are required of students in the French linguistics program.

French may also be chosen as one of the four major language areas for the Doctor of Philosophy degree with a major in Romance linguistics, offered in cooperation with the Department of Spanish and Portuguese. Language requirements for this degree are an adequate knowledge of the four major Romance languages, as well as a reading knowledge of German and a basic knowledge of Latin. A detailed description of the program is available from the graduate adviser.

Italian. A number of courses are taught at the graduate level and may be used to fulfill minor requirements in various doctoral programs. Candidates for the Doctor of Philosophy in comparative literature may count Italian as their major concentration.
FOR MORE INFORMATION

Campus address: Rainey Hall (HRH) 2.110A, phone (512) 471-5531, fax (512) 471-8492; campus mail code: B7600
Mailing address: The University of Texas at Austin, Graduate Program, Department of French and Italian, 1 University Station B7600, Austin TX 78712
E-mail: devries@mail.utexas.edu
URL: http://www.utexas.edu/cola/depts/frenchitalian/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

French: FR

380L. History of the French Language. An analysis of the evolution of the French language since its origin. Prerequisite: Graduate standing in French, or graduate standing and six semester hours of upper-division coursework in French.

380R. Reference Works and Research Methodologies. Offered on the credit/no credit basis only. Prerequisite: Graduate standing.

381. Old French Language. Prerequisite: Graduate standing and twelve semester hours of upper-division coursework in French.

381J. Topics in French Studies. Designed for students in other departments; taught in English with optional reading in French. May be repeated for credit when the topics vary; graduate students in French may count only one topic toward the degree. Prerequisite: Graduate standing.

381M. Critical Approaches to Literature. Introduction to various modern approaches to literary criticism, stressing both theory and practical application. Prerequisite: Graduate standing.

381N. Studies in Language and Style. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Rhetoric, Composition, and Stylistics.
Topic 2: Translation.

381P. Old Provençal. An introduction to Old Provençal through analysis of literary texts. Prerequisite: Graduate standing and twelve semester hours of upper-division coursework in French.

382L. Studies in the Civilization of the French-Speaking World. Studies in various aspects of the cultures of France, Quebec, Francophone Africa, the French Caribbean, and other areas. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

383K. Structure of French: Phonology and Morphology. Prerequisite: Graduate standing in French, or graduate standing in linguistics and six semester hours of upper-division coursework in French.

383M. Structure of French: Syntax and Semantics. Prerequisite: Graduate standing in French, or graduate standing in linguistics and six semester hours of upper-division coursework in French.

383N. Introduction to French Linguistics. An introductory survey of the main fields of French linguistics: phonology, syntax, sociolinguistics, historical linguistics, and applied linguistics. Fulfills linguistics requirement for doctoral candidates in French literature. May not be counted toward a graduate degree in French linguistics or Romance linguistics. Prerequisite: Graduate standing.

385L. Conference Course in French Language and Literature. For students needing specialized courses not normally or not often included in the regular course offerings. May be repeated for credit. Prerequisite: Graduate standing and written consent of the graduate adviser.

390K. Studies in French Literature through the Renaissance. Intensive study of particular writers or literary movements. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and twelve semester hours of upper-division coursework in French.
390L. Studies in French Literature of the Seventeenth and Eighteenth Centuries. Intensive study of particular writers or literary movements. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and twelve semester hours of upper-division coursework in French.

390M. Studies in French Literature of the Nineteenth and Twentieth Centuries. Intensive study of particular writers or literary movements. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and twelve semester hours of upper-division coursework in French.

390N. Studies in Francophone Literature. Studies in the literatures of Quebec, Francophone Africa, the French Caribbean, and other areas. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

391K. Studies in Criticism and Literary Genres. Intensive study of critical theory or of the evolution of a genre. Topics: Le Voyage: themes, genres, structure; French short fiction since 1650; the theatre of the absurd; and others. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and twelve semester hours of upper-division coursework in French.

392K. Studies in French Linguistics. Examination of specific issues in theoretical, applied, descriptive, or historical linguistics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and twelve semester hours of upper-division coursework in French.

396K. Comparative Romance Linguistics. General survey of the development of spoken Latin in Italy, Spain, Portugal, and France; main traits of phonology, morphology, and syntax in each modern derivative language. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in languages and consent of instructor and the graduate adviser.

Topic 1: Introduction to Romance Linguistics. Same as Italian 396K (Topic 1: Introduction to Romance Linguistics), Linguistics 383 (Topic 3: Introduction to Romance Linguistics), Portuguese 396K (Topic 2: Introduction to Romance Linguistics), and Spanish 396K (Topic 2: Introduction to Romance Linguistics).

197T. Practicum in Teaching College French. Designed to train first-year teaching assistants to observe, describe, and evaluate foreign language instruction and testing. Practical aspects of teaching to be studied include organization of class time; treatment of vocabulary and grammar; speaking and pronunciation; listening and reading comprehension; evaluating and creating tests; testing language content and language skills. One lecture hour a week for one semester. Prerequisite: Graduate standing.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in French and consent of the graduate adviser; for 698B, French 698A.

398R. Master's Report. Preparation of a report to fulfill the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in French and consent of the graduate adviser.

398T. Supervised Teaching in French. Teaching under the close supervision of the course instructor for two semesters; weekly group meetings with the instructor, individual consultations, and reports throughout the teaching period. Prerequisite: Graduate standing and appointment as a teaching assistant.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: French 399R, 699R, or 999R.

Italian: ITL

381. Readings in Italian Literature. Intensive study of a period or a major writer. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and six semester hours of upper-division coursework in Italian.

383K. Studies in Italian Language. Synchronic approach to the modern Italian language: phonology, morphology, syntax, lexicology, stylistics. Prerequisite: Graduate standing.

385L. Conference Course in Italian Language and Literature. For students needing specialized courses not normally or not often included in the regular course offerings. May be repeated for credit. Prerequisite: Graduate standing and written consent of the graduate adviser.

390K. Studies in Italian Literature through the Renaissance. Intensive study of a particular writer, school, or literary movement. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

390L. Studies in Italian Literature since the Renaissance. Intensive study of a particular writer, school, or literary movement. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.
396K. **Comparative Romance Linguistics.** General survey of the development of spoken Latin in Italy, Spain, Portugal, and France; main traits of phonology, morphology, and syntax in each modern derivative language. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing in languages and consent of instructor and the graduate adviser.


398T. **Supervised Teaching in Italian.** Practical exercises in second-language instruction and closely supervised classroom teaching, supported by theoretical studies of second-language learning. **Prerequisite:** Graduate standing.

**GEOGRAPHY**

**Master of Arts**

**Doctor of Philosophy**

**FACILITIES FOR GRADUATE WORK**

The teaching and research facilities of the Department of Geography and the Environment are housed in the Geography Building, centrally located on campus.

**Environmental Information Systems Laboratory.** This laboratory provides comprehensive resources for learning and research in cartography, geographic information systems, remote sensing, and spatial statistics. It contains twenty-five microcomputers connected by Ethernet to the campus network and the Internet. The laboratory is also equipped with scanners, digitizers, plotters, GPS receivers, a station for field mapping, and audiovisual equipment for hypermedia production. The computers run a variety of software for microcomputer mapping and GIS, remote sensing, computer-assisted drafting, and statistical analysis.

**Digital Landscape Laboratory.** The Digital Landscape Laboratory is a GIS and remote sensing facility designed to support research in the modeling and characterizing of Earth’s varied processes through geomorphology, biogeography, and landscape ecology. The laboratory includes a server, high-speed Ethernet connections, Windows-based workstations, scanners, and a large-format plotter. Nearby is the Robert K. Holz Remote Sensing Laboratory, a teaching facility.

**Environmental Analysis Laboratories.** The Soils Laboratory, the Applied Geoarchaeology Laboratory, and the Palynology Laboratory are equipped for field study and laboratory analysis of soils, sediments, pollen, and archaeological materials. Used as both teaching and research facilities, these laboratories are integral to the graduate program in physical geography and cultural ecology.

**University Libraries.** The University Libraries are noted for their collections on Latin America, the Middle East, South Asia, and the American West.

Special research, training, and financial aid opportunities are available through area studies centers and research institutes in African and African American studies, Australian studies, East Asian studies, Latin American studies, Middle Eastern studies, Russian, East European, and Eurasian studies, and South Asian studies. Language training is available in Arabic, Bengali, Chinese, Hebrew, Hindi, Japanese, Korean, Malayalam, Persian, Sanskrit, Serbian/Croatian, Tamil, Turkish, Urdu, and all major European languages. Additional University research facilities used by graduate students in the Department of Geography and the Environment include the Bureau of
Economic Geology, the Center for Energy and Environmental Resources, the Center for Research in Water Resources, the Center for Transportation Research, the Marine Science Institute, the Center for Space Research, and the Population Research Center.

AREAS OF STUDY
The graduate curriculum in geography enables students to obtain an understanding of the heritage and philosophical foundations of the discipline, of contemporary thought and practice in its various subfields, and of the analytical tools and techniques currently used in geographic research. Among the most common graduate specializations are cultural geography, cultural and political ecology, environmental resources, physical geography, urban and regional analysis, and geographic methods and techniques.

Cultural geographers place particular emphasis on culture regions, cultural origins and dispersals, cultural landscapes, and concepts of space and place. Cultural and political ecology is concerned with subsistence, settlement, and organizational strategies that people develop to cope with different and changing environmental settings. Environmental resources addresses issues in environmental planning, resource management, and habitat conservation. Physical geography involves analysis of scale, distribution, morphology, and process in environmental systems. Urban and regional analysis engages students in comparative urban development, space and behavior in the urban living environment, and systems of regional organization. Geographical methods and techniques trains students in geographic information systems, computer cartography, remote sensing, field methods, and spatial analysis. In addition to these topical specializations, students often also focus their studies on a particular geographic region, such as the Middle East, Latin America, Europe, Asia, or the American Southwest.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Paul C. Adams
Karl W. Butzer
Kelley Crews-Meyer
Christopher S. Davies
Diana Davis
William E. Doolittle
Robin W. Doughty
Robert A. Dull
David J. Eaton
Steven D. Hoelscher
Paul F. Hudson
David L. Huff

Brian H. King
Gregory W. Knapp
Ian R. Manners
Barbara McKeen Parmenter
Francisco L. Pérez
Richard Harvey Richardson
Rodrigo Sierra-Maldon
Emily Skop
Frederick R. Steiner
Peter Ward
Kenneth R. Young
Leo E. Zonn

DEGREE REQUIREMENTS
Master of Arts
To obtain a master’s degree in geography, students must complete either thirty semester hours of coursework, including eighteen hours of geography, six hours in a minor subject, and six hours in the thesis course; or thirty-six semester hours of coursework, including twenty-seven hours of geography, six hours in a minor subject, and three hours in the report course. A student who wishes to substitute courses in another field for geography courses must demonstrate that these substitutions are
appropriate to his or her program of study and must have the consent of the graduate adviser and the supervising professor for the courses substituted. All master's degree students must complete Geography 391K with a grade of at least B and must demonstrate proficiency in a foreign language or in quantitative techniques. The foreign language requirement may be fulfilled by completing twelve semester hours in a foreign language with a grade point average of at least 3.00 or by passing an oral or written examination in a selected foreign language. The quantitative techniques requirement may be fulfilled by completing twelve semester hours of mathematics or other quantitative techniques courses with a grade point average of at least 3.00 or by passing a written examination. Fulfillment of this requirement is supervised by the graduate adviser.

Each student must enroll in at least one organized graduate course in geography during both the first and the second semester in the graduate program. Geography 391K, a required course for all new graduate students, may not be counted as one of these courses. By the middle of the second semester, the student should have chosen a supervising committee.

When all course and language requirements have been fulfilled, the student completes the degree by presenting independent research in the form of a thesis or report.

**Doctor of Philosophy**

All students entering the doctoral program must hold a Master of Arts degree or the equivalent.

To qualify for advancement to candidacy, a student must (1) complete, with a grade of at least B, two required seminars, Geography 391K (in the first year of study) and Geography 386; (2) fulfill the language requirement by demonstrating proficiency in two foreign languages or in one language and quantitative techniques; (3) select a faculty supervisor and dissertation committee by the end of the second semester; the student may later change supervisors and alter the committee if appropriate; (4) present a Program of Work that meets with the approval of the dissertation committee; (5) demonstrate comprehensive knowledge in depth in two areas of specialization in geography; and (6) pass a qualifying examination.

After admission to candidacy, a student has completed the formal program of coursework and engages in the research and writing of the dissertation, culminating in an oral defense of the dissertation.

**DUAL DEGREE PROGRAM**

**Doctor of Philosophy/Master of Science in Community and Regional Planning**

The objective of the dual program in geography and community and regional planning is to stimulate interdisciplinary research and advanced understanding of contemporary issues involving cultural, spatial, social, and environmental dimensions of urban and regional growth and to develop in students the technical skills and knowledge necessary to analyze and resolve problems associated with such growth.

A student seeking admission to the dual degree program must apply through the Graduate and International Admissions Center. He or she must be accepted by each program in order to be admitted to the dual program. Like all other graduate applicants, the student is responsible for submitting any additional information required by the Graduate Studies Committee for each program. Students without a master's degree apply to the dual program after completing eighteen semester hours of graduate work in community and regional planning.
Each candidate is assigned a supervising committee composed of faculty members in both geography and community and regional planning. After completing the required coursework, a student advances to candidacy for the doctoral degree according to the procedures of the Department of Geography and the Environment.

FOR MORE INFORMATION

*Campus address:* Geography Building (GRG) 334, phone (512) 471-5116, fax (512) 471-5049; campus mail code: A3100

*Mailing address:* The University of Texas at Austin, Graduate Program, Department of Geography and the Environment, 1 University Station A3100, Austin TX 78712

*E-mail:* utgeog@uts.cc.utexas.edu

*URL:* http://www.utexas.edu/cola/depts/grg/

**GRADUATE COURSES**

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the *Course Schedule* to determine which courses and topics will be offered during a particular semester or summer session. The *Course Schedule* may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

**Geography: GRG**

**380. Field Course in Geography.** Collection of data, formulation of meaningful categories of regions, development of hypotheses of cause-and-effect relations through direct contact with the phenomena and processes in the area where a problem is located. *Prerequisite:* Graduate standing and consent of instructor.

**380C. Myth, Ritual, Place, and Environment.** Impact of local religious lore and practice on cultural landscapes, conservation, and sense of place; cultural and environmental consequences of the spatial expansion of world religions; other themes in the geography of religion, including civil religion and environmental theology. *Prerequisite:* Graduate standing.

**380D. Environment and Health in Latin America.** Same as Latin American Studies 388 (Topic 4: Environment and Health in Latin America). Issues related to health, health care, and development in Latin America and the Caribbean, considered with the recognition that health depends on the interactions of social, economic, and political factors as well as on health care services. *Prerequisite:* Graduate standing.

**380E. Geomorphology of the Southwest.** Geography of West Texas and New Mexico; late Cenozoic basalt flows, volcanic ashes, sand sheets, alluvium, paleolake deposits, glacial moraines, colluvium, and soils; integration of landforms and landscape ecology. Includes a ten-day field trip. The equivalent of three lecture hours a week for one semester, with additional field hours to be arranged. *Prerequisite:* Graduate standing and consent of instructor.

**380F. Field Techniques in Sediments and Soils.** Designed to provide experience in field description of sediments and soils in Central Texas; second half of course focuses on field interpretation of geomorphology and landscape evolution using sedimentary deposits and soils. The equivalent of three lecture hours a week for one semester. *Prerequisite:* Graduate standing and consent of instructor.
381. Seminar in Historical Geography. Topics include Latin America, Anglo-America, Texas, boundaries, settlement origins and patterns, origins of agriculture. The equivalent of three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in geography or a related social science, and consent of instructor.

381C. Mapping the Middle East. Same as Middle Eastern Studies 381 (Topic 31: Mapping the Middle East). Ways in which the Middle East is and has been represented cartographically. Cartographic representations of the region during the fifteenth and sixteenth centuries; the nature and evolution of a distinctive Islamic cartographic tradition; the role and use of maps during the nineteenth and twentieth centuries both in the extension of colonialism and in the creation of modern states; and the contemporary use, applications, and implications of geographic information systems in organizing and representing data spatially. Prerequisite: Graduate standing and consent of instructor.

382K. Geo-Archaeology and Environmental History. Same as Anthropology 382N. Long-term ecology as reconstructed from settlement and land-use histories. Empirical case studies in environmental history from the Mediterranean region, the Near East, and Mesoamerica. Applications to degradation, desertification, sustainability, and global change. Only one of the following may be counted: Geography 356 (Topic: Geo-Archaeology), 356C, 382K. Prerequisite: Graduate standing.

383C. Seminar in Environment and Development. A third- and fourth-world perspective on the geographic implications of international development; emphasis on local and global environmental effects. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in geography or a related social science.


Topic 2: Environment and Development in the Middle East. Same as Middle Eastern Studies 381 (Topic 29: Environment and Development in the Middle East).

384C. Watershed Systems and Environmental Management. The effect of landcover change on drainage basin processes, considered from a geomorphological perspective over varying temporal and spatial scales. Topics may include watershed management, stream channel restoration, fluvial geomorphic processes, and Geographic Information Systems applications to drainage basin processes. Three lecture hours a week for one semester, with additional field hours to be arranged. Prerequisite: Graduate standing and consent of instructor.

385. Seminar in Regional Geography. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in geography or a related social science, and consent of instructor.

Topic 1: Latin America. Same as Latin American Studies 388 (Topic 1: Regional Geography of Latin America). Topics include land and life in Central America; culture, environment, and development in Latin America; recent trends in Latin American geography.

Topic 2: Europe. Topics include various aspects of the economic and political geography of individual nations or regions, such as regional differences in Southeast Europe, agricultural developments in European Economic Community countries, trade, viability of individual countries, the changing resources picture in Western and Eastern Europe.

Topic 3: Anglo-America. Topics include agricultural patterns of the United States, comparative regional studies, measurement and delimitation of regions, analysis of population shifts.

Topic 4: Asia. Topics include economic regionalization in Asia, spatial structure of Asian manufacturing, regional discrimination analysis for selected areas and variables in Asia, urban structure in South Asia, developmental activity and spatial change in India.

Topic 5: The Middle East and North Africa. Same as Middle Eastern Studies 381 (Topic 11: Regional Geography of the Middle East and North Africa). Topics include developmental activity and spatial change in the Middle East, comparative regional studies.

385C. Quaternary Landscapes. Changing physical and biotic landscapes on Ice Age earth during the past two million years. Reconstruction of Quaternary geomorphic landscapes based on principles and applications of geochronology and paleoclimatology. Geography 335C and 385C may not both be counted. Prerequisite: Graduate standing.

386. Seminar in the Philosophy of Geography. Advanced study of geographical concepts and themes. Prerequisite: Graduate standing.
386C. Seminar in Quaternary Studies. Issues and new developments in regional and global aspects of Quaternary climates, biota, prehistory, and landscape evolution. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

387C. Political Ecology. An introduction to the history of development theory, economic globalization, studies in the history of science, issues of social justice, and critical studies of environmental history. Geography 387C and 396T (Topic: Political Ecology) may not both be counted. Prerequisite: Graduate standing.

388. Seminar in Resources and Conservation. Development of the conservation movement, problems of resource misuse, conservation practices, state and national conservation policies, nature and distribution of natural resources. Prerequisite: Graduate standing in geography or a related social science, and consent of instructor.

388C. Historical Geography of Colonial Mexico. Same as Latin American Studies 388 (Topic 2: Historical Geography of Colonial Mexico). The encounter of Spanish and indigenous cultures and ecologies; regional diversity of agricultural, urban, and economic development from 1521 to 1810; ethnic transformation and new socioeconomic configurations. Prerequisite: Graduate standing.

390. Cultural and Humanistic Geography. Analysis of human-environment interactions by employing the concepts of place, home, and dwelling. Discussion of humanistic and postmodern geographical research. Prerequisite: Graduate standing.

390C. Landscape, Meaning, and Society. The creation, transformation, and meaning of landscapes within different societies through time. Iconographical analysis of the built environment; impress of belief and ideology on landscape; analysis of nationalistic and authoritarian landscapes; problems of defining and mapping ethnicity; civilizational process and behavior; institutional vandalism, place annihilation, and the destruction and effacement of landscape symbols; cultural and geographical foundations and unintended consequences of global economic integration. Prerequisite: Graduate standing and consent of instructor.

390S. Environment, Development, and Food Production. Assessment of various types of nonmechanized agriculture with regard to environmental factors and management techniques. Geography 339K and 390S may not both be counted. Prerequisite: Graduate standing and consent of instructor.

391C. Dynamics of Earth Systems. An overview of climate, vegetation, soil, and landform processes. Principles and methodology of physical geography. Prerequisite: Graduate standing.

391K. Issues and Research in Geography. Principal themes in geographical research, related by departmental faculty members. Required of all first-year graduate students in geography. Prerequisite: Graduate standing.

391M. Multivariate Techniques in Spatial Analysis. The application of multivariate data analytic techniques including regression, factor, canonical, and discriminatory analysis of spatial problems. Prerequisite: Graduate standing, and Geography 360L or a basic course in inferential statistics.

192D. Grant Writing in Geography. Designed to train students to write competitive and successful applications for extramural grants and fellowships. One lecture hour a week for one semester. Prerequisite: Graduate standing.

392M. Seminar in Biodiversity Conservation. Examines issues that involve the conservation and sustainable use of plants, animals, and ecosystems. Prerequisite: Graduate standing.

493K. Research in Remote Sensing of the Environment. Imagery generated by remote sensors applied to research and problem solving in the physical and cultural environment. Three lecture hours and two laboratory hours a week for one semester. Prerequisite: Graduate standing.

493M. Advanced Remote Sensing and Quantitative Landscape Ecology. Advanced digital image processing of optical satellite imagery for landscape composition and pattern analysis. Three lecture hours and one and one-half discussion hours a week for one semester. Geography 493M and 396T (Topic: Advanced Remote Sensing and Quantitative Landscape Ecology) may not both be counted. Prerequisite: Graduate standing, and Geography 493K (or 393K) or the equivalent or consent of instructor.

394. Seminar in Urban Analysis. Research seminar in urban issues: demographic, environmental, and transportation modeling; metropolitan finance; and urban social pathologies. Prerequisite: Graduate standing.

394C. Market Area Analysis. Same as Marketing 382 (Topic 1: Market Area Analysis). Conceptual and methodological aspects of analyzing the geographical dimensions of demand. Students complete a field project in which they apply concepts and techniques to the analysis of a problem.
394K. Geographic Information Systems. An introduction to the design and use of geographic information systems and to computer-based tools used to store, manage, analyze, and display spatially referenced data. **Prerequisite:** Graduate standing and consent of instructor.

394L. Advanced Applications of Information Technology. Advanced issues in computer cartography, geographic information systems, three-dimensional environmental reconstruction and rendering, terrain modeling, animation of environmental processes, and hypertext and multimedia authoring. Interdisciplinary subjects, such as the application of geographic information systems to archaeological research, historical demography, and habitat mapping and analysis. **Prerequisite:** Graduate standing and consent of instructor.

395. Cultural Adaptation and Change. Same as Anthropology 395K. A graduate-level introduction to cultural behavior, adaptation, evolution and transformation, with emphasis on demography, diffusion, migration, ethnicity, and institutions. **Prerequisite:** Graduate standing and consent of instructor.

395D. Latin American Cultures, Environment, and Development. Same as Latin American Studies 388 (Topic 3: Latin American Cultures, Environment, and Development). Exploration through Latin American examples of issues of cultural identity and territory, adaptive strategies, environmental impact, conservation, cultural survival, parks and people, and sustainable development. **Prerequisite:** Graduate standing and consent of instructor.

396. Techniques in Pollen Analysis. Field sampling, laboratory processing, microscopy, pollen grain morphology, pollen counting, and data-handling techniques. Two lecture hours and four laboratory hours a week for one semester. **Prerequisite:** Graduate standing and consent of instructor.

396C. Seminar in Current Geographic Research. Review and discussion of recent research projects across the field of geography; includes analysis of theories and methodologies, and various methods for presenting results. Offered on the credit/no credit basis only. **Prerequisite:** Graduate standing in geography or a related field, and consent of instructor.

396K. Quaternary Palynology. Methods, principles, and applications of pollen analysis to vegetation, paleoenvironmental, and ethnobotanical reconstructions. **Prerequisite:** Graduate standing.

396T. Topics in Geography. Some topics may require additional field trips; these are identified in the Course Schedule. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

397. Research in Geography. Supervised study and research. Conference course. May be repeated for credit. **Prerequisite:** Graduate standing and consent of supervising professor.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. **Prerequisite:** For 698A, graduate standing in geography and consent of the graduate adviser; for 698B, Geography 698A.

398R. Master's Report. Preparation of a report to fulfill the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. **Prerequisite:** Graduate standing in geography and consent of the graduate adviser.

398T. Supervised Teaching in Geography. Teaching under the close supervision of the course instructor; group meetings with the instructor, individual consultations, and reports throughout the teaching period. **Prerequisite:** Graduate standing and appointment as a teaching assistant.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. **Prerequisite:** Admission to candidacy for the doctoral degree and consent of the graduate adviser.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. **Prerequisite:** Geography 399R, 699R, or 999R.
GERMANIC STUDIES

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

The University Libraries have extensive collections of primary and secondary works, reference materials, and periodicals that provide excellent resources for advanced studies in Germanic linguistics, philology, and literatures of all periods. Several language laboratory facilities are available for research, preparation for teaching, and use of the large collection of dialect materials, radio plays, films, and videotapes in all Germanic languages. Course offerings of the resident faculty are supplemented by visiting scholars from the United States and Europe. German, Dutch, and Scandinavian prose writers and poets periodically conduct seminars in conjunction with the departmental Visiting Writer Program.

The Department of Germanic Studies is committed to an interactive, multimedia teaching approach and is currently offering such courses at the undergraduate level and developing courses that will make use of the World Wide Web, with seventeen workstations available to graduate students and undergraduate majors. The department has extensive computer facilities; all computers are connected to the Internet by fast Ethernet. Current projects include providing a high-powered workstation for faculty members and graduate students to digitize graphic, audio, and video inputs for use in the virtual classroom.

AREAS OF STUDY

All students in the master’s degree program take a core of required courses; each student also chooses a concentration in literature, linguistics, pedagogy, German cultural studies, or German in combination with another Germanic language. Doctoral areas of concentration are Germanic linguistics and philology; applied linguistics/pedagogy; German literatures of various periods; Scandinavian languages and literatures; Dutch language and literature; and Yiddish language and literature. With the advice and approval of the graduate adviser, students may design special programs including courses from outside the department that are related to the major area of study.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Zsuzsanna I. Abrams
Katherine M. Arens
Kirsten Belgum
Hans C. Boas
Pascale R. Bos
Frank E. Donahue
Susanne Hafner
Sabine Hake
Peter A. Hess
John M. Hoberman

Robert D. King
Hans-Bernhard Moeller
Robert R. Mollenauer
Sandra Ballif Straubhaar
Jürgen K. Streeck
Janet Swaffar
Nina Warnke
John M. Weinstock
Lynn R. Wilkinson
ADMISSION REQUIREMENTS
Entering graduate students must have a bachelor's degree (or the equivalent from a university outside the United States), ordinarily with a major in German or the appropriate Germanic language.

DEGREE REQUIREMENTS
Master of Arts
Students enroll in a core program to fulfill the requirements for the master’s degree. The core program includes German 381 (Topic 3: Introduction to Diachronic Linguistics: Germanic or Topic 11: History of the German Language); 381 (Topic 2: Introduction to Synchronic Linguistics: German) or 393K (Topic 1: German Syntax); 382M; 382N; 386, taken twice; 389K (Topic 1: Fundamentals of Scholarship); and 398T.

The master's degree program with thesis requires thirty-six semester hours of coursework, of which six hours are earned in the thesis course, German 698. A translation with critical commentary may be submitted as a thesis. The master's degree program with report or translation requires thirty-six semester hours of coursework, of which three hours are earned in the report course, German 398R. Six of the required thirty-six semester hours constitute the minor. They are often taken outside the department. Students must pass an oral examination of up to an hour and a half based on the Master of Arts and Preliminary Examination reading list. Those who concentrate in literature, linguistics, pedagogy, or German cultural studies must also demonstrate reading competence in one foreign language other than German or the student’s major field of study; those who concentrate in German and another Germanic language must demonstrate reading competence in a foreign language other than the second Germanic language.

Doctor of Philosophy
Students in the doctoral program choose a primary area of concentration from those listed under “Areas of Study” on page 357. The student is expected to complete the core program for the Master of Arts or its equivalent before taking the Preliminary Examination for admission to the doctoral program.

Students must fulfill the following requirements: (1) take the Preliminary Examination and be evaluated by the Graduate Studies Committee as qualified to enter the doctoral program; (2) demonstrate reading competence in two foreign languages other than German or the language of concentration; (3) near the completion of coursework, pass the Admission to Candidacy Examination; (4) present the dissertation proposal to the faculty and students within two long-session semesters of being admitted to candidacy or early in the fall after returning from approved study abroad; and (5) defend the dissertation in a final oral examination.

FOR MORE INFORMATION
Campus address: E. P. Schoch Building (EPS) 3.102, phone (512) 471-4123, fax (512) 471-4025; campus mail code: C3300
Mailing address: The University of Texas at Austin, Graduate Program, Department of Germanic Studies, 1 University Station C3300, Austin TX 78712
E-mail: hoberman@mail.utexas.edu
URL: http://www.utexas.edu/depts/german/main.html
GRADUATE COURSES
The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

German: GER

381. Studies in Germanic Linguistics and Philology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and twelve semester hours of upper-division coursework in German or consent of instructor.

Topic 2: Introduction to Synchronic Linguistics: German.


Topic 4: German Phonetics and Phonology. Same as Linguistics 384 (Topic 3: German Phonetics and Phonology).

Topic 7: Introduction to Old Norse.


382M. Cultural History. Study of various political, intellectual, artistic, and social movements in the cultures of Germanic countries. May be repeated for credit when the topics vary. Prerequisite: Graduate standing. Additional prerequisites vary with the topic and are given in the Course Schedule.

382N. Intellectual History. An interdisciplinary investigation of the significance of ideological structures of thought in historical contexts. Emphasis is on the genealogy, interpretative power, and critical reception of ideas that inform the ends and methods of German studies as a discipline. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

185, 285, 385. Conference Course in Germanic Languages or Literature. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

386. Periods in Germanic Literature. Thorough survey of the principal periods of Germanic literature. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and twelve semester hours of upper-division coursework in German or consent of instructor.

Topic 1: German Literature: Middle Ages through Humanism (800–1450).

Topic 2: German Literature: Renaissance/Reformation through Baroque (1450–1730).

Topic 3: German Literature: Enlightenment through Realism (1730–1890).

Topic 4: German Literature: Naturalism to the Present (since 1890).

Topic 5: Old Norse Literature.

Topic 10: Modern Dutch Literature.

Topic 11: Yiddish Literature.

389K. Methods in the Study of Literature and Linguistics. An introduction to the critical and technical procedures used in Germanic studies, especially bibliographical aids. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and twelve semester hours of upper-division coursework in German or consent of instructor.

Topic 1: Fundamentals of Scholarship.

Topic 2: Methods and History of Literary Criticism.

Topic 4: Methods for Cultural Studies.

Topic 6: German Rhetoric and Stilistics.

192, 392. Seminar in Germanic Literature and Culture. Study of influences, writers, genres, themes, and movements in Germanic literature and culture. Topics include Goethe, Thomas Mann, Brecht, Schiller, medieval epic, picaresque novel, symbolism and naturalism, classical drama and theatre, Nietzsche, German women writers, myth and mythology in German literature. One or three lecture hours a week for one semester. May be repeated for credit when the topics vary. German 192 is offered on the credit/no credit basis only. Prerequisite: Graduate standing, and twelve semester hours of upper-division coursework in German or consent of instructor.

Topic 1: German Literature and Cinema.
393K. Seminar in Germanic Linguistics and Philology. Study of linguistic topics in Germanic languages, such as grammar, morphology, phonology, dialectology, syntax, lexicology, sociolinguistics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and twelve semester hours of upper-division coursework in German or consent of instructor.

Topic 1: German Syntax. Same as Linguistics 384 (Topic 4: German Syntax).

Topic 2: Older Germanic Languages. Same as Anthropology 393 (Topic 17: Older Germanic Languages) and Linguistics 383 (Topic 9: Older Germanic Languages).

Topic 3: The Acquisition of German. Special problems in the acquisition of German or another Germanic language as a first or second language. German 381 (Topic: The Acquisition of German) and 393K (Topic 3) may not both be counted.

Topic 4: German Morphology. How the composition and structure of German words are driven and constrained by lexical, phonological, semantic, and syntactic factors.

Topic 5: Language Variation in German. Historic roots of present-day German language variations, including regional, social, and gender-based differences.

397P. Topics in Applied Linguistics and Pedagogy. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and twelve semester hours of upper-division coursework in German or consent of instructor.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in Germanic studies and consent of the graduate adviser; for 698B, German 698A.

398R. Master's Report. Preparation of a report to fulfill the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in Germanic studies and consent of the graduate adviser.

398T. Supervised Teaching in German. Analysis of the major foreign language teaching methodologies; curriculum and curricular materials development. May be repeated for credit. Prerequisite: Graduate standing, and twelve semester hours of upper-division coursework in German or consent of instructor.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: German 399R, 699R, or 999R.

GOVERNMENT
Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK
With more than sixty full-time or jointly appointed members, the Department of Government is one of the largest political science faculties in the country. The department houses an important research center, the Public Policy Institute. The department's research resources include excellent computer facilities and an extensive collection of machine-readable social science data.

Students in the department also take advantage of many of the University's research facilities and programs, including the Teresa Lozano Long Institute of Latin American Studies and Centers for East Asian Studies; Russian, East European, and Eurasian Studies; and Middle Eastern Studies. Many other units provide institutional support for political scientists, including the Brazil Center, the Edward A. Clark Center for Australian and New Zealand Studies, the Center for European Studies, the Center for African and African American Studies, and the South Asia Institute.

The University has one of the largest academic libraries in the United States, with many collections of value for research in government and politics; these include the Benson Latin American Collection, the Grattan collection on Australia, the Woodrow Wilson collection, the Tobenken collection on the Russian Revolution, the Jaffe collection on political radicalism, and a variety of special materials on southern and
western Americana, Southwestern history and politics, India, East Asia, the Middle East, Africa, and the British Commonwealth. The library system also includes the Center for American History, the Harry Ransom Humanities Research Center, and the Tarlton Law Library. The Edie and Lew Wasserman Public Affairs Library contains a wide range of publications concerning public policy. The campus is the site of the Lyndon Baines Johnson Library and Museum, an invaluable resource for the study of twentieth-century politics.

AREAS OF STUDY
All candidates for graduate degrees are expected to develop a broad competence in the discipline as a whole as well as expertise in specific areas. The program offers specialized instruction in the following fields: American politics, comparative politics, formal theory, international relations, methodology, political theory, and public law.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester of 2004–2005.

Zoltan D. Barany
Gordon A. Bennett
Catherine Boone
David Braybrooke
Daniel M. Brinks
Jason M. Brownlee
Bruce Buchanan II
J. Budziszewski
Walter D. Burnham
Henry A. Dietz
David Van Deusen Edwards
James Enelow
Gary P. Freeman
James K. Galbraith
George Gabrilis
Terri E. Givens
Lawrence S. Graham
Kenneth F. Greene
Benjamin Gregg
Robert L. Hardgrave
Roderick P. Hart
Clement M. Henry
John C. Higley
Melvin J. Hinich
Juliet Hooker
Wendy Hunter
Gary J. Jacobsohn
Andrew J. Karch
Alan Eric Kessler
David Leal
Sanford V. Levinson

Tse-min Lin
William S. Livingston
Robert C. Luskin
Patricia Maclachlan
Raul L. Madrid
Stephen Marshall
Aloysius P. Martinich
Corrine M. McConnaughy
Eric McDaniel
Patrick J. McDonald
Robert Moser
Thomas L. Pangle
Hersel Watson Perry Jr.
Tasha S. Philpot
Scot Powe
David F. Prindle
Gary J. Jacobsohn
Aloysius P. Martinich
Corrine M. McConnaughy
Eric McDaniel
Patrick J. McDonald
Robert Moser
Thomas L. Pangle
Hersel Watson Perry Jr.
Tasha S. Philpot
Scot Powe
David F. Prindle
Gretchen Ritter
Brian E. Roberts
Victoria E. Rodríguez
Elspeth D. Rostow
Thomas K. Seung
Daron Shaw
John M. Sides
Bartholomew H. Sparrow
Sean Theriault
Peter Trubowitz
Jeffrey K. Tulis
Robert Harrison Wagner
Kurt Weyland
Ismail K. White
DEGREE REQUIREMENTS

Master of Arts. The master’s degree program requires either twenty-four semester hours of coursework and Government 698, the thesis course; or thirty hours of coursework and Government 398R, the report course. At least six hours must be taken as supporting work outside the department.

Doctor of Philosophy. A doctoral degree candidate must fulfill the following general requirements: (1) complete two foundation courses in political science and more specialized coursework in two fields of study; (2) complete six hours of coursework outside the department; (3) demonstrate language proficiency or competence in quantitative research methods; (4) pass written examinations in two fields; (5) prepare and defend a dissertation proposal; and (6) write an original dissertation and successfully defend it in oral examination. Additional information on specific requirements and procedures is available from the department.

FOR MORE INFORMATION

Campus address: Burdine Hall (BUR) 536, phone (512) 471-5121, fax (512) 471-1061; campus mail code: A1800

Mailing address: The University of Texas at Austin, Graduate Program, Department of Government, 1 University Station A1800, Austin TX 78712

E-mail: gov-gpo@mail.la.utexas.edu

URL: http://www.gov.utexas.edu/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Government: GOV

380R. Mathematical Methods for Political Analysis. An introduction to mathematical concepts essential for quantitative analysis, such as statistics and formal political theory. Prerequisite: Graduate standing and consent of the graduate adviser.

381J. Political Institutions and Processes. Local, state, and national political institutions and policy processes, and specific areas of public policy. Field core course. Prerequisite: Graduate standing and consent of the graduate adviser.

381L. Seminar in American Government and Politics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, twenty-four semester hours of coursework in government or related fields, and consent of the graduate adviser.

Topic 1: Parties and Interest Groups. An empirically oriented inquiry into political parties and interest groups in the political process.


Topic 4: State Government and Politics. Institutions, processes, and problems of the American political system at the state level.

Topic 5: Government and the Economy. Selected topics on the interrelations between governments and economic systems, with particular reference to American experience.

Topic 6: Ethnic Politics. An examination of the status and behavior of racial, ethnic, and religious minorities in the American political system.

Topic 7: The American Presidency.

Topic 8: Congress.

Topic 9: Campaigns and Elections.

Topic 10: American Political Development.


Topic 12: Positive Political Economy.
381R. Political Behavior. Political socialization, political psychology, public opinion, and electoral behavior. Field core course. Prerequisite: Graduate standing and consent of the graduate adviser.

381S. Seminar in Political Behavior. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

Topic 2: Political Participation.

382K. Studies in Political Theory and Philosophy. Intensive study of selected classical and contemporary theorists and source materials related to political theory and philosophy. Field core course. Prerequisite: Graduate standing, twenty-four semester hours of coursework in government or related fields, and consent of the graduate adviser.

Topic 1: Contemporary Political Theory. Analysis of contemporary theoretical problems and detailed study of the works of contemporary Western theorists.
Topic 2: American Political Thought. Examination of the origins and development of political ideas that have influenced the evolution of the American political system.
Topic 4: Feminist Theory.
Topic 5: Natural Law Modernized.
Topic 6: Postmodernism.
Topic 7: Classical Liberalism, Utilitarianism, and Democratic Theory.
Topic 8: Philosophy of History.
Topic 9: Rousseau.

382M. Seminar in Political Theory and Philosophy. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, twenty-four semester hours of coursework in government or related fields, and consent of the graduate adviser.

Topic 1: Contemporary Political Theory. Analysis of contemporary theoretical problems and detailed study of the works of contemporary Western theorists.
Topic 2: American Political Thought. Examination of the origins and development of political ideas that have influenced the evolution of the American political system.
Topic 4: Feminist Theory.
Topic 5: Natural Law Modernized.
Topic 6: Postmodernism.
Topic 7: Classical Liberalism, Utilitarianism, and Democratic Theory.
Topic 8: Philosophy of History.
Topic 9: Rousseau.

383K. Problems in the Study of Politics. Normative orientations in research, theory formation and empirical assessment, various conceptions of explanation, and historical development of the social sciences. Prerequisite: Graduate standing, twenty-four semester hours of coursework in government or related fields, and consent of the graduate adviser.

384L. Seminar: Latin American Politics. Analysis of selected problems in politics and international relations of the countries of Latin America. Two class hours and one conference hour a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, twenty-four semester hours of coursework in government or related fields, and consent of the graduate adviser. Some reading knowledge of Spanish or Portuguese is recommended.

Topic 1: Brazilian Public Policies. Same as Latin American Studies 384L (Topic 1: Brazilian Public Policies).

384M. Seminar in Public Policy and Administration. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, twenty-four semester hours of coursework in government or related fields, and consent of the graduate adviser.

Topic 4: Comparative Administration. Study of administrative theory and practice in comparative perspective.
Topic 7: Comparative Public Policy.
Topic 8: Public Policy Clinic.

384N. Seminar in Public Law. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, twenty-four semester hours of coursework in government or related fields, and consent of the graduate adviser.

Topic 1: The Judicial Process. An exploration of the nature of the judicial function, with emphasis on the roles of law and discretion in the decisional process.
Topic 2: Core Readings in Public Law.
Topic 3: Constitutional Interpretation.
Topic 4: State Constitutions and Human Rights.

385K. Foundations of Public Policy. Introduction to major institutions, values, processes, and problems that shape contemporary public policies. Review and appraisal of current international, national, state, and local policy debates. Sampling of theoretical literature in policy analysis, American politics, institutional and organizational theory, macroeconomic management, democratic theory, policy evaluation, and politics-governance conflicts. Field core course. Prerequisite: Graduate standing and consent of the graduate adviser.
385L. Seminar in Methodology. Intensive examination of selected issues in the methodology of political inquiry. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

Topic 1: Time-Series Analysis.
Topic 2: Introduction to Political Methodology.
Topic 4: Advanced Regression.

185M. Colloquium in Politics. Field roundtables, reports of current research, and panel discussions of significant issues in the study of politics. One lecture hour a week for one semester. May be repeated for credit when the topics vary. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of the graduate adviser.

385N. Introduction to Formal Political Analysis. Critical, comparative survey of important formal theories of political processes, stressing general approaches rather than mathematical results. Presupposes no technical background. Field core course. Prerequisite: Graduate standing and consent of the graduate adviser.

385R. Seminar in Formal Theory. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

Topic 1: Game Theory.
Topic 2: Spatial Theory. Only one of the following may be counted: Government 381L (Topic: Spatial Theory), 385L (Topic: Spatial Theory), 385R (Topic 2).

388K. The Study of International Relations. Comparison of various theories of international politics and analysis of basic forces that underlie national policies and condition the nature and concerns of contemporary international relations. Discussion, reading, and research. Field core course. Prerequisite: Graduate standing, twenty-four semester hours of coursework in government or related fields, and consent of the graduate adviser.

388L. Seminar in International Relations. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, twenty-four semester hours of coursework in government or related fields, and consent of the graduate adviser.

Topic 1: Study of International Conflict. Studies of the determinants of foreign policy in selected countries, with consideration of both domestic and international factors.

Topic 2: American Foreign Policy. Topics in the study of American foreign policy, including the problems and instruments of American diplomacy, and the process by which policy is made.


Topic 4: Contemporary Issues in International Relations. An analysis of major current developments and issues in international politics and military relations.

Topic 5: International Law and Organization. An analysis of the forms and functions of international law and organization, with particular emphasis on the case method as means of adjusting interstate relations.

Topic 6: International Political Economy.

Topic 7: Theory and International Relations.

Topic 8: Competing Approaches to World Politics.

390K. Comparative Study of Political Systems. Theory and method of comparative political study; varieties of governmental institutions in Western and non-Western countries; comparative examination of political institutions. Field core course. Prerequisite: Graduate standing, twenty-four semester hours of coursework in government or related fields, and consent of the graduate adviser.

390L. Seminar in Comparative Government and Politics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, twenty-four semester hours of coursework in government or related fields, and consent of the graduate adviser.

Topic 2: Political Systems of Western Europe. Analysis of Western European politics; may include both particular political systems and comparative study of political institutions, processes, and behavior.

Topic 4: Politics of the Middle East and North Africa. Same as Middle Eastern Studies 381 (Topic 22: Politics of the Middle East and North Africa). Readings and research on the political systems of the Arab world, Israel, Turkey, Iran, and Afghanistan. Precise topics vary.

Topic 7: Authoritarian Political Systems. Same as Asian Studies 390 (Topic 2: Authoritarian Political Systems). Comparative study of authoritarian and totalitarian patterns of government, past and present, Western and non-Western; special emphasis on Communist and Fascist systems.

Topic 9: Political Sociology.
Topic 10: *Elites*. Same as Sociology 396P (Topic 6: *Elites*). Government 390L (Topic 10) and Sociology 395K (Topic 13: *Elites*) may not both be counted.

Topic 11: *Seminar in Russian, East European, and Eurasian Civilizations and Cultures*.

Topic 12: *Soldiers and Politics*.

Topic 13: *Political Transition in Eastern Europe*.

Topic 14: *Comparative Political Institutions*.

Topic 15: *Politics and Society in the Third World*. Same as Latin American Studies 384L (Topic 5: *Politics and Society in the Third World*).

Topic 16: *Politics of Mexico*.


Topic 18: *Comparative Politics: Latin America*. Same as Latin American Studies 384L (Topic 6: *Comparative Politics: Latin America*).

Topic 19: *Advanced Readings in Chinese Politics*. Same as Asian Studies 381 (Topic 1: *Advanced Readings in Chinese Politics*).


Topic 21: *Comparative Ethnic Conflict*. Same as Asian Studies 391 (Topic 1: *Comparative Ethnic Conflict*).

### 391J. Statistical Analysis in Political Science I

An introductory course covering estimation theory and hypothesis testing for statistical models in political science and the basic probability theory needed for statistical theory. *Prerequisite:* Graduate standing and consent of the graduate adviser.

### 391K. Seminar in Political Science

May be repeated for credit when the topics vary. *Prerequisite:* Graduate standing, twenty-four semester hours of coursework in government or related fields, and consent of the graduate adviser.

Topic 7: *Scope and Methods of Political Science*. History, scope, and methods of political science as a discipline; major paradigms and current subfields; conceptions of explanation in the social sciences; concept formation, theory construction, and empirical assessment; problems of interpretation, comparison, measurement, and experimentation; designs for research; normative orientations in research.

### 391L. Statistical Analysis in Political Science II

Multivariate statistical techniques and their applications to problems in political science. Field core course. *Prerequisite:* Graduate standing, one course in statistics, and consent of the graduate adviser.

### 391R. Research Colloquium in Political Science

Forum for development of research projects and dissertation proposals. Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing and consent of the graduate adviser.

### 397K, 697K. Conference Course in Political Science

Readings in the literature of political science in fields in which the student is preparing for the qualifying examinations for the Doctor of Philosophy. May be repeated for credit. *Prerequisite:* Graduate standing, twenty-four semester hours of coursework in government or related fields, and consent of the graduate adviser.

### 698. Thesis

The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. *Prerequisite:* For 698A, graduate standing in government, twelve semester hours of upper-division or graduate coursework in government, six of which must be in the field of the thesis subject, and consent of the graduate adviser; for 698B, Government 698A.

### 398R. Master’s Report

Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing in government and consent of the graduate adviser.

### 398T. Supervised Teaching in Government

Teaching under the close supervision of the course instructor; group meetings with the instructor, individual consultations, and reports throughout the teaching period. *Prerequisite:* Graduate standing, appointment as a teaching assistant, and consent of the graduate adviser.

### 399R, 699R, 999R. Dissertation

Offered on the credit/no credit basis only. *Prerequisite:* Admission to candidacy for the doctoral degree.

### 399W, 699W, 999W. Dissertation

Offered on the credit/no credit basis only. *Prerequisite:* Government 399R, 699R, or 999R.
HISTORY

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

Graduate students in history have access to major collections of research materials in a number of fields. The Benson Latin American Collection of printed and manuscript materials is of international importance for research and study in the history of Latin America in general and Mexico in particular. The Lyndon Baines Johnson Library and Museum and its Oral History Project offer an unprecedented wealth of material for the study of United States history in the Eisenhower, Kennedy, and Johnson years. In the Perry-Castañeda Library, the Harry Ransom Humanities Research Center, and the Center for American History are major collections related to the history of science, twentieth-century writers, British and European history, ancient history, and the history of Texas, the South, and the West, and documents of the United States and of the United Nations. The Natchez Trace Collection in the Center for American History provides an unparalleled resource for the study of the history of the lower Mississippi region in the nineteenth century. At the Episcopal Theological Seminary of the Southwest near the University campus are the national archives of the Episcopal Church, containing books and manuscripts from the colonial period onward.

AREAS OF STUDY

Graduate study in history is offered in the areas of Asian/African/Middle Eastern history (East Asian, South Asian, Middle Eastern, and African), European history (ancient, medieval, early modern, and modern), Latin American history, and United States history.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Robert H. Abzug
Kamran S. Aghaie
Kimberly A. Alidio
Susan Renee Boettcher
H. W. Brands
Jonathan C. Brown
Norman D. Brown
Erika Bsumek
Virginia Garrard Burnett
Caroline Castiglione
Sally H. Clarke
Judith G. Coffin
David F. Crew
Donald G. Davis Jr.
Janet M. Davis
Susan Deans-Smith
Carolyn Eastman
Oloruntoyin O. Falola
Neil F. Foley
William E. Forbath
George B. Forgie
Alison Knowles Frazier

Seth W. Garfield
Tiffany M. Gill
William H. Goetzmann
Laurie Green
Frank A. Guridy
Julie Hardwick
Roger Hart
Antony Gerald Hopkins
Bruce J. Hunt
Neil D. Kamil
Patricia Kruppa
John E. Lamphear Jr.
Mark A. Lawrence
Brian P. Levack
W. Roger Louis
Abraham Marcus
Aloysius P. Martinich
Tracie M. Matysik
Janet A. Meisel
Mark Metzler
Howard Miller
Karl H. Miller
DEGREE REQUIREMENTS

Master of Arts

Each student should work out a specific program of study with the graduate adviser, the faculty adviser, and, finally, the thesis or report supervisor.

All students except those in United States history must demonstrate competence in a foreign language.

Master's degree program with thesis. The student must complete thirty semester hours at the University. Twenty-four semester hours must be in graduate history courses; these must include at least one research seminar and the six-hour thesis course. Six hours of supporting work must be taken outside the major field of interest in history; at least three of these hours must be taken outside the department.

The student writes the thesis under the direction of a supervisor, who serves as head of the supervisory committee; the committee must be made up of at least one other faculty member. The thesis must be approved by the committee and by the graduate dean.

Master's degree program with report. The student must complete thirty-three semester hours at the University. Twenty-seven hours must be in graduate history courses; these must include at least two research seminars and the three-hour report course. Six hours of supporting work must be taken outside the major field of interest in history; at least three of these hours must be taken outside the department.

The report is ordinarily an expansion and revision of a paper written in one of the research seminars. The report must be approved by the faculty supervisor and one other faculty member and by the graduate dean.

Doctor of Philosophy

The Graduate Program Committee maintains close control over admission to the doctoral program; a student is admitted only if the committee believes he or she will excel in doctoral work.

Students who enter the department with a master’s degree are evaluated for admission to the doctoral program after completing their first semester in the department; those who enter with a bachelor’s degree, after their second semester.

The doctoral degree student must complete at least thirty-nine hours of graduate work, at least twenty-seven of which must be in history. At least six of the required twenty-seven hours must be in research seminars (or at least three of the twenty-seven hours if the student has written a master’s thesis at the University). The student must also complete a twelve-hour supporting field outside the major field of interest in history. At least six of the twelve hours must be taken outside the department; depending on the student’s interests and needs, the other six hours may be taken...
outside the department or outside the student's major field in history. Courses taken at the University for the master's degree are counted toward the hours required for the doctoral degree. The graduate adviser may also permit transfer of up to twelve hours of graduate credit from another institution.

The student must fulfill the foreign language requirement for the major field as prescribed in the official Program of Study of the department.

To qualify for admission to candidacy for the doctoral degree, the student must pass both a written and an oral examination in the major field. He or she must then write a dissertation and defend it before a supervisory committee of at least five faculty members, including one member from a field other than history. At some point, each student must participate in the departmental dissertation colloquium.

The student must meet any other requirements prescribed individually by the Graduate Studies Committee or by the dissertation supervisory committee.

FOR MORE INFORMATION

Campus address: Garrison Hall (GAR) 103, phone (512) 471-6421, fax (512) 475-7222; campus mail code: B7000

Mailing address: The University of Texas at Austin, Graduate Program, Department of History, 1 University Station B7000, Austin TX 78712

E-mail: history@mail.utexas.edu

URL: http://www.utexas.edu/cola/depts/history/graduate/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

History: HIS

380K. History of Science. Topics cover scientific development since ancient times, including the scientific revolution, 1500–1800; the development of specific scientific disciplines; and the relationship between science and social change. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

380L. Topics in European Imperialism. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser. Topic 1: European Imperialism: British Empire. Same as Asian Studies 391 (Topic 3: European Imperialism: British Empire) and Middle Eastern Studies 381 (Topic 12: European Imperialism: British Empire). Study of the British empire in the Middle East, Asia, and Africa.

381. Topics in World History. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

382L. Topics in African History. Seminar on selected topics on precolonial African societies and African societies since 1875. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

382N. Topics in the History of East and South Asia. May be repeated for credit when the topics vary. Prerequisite: Graduate standing. Some topics also require consent of instructor; these are identified in the Course Schedule. Topic 1: Social and Religious Reform in Modern India. Same as Asian Studies 384 (Topic 5: Social and Religious Reform in Modern India). History 382N (Topic 1) and 388K (Topic: Social and Religious Reform in Modern India) may not both be counted.
Topic 2: Women in Islamic Societies. Same as Asian Studies 391 (Topic 7: Women in Islamic Societies) and Middle Eastern Studies 381 (Topic 35: Women in Islamic Societies). Only one of the following may be counted: Asian Studies 380T (Topic: Women in Islamic Societies), History 382N (Topic 2), 388K (Topic: Women in Islamic Societies).


Topic 4: Communism in Colonial India. Same as Asian Studies 384 (Topic 2: Communism in Colonial India).

Topic 5: Historiography in Premodern India. Same as Asian Studies 384 (Topic 4: Historiography in Premodern India), History 381 (Topic: Historiography in Premodern India) and 382N (Topic 5) may not both be counted.

382Q. Introductory Conference Course in African History. May be repeated for credit. Prerequisite: Graduate standing and written consent of instructor; consent forms are available in the departmental graduate advising office.

382R. Introductory Conference Course in Asian History. May be repeated for credit. Prerequisite: Graduate standing and written consent of instructor; consent forms are available in the departmental graduate advising office.

382S. Introductory Conference Course in Middle Eastern History. May be repeated for credit. Prerequisite: Graduate standing and written consent of instructor; consent forms are available in the departmental graduate advising office.

382T. Introductory Conference Course in European History. May be repeated for credit. Prerequisite: Graduate standing and written consent of instructor; consent forms are available in the departmental graduate advising office.

382U. Introductory Conference Course in American History. May be repeated for credit. Prerequisite: Graduate standing and written consent of instructor; consent forms are available in the departmental graduate advising office.

383. Seminar in Modern European History. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

Topic 1: Seminar in Russian, East European, and Eurasian Civilizations and Cultures.

383C. Literature of European History. May be repeated for credit when the topics vary. Required of all entering graduate students in European history. Prerequisite: Graduate standing and consent of the graduate adviser.

Topic 1: Literature of European History: The Medieval Period.

Topic 2: Literature of European History: The Early Modern Period.


383L. Studies in World History. Same as Economics 383K. A historical study of economic development and economic policy. With consent of instructor, may be repeated for credit when the topics vary. Prerequisite: Graduate standing, six semester hours of upper-division coursework in economics or related history or government, and six additional semester hours of upper-division coursework in social science or business.

383M. Studies in the Atlantic Worlds. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

384K. Seminar in British History. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

384M. Seminar in Tudor-Stuart History. Reading and research in the history of England under the Tudors and Stuarts, 1485–1689. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

385N. Comparative Slavery. Historiographic treatment of slavery in the New World, with emphasis on comparative and cross-cultural perspectives. Prerequisite: Graduate standing and consent of the graduate adviser.

386K. Seminar in Latin American History. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, reading knowledge of Spanish or Portuguese, and consent of the graduate adviser.

386L. Research Seminar in Latin American History. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, reading knowledge of Spanish or Portuguese, and consent of the graduate adviser. Some topics also require consent of instructor; these are identified in the Course Schedule.

387M. Studies in Early Modern Europe. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

388K. Seminar in Middle Eastern History. Development of Middle Eastern history since the beginning of modern times. May be repeated for credit when the topics vary. Prerequisite: Graduate standing. Some topics also require consent of instructor; these are identified in the Course Schedule.
**Topic 1:** Ottoman Egypt and Syria, 1516–1918. Same as Middle Eastern Studies 381 (Topic 18: Ottoman Egypt and Syria, 1516–1918).

**Topic 2:** Intellectual History of Indo-Iranian Islam. Same as Asian Studies 390 (Topic 6: Intellectual History of Indo-Iranian Islam) and Middle Eastern Studies 381 (Topic 37: Intellectual History of Indo-Iranian Islam).

**Course Descriptions:**

**388M. Problems and Methods of Historical Demography.** Prerequisite: Graduate standing and consent of the graduate adviser.

**389. Research Seminar in United States History.** May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

**391L. Conference Course.** Designed to expand the graduate student’s opportunity for individual consultation. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

**392. Seminar in United States History.** May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser. Some topics also require consent of instructor; these are identified in the Course Schedule.

**393L. Qualifying Examination.** Preparation for qualifying examinations. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. May be repeated for credit. Prerequisite: Graduate standing and consent of the graduate adviser.

**393M, 693M, 993M. Dissertation Colloquium.** Preparation and presentation of a proposal related to the doctoral dissertation. Three, six, or nine discussion hours a week for one semester. Offered on the credit/no credit basis only. Required of all doctoral candidates. Prerequisite: Graduate standing, completion of all coursework, and consent of the graduate adviser.

**395. Seminar in Bibliography and Methods.** A seminar to acquaint the advanced student with the nature and extent of materials for study and writing in United States history. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

**397K. Historiography.** Survey of historical writing and historiography from colonial times to the present. May be repeated for credit when the topics vary. Required of all entering graduate students in United States history. Prerequisite: Graduate standing and consent of the graduate adviser; additional prerequisites vary with the topic and are given in the Course Schedule.

**698. Thesis.** The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in history and consent of the graduate adviser; for 698B, History 698A.

**398R. Master’s Report.** Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in history and consent of the graduate adviser.

**398T. Supervised Teaching in History.** Weekly group meetings with the instructor, individual consultations, and reports. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of the graduate adviser.

**399R, 699R, 999R. Dissertation.** Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

**399W, 699W, 999W. Dissertation.** Offered on the credit/no credit basis only. Prerequisite: History 399R, 699R, or 999R.
LATIN AMERICAN STUDIES

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

The Benson Latin American Collection is the most complete library of its kind in the United States, containing more than 800,000 volumes of printed material in addition to manuscripts, maps, newspapers, and microfilms. Of special interest are the 20,000 reels of microfilm copies of archival material located in Mexico, Spain, England, and Washington, DC. Other campus libraries, including the Perry-Castañeda Library, the Fine Arts Library, the Walter Geology Library, and the Architecture and Planning Library, contain additional Latin American material. Students also have access to a variety of electronic journals, books, and bibliographic tools through the University Libraries Web site, http://www.lib.utexas.edu/.

About 65 faculty members regularly teach courses dealing with Latin America, and some 125 additional faculty members have Latin American interests in a wide variety of fields.

AREAS OF STUDY

Graduate work toward a degree in Latin American studies may be concentrated in any academic area in which courses with Latin American content are offered.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Rosental Alves
Jossianna Arroyo Martinez
Jacqueline E. Barnitz
Leopoldo M. Bernucci
Steve Bourget
Daniel M. Brinks
Jonathan C. Brown
Virginia Garrard Burnett
Karl W. Butzer
Harry Cleaver
Sarah H. Cleveland
Kelley Crews-Meyer
Megan J. Crowhurst
Diana Davis
Susan Deans-Smith
Mercedes Lynn de Uriarte
Henry A. Dietz
Héctor Dominguez
William E. Doolittle
Robert A. Dull
John W. F. Dulles
David J. Eaton
Nora C. England
Enrique Fierro
Richard R. Flores
Seth W. Garfield
Lawrence E. Gilbert
Kate Gillespie
William P. Glade
Gloria González-López
Edmund T. Gordon
Kenneth F. Greene
Julia Guernsey
Frank A. Guridy
Charles R. Hale
Barbara Jane Harlow
Frederick G. Hensey
Virginia Higginbotham
John C. Higley
R. Rolando Hinojosa-Smith
Lori Kay Holleran
Joni L. Jones
Terry D. Kahn
Orlando Rene Kelm
Gregory W. Knapp
Dale April Kelm
José E. Limón
Naomi Lindstrom
Lily Litvak
Marta Luján
Raul L. Madrid
Amelia Malagamba
James D. Mauseth
Martha Menchaca
James R. Nicolopolos
Marta Ortega-Llebaria
Yolanda C. Padilla
Francisco L. Pérez
Joseph E. Potter
Charles E. Ramirez-Berg
Bryan R. Roberts
América Rodriguez
Enrique R. Rodriguez
Victoria E. Rodríguez
Sonia Roncador
Charles R. Rossman
Kim J. Ruhl
César A. Salgado
Joel Sherzer
Nicolas Shumway
Rodrigo Sierra-Maldon
Carlos A. Solé
Shannon Speed
Chandler Stolp
Joseph D. Straubhaar
Brian M. Stross
David S. Stuart
Mauricio Tenorio
Ann Twinam
Fred Valdez Jr.
Angela Valenzuela
Joao Costa Vargas
Andres Villarreal
Peter Ward
David C. Warner
Kurt Weyland
Patricia Wilson
Robert H. Wilson
Samuel Wilson
Anthony C. Woodbury
Kenneth R. Young

ADMISSION REQUIREMENTS
The entering master's degree student must have a bachelor's degree, with a major in any discipline. Reading and speaking knowledge of Spanish or Portuguese is required. Students must hold the master's degree by the time they enter the doctoral program.

DEGREE REQUIREMENTS
Master of Arts
Three degree plans are available; one requires a thesis, while the others require two substantial research papers, one in the major field and one in the minor. The major and minor fields may be any academic areas that offer Latin American content coursework, such as anthropology, economics, government, history, sociology, public administration, literature, and art history. Most plans require the completion of at least thirty-three semester hours of coursework, including either the thesis course, Latin American Studies 698, or the primary and secondary report courses, Latin American Studies 397R and 398R. Dual degree programs may require a different number of hours.

Under all of the Master of Arts degree plans, the student must develop a proficiency in either Spanish or Portuguese. Examinations are held each semester, and the student may repeat them until proficiency is indicated. Students are strongly encouraged to study both languages.

Doctor of Philosophy
The doctoral degree program provides flexibility for the small number of students who wish to prepare themselves broadly and with sufficient depth to work in areas requiring multidisciplinary competence, such as the study of hieroglyphic writing from both an archaeologist's and an art historian's perspective. Students wishing to pursue a doctoral degree are urged to consider carefully the advisability of a program in an appropriate discipline.
Doctoral students must complete at least thirty semester hours of coursework beyond the master's degree program, excluding hours in the dissertation courses. Once admitted, each student must form, in consultation with the graduate adviser, a program committee that will supervise the student's work until he or she is admitted to candidacy.

The student must demonstrate a high level of competence in reading and speaking either Spanish or Portuguese, and must be able to read the other language or some alternate language appropriate to the chosen program that has the approval of the Graduate Studies Committee. Working with a program committee approved by the Graduate Studies Committee and the graduate adviser, the student develops a coherent interdisciplinary program of graduate study designed to provide both competence in depth in a particular discipline or disciplines and complementary strength in related fields. Within the concentration, students must acquire the level of competence in the theories and methods of research demanded of students pursuing the doctoral degree in that department. Graduate credit accumulated for the master's degree may, when deemed appropriate by the program committee, be included in the proposed doctoral degree program. The student's proposed Program of Work must be submitted to the program committee, which may endorse the program as submitted or require modification to improve it.

The graduate student is admitted to candidacy upon passage of written and oral examinations conducted by the program committee. A research proposal for the dissertation should be submitted by the student to the program committee and the graduate adviser. Evaluation of the proposal is in the hands of the program committee, which may, if appropriate, incorporate the proposal into the oral examination. The doctoral dissertation is submitted to a dissertation supervising committee appointed by the graduate dean. The supervising professor must be from the academic area in which the work is being written. All dissertations submitted for Latin American studies doctoral degrees must be of an interdisciplinary nature, clearly drawing upon at least two academic disciplines.

Details on both the master's and the doctoral degree program are available from the graduate adviser.

**DUAL DEGREE PROGRAMS**

A student seeking admission to a dual degree program must apply through the Graduate and International Admissions Center. He or she must be accepted by each individual program in order to be admitted to the dual program. Like all other graduate applicants, the student is responsible for submitting any additional information required by the Graduate Studies Committee for each program.

A committee composed of graduate advisers from the Teresa Lozano Long Institute of Latin American Studies and the other participating program selects students for admission to each of the following dual degree programs. For more information, write to The University of Texas at Austin, Graduate Program, Teresa Lozano Long Institute of Latin American Studies, 1 University Station D0800, Austin TX 78712.

**Master of Arts/Doctor of Jurisprudence**

The dual program in Latin American studies and law is designed for students who wish to study law and Latin American issues in an integrated and interdisciplinary manner and who expect to be involved in government service or legal practice with a Latin American focus.
Including the normal first-year coursework in the School of Law, the student must complete seventy-two semester hours of work for the JD; the coursework in law must include six hours on Latin American topics. Thirty hours of work are required for the Master of Arts, including six hours earned in the thesis course.

To enter the MA/JD program, the student must apply for admission both to the Graduate and International Admissions Center and to the School of Law. The student may submit these applications simultaneously, or he or she may apply to the dual program during the first year in law school.

**Master of Arts/Master of Arts with a Major in Communication Studies**

This dual degree program allows students to study the relationships between the theories and processes of communication and issues pertinent to an understanding of the histories and current policies of the societies and cultures of Latin America. It is designed to meet the need for specialists with multidisciplinary knowledge of Latin American affairs and mastery of the principles and techniques of communication. The student must complete thirty-three semester hours of coursework in communication studies and thirty hours of coursework in Latin American studies; the program must include a summer internship in Latin America and a thesis on a topic involving both fields. The communication studies program may require additional background work.

**Master of Arts/Master of Arts with a Major in Journalism**

This dual degree program allows students to study the relationships between the theories and processes of communication and issues pertinent to an understanding of the histories and current policies of the societies and cultures of Latin America. It is designed to meet the need for specialists with multidisciplinary knowledge of Latin American affairs and mastery of the principles and techniques of communication. The student must complete thirty-three semester hours of coursework in journalism and thirty hours of coursework in Latin American studies; the program must include a summer internship in Latin America and a thesis on a topic involving both fields. The journalism program may require additional background work.

**Master of Arts/Master of Arts with a Major in Radio-Television-Film**

This dual degree program allows students to study the relationships between the theories and processes of communication and issues pertinent to an understanding of the histories and current policies of the societies and cultures of Latin America. It is designed to meet the need for specialists with multidisciplinary knowledge of Latin American affairs and mastery of the principles and techniques of communication. The student must complete thirty-three semester hours of coursework in radio-television-film and thirty hours of coursework in Latin American studies; the program must include a summer internship in Latin America and a thesis on a topic involving both fields. The radio-television-film program may require additional background work relevant to the major.

**Master of Arts/Master of Business Administration**

The objective of the dual program in Latin American studies and business administration is to provide students with a graduate education that will prepare them for business positions involving Latin America. A student must complete a total of at least sixty-nine semester hours in the Teresa Lozano Long Institute of Latin American Studies and the McCombs School of Business.
Upon admission to this dual degree program, the student must pay a nonrefundable enrollment deposit to indicate that he or she accepts the offer of admission. The deposit serves to confirm the student’s intention of enrolling in both programs and is applied to the payment of fees when the student enrolls. Students who demonstrate financial need may qualify for assistance to cover the deposit.

**Master of Arts/Master of Public Affairs**

The dual program in Latin American studies and public affairs combines advanced policy studies with interdisciplinary area studies, responding to an increasing need in both the public and the private sector for policy specialists with a thorough understanding of Latin America.

A student must complete a combined total of at least sixty-nine semester hours of coursework in Latin American studies and public affairs, including a master’s report, taken as Latin American Studies 398R, and a summer internship. In addition, it may be necessary for some students to enroll for an additional semester or summer session to complete all requirements of the dual program.

**Master of Arts/Master of Science in Community and Regional Planning**

The dual program in Latin American studies and community and regional planning is designed to train qualified students in the skills necessary to work toward solving the urbanization and regional development problems that lie at the forefront of contemporary policy concerns in Latin America.

A student must complete a combined total of at least sixty-six semester hours of graduate coursework in the Latin American studies and community and regional planning programs. In addition, it may be necessary for some students to enroll for an additional semester or summer session to complete all requirements of the dual program.

**FOR MORE INFORMATION**

*Campus address:* Sid Richardson Hall (SRH) 1.310, phone (512) 471-5551, fax (512) 471-3090; campus mail code: D0800

*Mailing address:* The University of Texas at Austin, Graduate Program, Teresa Lozano Long Institute of Latin American Studies, 1 University Station D0800, Austin TX 78712

*E-mail:* ilas@uts.cc.utexas.edu

*URL:* http://www.lanic.utexas.edu/ilas/
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Latin American Studies: LAS

381. Topics in Latin American Studies. A varied selection of topics each semester, taught by different faculty members and visiting professors. May be repeated for credit when the topics vary. Some topics are offered on the letter-grade basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Migration. Same as Sociology 389K (Topic 4: Migration).

Topic 5: Health and Development in Latin America. Same as Sociology 395D (Topic 4: Health and Development in Latin America). Latin American Studies 381 (Topic 5) and Sociology 396L. (Topic 6: Health and Development in Latin America) may not both be counted.


Topic 8: International Business Fellows Seminar. Same as Asian Studies 391 (Topic 6: International Business Fellows Seminar); Middle Eastern Studies 380; and Russian, East European, and Eurasian Studies 380. Multidisciplinary seminar for students in area studies, business administration, law, and public policy. The faculty includes both academics and business leaders. Offered on the letter-grade basis only. International Business 395 (Topic: International Business Fellows Seminar) and Latin American Studies 381 (Topic 8) may not both be counted.

Topic 9: The Brazilian Left, 1900 to the Present. Same as American Studies 395C. Additional prerequisite: Consent of the graduate adviser.

Topic 10: Recent Brazil, 1919 to the Present. Same as American Studies 395D. Additional prerequisite: Consent of the graduate adviser.

Topic 11: Information Resources on, and Services for, Hispanic Americans. Information needs of Hispanic Americans; roles of academic, public, and school libraries in meeting those needs.

Topic 12: Information Resources on Latin America. Historical survey of sources of information on Latin America: bibliographical literature from and about Latin America during the colonial, national, and contemporary periods; various types of book and nonbook sources of information available to contemporary scholars. Additional prerequisite: Proficiency in Spanish or Portuguese and consent of instructor.


Topic 15: Local Economic Development.

Topic 16: Maya Hieroglyphic Writing. Additional prerequisite: Consent of the graduate adviser.


381C. Quechua Language and Society in the Andes I.
Same as Anthropology 381C. Beginning spoken Quechua; Quechua folklore. Taught in English. Only one of the following may be counted: Anthropology 324L (Topic: Quechua Language and Society in the Andes), 351C, 389 (Topic: Quechua Language and Society in the Andes), Latin American Studies 324L (Topic: Quechua Language and Society in the Andes), 351C, 381C, 391 (Topic: Quechua Language and Society in the Andes). Prerequisite: Graduate standing and consent of instructor.

381D. Quechua Language and Society in the Andes II.
Same as Anthropology 381D. Intermediate spoken Quechua; Quechua folklore. Taught in English. Only one of the following may be counted: Anthropology 324L (Topic: Advanced Quechua Language and Society in the Andes), 351D, 389 (Topic: Advanced Quechua Language and Society in the Andes), Latin American Studies 324L (Topic: Advanced Quechua Language and Society in the Andes), 351D, 381D, 391 (Topic: Advanced Quechua Language and Society in the Andes). Prerequisite: Graduate standing and consent of instructor.

382. Conference Course in Latin American Studies.
Individual study to be arranged with a faculty member. The equivalent of three lecture hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

384L. Topics in Latin American Politics.
A varied selection of topics each semester, taught by different faculty members and visiting professors. Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

384L. Topics in Latin American Communication.
Latin American Studies 381 (Topic 19) and Radio-Television-Film 393P (Topic: Political Economics of International Communication) may not both be counted. Additional prerequisite: Consent of instructor and the graduate adviser.

386. Topics in Latin American History.
A varied selection of topics each semester, to allow curriculum flexibility for faculty members and visiting scholars. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Brazilian Public Policies. Same as Government 384L (Topic 1: Brazilian Public Policies). Two class hours and one conference hour a week for one semester. Additional prerequisite: Twenty-four semester hours of coursework in government or related fields and consent of the graduate adviser. Some reading knowledge of Spanish or Portuguese is recommended.

Topic 2: Latin American Urban Politics. Same as Government 384L (Topic: Latin American Urban Politics). Two class hours and one conference hour a week for one semester. Additional prerequisite: Twenty-four semester hours of coursework in government or related fields and consent of the graduate adviser. Some reading knowledge of Spanish or Portuguese is recommended.


Topic 6: Comparative Politics: Latin America. Same as Government 390L (Topic 18: Comparative Politics: Latin America). Additional prerequisite: Twenty-four semester hours of coursework in government or related fields and consent of the graduate adviser.

Course Schedule.
388. **Topics in Latin American Geography.** May be repeated for credit when the topics vary. Latin American Studies 381 and 388 may not both be counted unless the topics vary. **Prerequisite:** Graduate standing.

Topic 1: **Regional Geography of Latin America.** Same as Geography 385 (Topic 1: Latin America). Additional prerequisite: Consent of instructor.

Topic 2: **Historical Geography of Colonial Mexico.** Same as Geography 388C. The encounter of Spanish and indigenous cultures and ecologies; regional diversity of agricultural, urban, and economic development from 1521 to 1810; ethnic transformation and new socioeconomic configurations.

Topic 3: **Latin American Cultures, Environment, and Development.** Same as Geography 385D. Exploration through Latin American examples of issues of cultural identity and territory, adaptive strategies, environmental impact, conservation, cultural survival, parks and people, and sustainable development. Additional prerequisite: Consent of instructor.

Topic 4: **Environment and Health in Latin America.** Same as Geography 380D. Issues related to health, health care, and development in Latin America and the Caribbean, considered with the recognition that health depends on the interactions of social, economic, and political factors as well as on health care services.

391. **Topics in Latin American Anthropology.** A varied selection of topics each semester, taught by different faculty members and visiting professors. Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: **Ethnohistory and Archaeology of the Caribbean.** Same as Anthropology 384M (Topic 10: Ethnohistory and Archaeology of the Caribbean).

Topic 2: **Mesoamerica.** Same as Anthropology 384M (Topic 4: Mesoamerica).

Topic 3: **Problems in Development in Latin America.** Same as Anthropology 391 (Topic 16: Problems in Development in Latin America). Discussion seminar on the agrarian question, the urban question, “Lo Mexicano,” and current changes in Mexico.

Topic 4: **The Mayan Languages.** Same as Anthropology 389 (Topic 2: The Mayan Languages). Three lecture hours and five laboratory hours a week for one semester. Additional prerequisite: Consent of instructor.

391K. **Topics in Latin American Economics.** A varied selection of topics each semester, taught by different faculty members and visiting professors. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: **Seminar on the Mexican Economy.** Same as Economics 391K (Topic 1: Seminar on the Mexican Economy). Additional prerequisite: Six semester hours of upper-division coursework in economics and six additional semester hours of upper-division coursework in social science or business.

Topic 2: **Current Issues in Latin American Economics.** Same as Economics 391K (Topic 2: Current Issues in Latin American Economics). Latin American Studies 391K (Topic 2) and 391K (Topic: Current Economic Issues in Latin America) may not both be counted. Additional prerequisite: Six semester hours of upper-division coursework in economics and six additional semester hours of upper-division coursework in social science or business.


Topic 4: **Entrepreneurship and Development in Latin America.** Same as Economics 391K (Topic 4: Entrepreneurship and Development in Latin America). Additional prerequisite: Six semester hours of upper-division coursework in economics and six additional semester hours of upper-division coursework in social science or business.

392P. **Topics in Luso-Brazilian Literature, Culture, Civilization, and Linguistics.** May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

392S. **Topics in Hispanic Literature, Culture, Civilization, and Linguistics.** May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

397R. **Secondary Report.** Preparation of a report to be counted toward the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the letter-grade basis only. **Prerequisite:** Graduate standing in Latin American studies and consent of the supervising professor and the graduate adviser.
698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in Latin American studies and consent of the supervising professor and the graduate adviser; for 698B, Latin American Studies 698A.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in Latin American studies and consent of the supervising professor and the graduate adviser.

LINGUISTICS

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

The University Libraries have extensive collections in linguistics and related fields, in major world and regional languages, and in minority and indigenous languages. The Archibald A. Hill Linguistics Library, maintained by the Department of Linguistics, includes collections of journals, unpublished manuscripts, and dissertations. The Benson Latin American Collection houses a major archive of materials on or in indigenous and colonial languages of Latin America.

The department maintains a well-equipped laboratory for research and instruction in experimental phonetics and natural language processing. Students may also use the linguistics laboratory, geared toward natural speech analysis, that is maintained by the Department of Anthropology. The facilities of Information Technology Services are among the most comprehensive at American universities.

Active interdisciplinary student-faculty research groups, which sponsor colloquia or conferences, include the Sounds Group (phonology and phonetics); the Syntax and Semantics Group; the Sign Language Interest Group; and the Sociolinguistics-Linguistic Anthropology Group. Annual student-run conferences include the conference of the Texas Linguistics Society and the Symposium about Language and Society—Austin (SALSA).

The Department of Linguistics has close links, including cross-listed faculty members and courses, to such adjacent fields as anthropology, foreign language education, philosophy, psychology, speech science, area studies (including Asian studies, Latin American studies, and Middle Eastern studies), Slavic languages and literatures, English, Germanic studies, French and Italian, and Spanish and Portuguese.

AREAS OF STUDY

The Department of Linguistics offers a thorough foundation in theoretical phonology and syntax, phonetics, semantics, and historical linguistics; it also offers strong grounding in computational linguistics, field linguistics/endangered languages, language acquisition, morphology, neurolinguistics, pidgin and creole studies, and sociolinguistics. The faculty aims to give students broad training in linguistics alongside their eventual specialization in one or more subfields.
A student's program of work in linguistics may be combined with supporting work in other areas: specific languages, anthropology, computer science, philosophy, or psychology.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Nicholas M. Asher
Aaron Bar-Adon
Megan J. Crowhurst
Nora C. England
Lisa J. Green
Ian F. Hancock
Robert T. Harms
Robert D. King
Jonas H. Kuhn
Peter F. MacNeilage

Richard P. Meier
Scott Myers
Bernhard Schwarz
Joel Sherzer
Carlota S. Smith
Harvey M. Sussman
Keith Walters
Stephen Wechsler
Anthony C. Woodbury
Qing Zhang

ADMISSION REQUIREMENTS
Admission to graduate work is not restricted to those who have a Bachelor of Arts degree with a major in linguistics. A number of other fields can also provide valuable preparation.

DEGREE REQUIREMENTS

Master of Arts
Candidates for the master's degree must complete thirty-three semester hours of coursework, submit a thesis or report for approval by a supervising committee, and fulfill the foreign language requirement.

The following coursework is required. A course used to fulfill requirement 1, 2, or 3 may not also be used to fulfill requirement 4, 5, or 6.

1. Linguistics 380K, 380L, and 381M.
2. Linguistics 381K or 381L.
3. One of the following: Linguistics 380M, 382.
5. For those who choose the report option, six additional semester hours in advanced graduate courses in linguistics; for those who choose the thesis option, three additional semester hours in advanced graduate courses in linguistics.
6. Six hours in a minor area.
7. Linguistics 398R or 698.

Language requirement. The student must have four semesters of coursework or equivalent proficiency in a language other than English or two semesters of coursework or equivalent proficiency in each of two languages other than English. This requirement may be fulfilled by courses completed concurrently with the graduate program; by courses completed previously, as certified by college transcript; or by other evidence of proficiency. The student must also have sufficient competence in oral and written English to complete all other degree requirements.
Doctor of Philosophy

Candidates for the doctoral degree in linguistics must complete the following courses: Linguistics 380K, 380L, 380M, 381K, 381L, 381M, 382, 397, and two courses from the following group: Linguistics 380S, 381S, 385, any one topic of 386M, 392 (Topic: Introduction to Language Acquisition), 393 (Topic: Introduction to Cognitive Science), and 393 (Topic 4: Neurolinguistics). The student must also complete eighteen semester hours of advanced courses, including the seminar required for candidacy, and nine hours of supporting work in a minor area.

Language requirement. The student must have four semesters of coursework or equivalent proficiency in a language other than English and two semesters of coursework or equivalent proficiency in a second language other than English. One language must be significantly different typologically from the student’s native language(s); the other must be a language that will increase the student’s access to the scholarly literature in his or her area of research. This requirement may be fulfilled by courses completed concurrently with the graduate program; by courses completed previously, as certified by college transcript; or by other evidence of proficiency. Students should consult the graduate adviser for more information about this requirement. The student must also have sufficient competence in oral and written English to complete all other degree requirements.

Admission to candidacy. To qualify for admission to candidacy for the doctoral degree, a student must submit a qualifying paper for approval by a faculty committee and must complete a seminar course in an area not related to his or her major area; the seminar course must require a paper. Information about this procedure is available from the graduate adviser. A student is expected to qualify for doctoral candidacy by the end of the sixth long-session semester in residence.

FOR MORE INFORMATION

Campus address: Calhoun Hall (CAL) 501, phone (512) 471-1701, fax (512) 471-4340; campus mail code: B5100

Mailing address: The University of Texas at Austin, Graduate Program, Department of Linguistics, 1 University Station B5100, Austin TX 78712

E-mail: linguistics@mail.utexas.edu

URL: http://www.utexas.edu/cola/depts/linguistics/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Linguistics: LIN

380J. Introduction to Applied Linguistics. Applying linguistics to practical questions: a representative sampling. Prerequisite: Graduate standing and Linguistics 380K and 380L.

380K. Phonology I. The descriptive techniques of generative phonology. Prerequisite: Graduate standing and Linguistics 381M.

380L. Syntax I. Prerequisite: Graduate standing.

380M. Semantics I. An introduction to formal logic and mathematical linguistics. Prerequisite: Graduate standing.
380S. Sociolinguistics. An introduction to sociolinguistic research, with attention to theoretical issues. Prerequisite: Graduate standing and Linguistics 380K and 380L.

381K. Phonology II. Readings and problems in current phonological theory. Prerequisite: Graduate standing and Linguistics 380K.

381L. Syntax II. Prerequisite: Graduate standing, and Linguistics 380L and 380M.

381M. Phonetics. Speech production and perception; acoustic phonetics; phonetics and phonology; experimental techniques. Prerequisite: Graduate standing.

381S. Phonology. Descriptive methods and theoretical tools for investigating meaning in human languages; an introduction to propositional content and speech acts. Prerequisite: Graduate standing and Linguistics 380L and 380M.

382. Historical Linguistics. The principles of language change, reconstruction of earlier stages, language contact, and language relatedness. Prerequisite: Graduate standing and Linguistics 380K.

383. Comparative and Diachronic Linguistics. The comparative method; applications to particular linguistic families. Includes a four-semester Indo-European sequence. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

384. Language Structures. Languages studied include Arabic, Chinese, English, Estonian, Finnish, Hebrew, Hindi, Japanese, Lapp, Persian, Swahili, Swedish, Telugu. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and twelve semester hours of upper-division coursework in linguistics.

385. Field Methods in Linguistic Investigation. Methods of research in phonological and grammatical description; work with informants in exotic languages. Prerequisite: Graduate standing and consent of instructor.

386M. Mathematical and Computational Linguistics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

387. Linguistics and Language Teaching. Same as Curriculum and Instruction 385G (Topic 6: Linguistics and Language Teaching). Designed primarily for participants in international education exchange programs. Application of the findings of linguistics to the teaching of languages. Prerequisite: Graduate standing and consent of instructor.

387P. Literacy. Prerequisite: Graduate standing and consent of instructor.

390. General Phonology. Introduction to phonetics and the basic principles of phonological theory. Prerequisite: Graduate standing.
391. **Topics in Descriptive Linguistics.** May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

   Topic 1: *Studies in English Phonology.* Additional prerequisite: Consent of instructor.

   Topic 2: *Studies in English Grammar.* Additional prerequisite: Consent of instructor.


392. **Current Developments in Linguistic Research.** A reading course in a selected area of linguistics. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor.


393. **Seminar in Linguistic Topics.** May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor.

   Topic 2: *Language Acquisition.*

   Topic 4: *Neurolinguistics.*

   Topic 6: *Speech Play and Verbal Art.* Same as Anthropology 393 (Topic 3: *Speech Play and Verbal Art*).

393P. **Topics in Phonology and Phonetics.** May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor.

   Topic 1: *Current Issues in Phonological Theory.*

   Topic 2: *Experimental Phonetics.*

393S. **Topics in Syntax and Semantics.** May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor.

   Topic 1: *Current Issues in Syntactic Theory.*

   Topic 2: *Current Issues in Semantic Theory.*

394K. **Philosophy of Language.** Same as Philosophy 394K. Only one of the following may be counted: Linguistics 393S (Topic: *Philosophy of Language*), 394K, Philosophy 391 (Topic: *Philosophy of Language*). **Prerequisite:** Graduate standing and consent of instructor.

395. **Conference Course in Linguistics.** Supervised research. May be repeated for credit. **Prerequisite:** Graduate standing and consent of instructor and the linguistics graduate adviser.

396. **Topics in Sociolinguistics.** Detailed investigation of an area of current interest in sociolinguistics. Most topics provide an opportunity for field research. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.


   Topic 2: *Introduction to Graduate Linguistic Anthropology.* Same as Anthropology 392N. Additional prerequisite: Consent of instructor.

   Topic 3: *Ethnography of Speaking.* Same as Anthropology 393 (Topic 8: *Ethnography of Speaking*). Additional prerequisite: Consent of instructor.

   Topic 4: *Turkic Cultures and Languages in Central Asia.* Same as Middle Eastern Studies 381 (Topic 26: *Turkic Cultures and Languages in Central Asia*). Linguistics 396 (Topic 4) and Middle Eastern Languages and Cultures 395 (Topic 3: *Turkic Cultures and Languages in Central Asia*) may not both be counted. Additional prerequisite: Consent of instructor.

   Topic 5: *Arabic Language: Sociolinguistic Perspective.* Same as Arabic 382C (Topic 1: *Arabic Language: Sociolinguistic Perspective*). Additional prerequisite: Consent of instructor.

   Topic 7: *Grammar of the Arabic Language.* Same as Arabic 382C (Topic 2: *Grammar of the Arabic Language*). Additional prerequisite: Arabic 412L and consent of instructor.

397. **Forum for Doctoral Candidates.** Offered on the credit/no credit basis only. **Prerequisite:** Graduate standing in linguistics and consent of instructor.

698. **Thesis.** The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. **Prerequisite:** For 698A, graduate standing in linguistics and consent of the graduate adviser; for 698B, Linguistics 698A.

398R. **Master’s Report.** Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. **Prerequisite:** Graduate standing in linguistics and consent of the graduate adviser.

398T. **Supervised Teaching in Linguistics.** Teaching under the close supervision of the course instructor; weekly group meetings with instructor, individual consultations, and reports throughout the teaching period. **Prerequisite:** Graduate standing and appointment as a teaching assistant.
399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Linguistics 399R, 699R, or 999R.

MEXICAN AMERICAN STUDIES

Master of Arts

FACILITIES FOR GRADUATE WORK

The Center for Mexican American Studies has over thirty affiliated faculty members from a variety of disciplines, making it one of the largest and most diverse centers of its kind. In addition to the expertise of the faculty, graduate students have access to the extensive resources of the Nettie Lee Benson Latin American Collection, the Mexican American Library Program, and the Harry Ransom Humanities Research Center. The University’s central Texas location also provides opportunities for field research within a rapidly growing Mexican American population across the Southwest, and for research in Mexico as well.

AREAS OF STUDY

Mexican American studies has emerged as a significant area of scholarship over the last three decades. The University has been at the forefront of this area under the leadership of faculty members such as George I. Sánchez, Carlos E. Castañeda, and the founder of the Center for Mexican American Studies, Américo Paredes. These scholars helped to define the discipline of Mexican American studies as academic work carried out from the perspective of the Mexican American experience. This work should raise new questions, formulate and explore new theories, and carry out empirical research that expands the understanding of a variety of fields, including social science, history, the humanities and arts, education, public and social policy, and the sciences. The objective of the master’s degree program in Mexican American studies is to prepare students for professional careers in which advanced knowledge about the Mexican American experience is crucial. In addition, graduates are prepared to pursue doctoral work in a related discipline at the University or in Mexican American studies at other institutions.

GRADUATE STUDIES COMMITTEE

The following faculty members are expected to serve on the Graduate Studies Committee in the fall semester 2005–2006:

Ricardo C. Ainslie
Lorenzo Candelaria
Norma V. Cantú
Richard R. Flores
Douglas E. Foley
Neil E. Foley
John M. González
Gloria González-López
Michele R. Guzmán
R. Rolando Hinojosa-Smith
David Leal
José E. Limón
Amelia Malagamba
Martha Menchaca
James R. Nicolopulos
Alba A. Ortiz
Yolanda C. Padilla
Deborah A. Paredes
Domino Renee Pérez
Manuel Ramirez III
Charles E. Ramírez-Berg
Pedro Reyes
América Rodriguez
Maggie Rivas-Rodríguez

5. Final approval of this degree program is pending.
ADMISSION REQUIREMENTS

Applicants must meet the minimum requirements for graduate study at the University. An admissions committee composed of Graduate Studies Committee members in Mexican American studies also evaluates applications, giving preference to candidates who demonstrate a strong academic background and a clear sense of the areas they wish to pursue through the master's degree program.

DEGREE REQUIREMENTS

Students pursuing the master's degree may choose one of two plans: Plan A, which requires thirty-three semester hours of coursework, including a thesis, or Plan B, which requires thirty-three semester hours of coursework, including two reports. The coursework may be chosen from a variety of fields of study but must have Mexican American studies content.

Students in both plans complete a three-hour foundational seminar in Mexican American studies. Students pursuing Plan A then complete fifteen hours of coursework in a major discipline and nine hours in a minor discipline. They must also complete six hours in the thesis course. Students pursuing Plan B must choose three disciplines and must complete at least six but no more than twelve hours of coursework in each discipline. They must also complete six hours in the report courses and six additional hours in the disciplines in which they write the reports.

Before completing the program, all students must demonstrate competence in written and/or oral Spanish by means approved by the Graduate Studies Committee.

FOR MORE INFORMATION

Campus address: West Mall Office Building (WMB) 5.102, phone (512) 471-4557, fax (512) 471-9639; campus mail code: F9200

Mailing address: The University of Texas at Austin, Graduate Adviser, Center for Mexican American Studies, 1 University Station F9200, Austin TX 78712

E-mail: cmas@uts.cc.utexas.edu

URL: http://www.utexas.edu/depts/cmas/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Mexican American Studies: MAS

382. Conference Course in Mexican American Studies. May be repeated for credit. Prerequisite: Graduate standing and consent of the graduate adviser.

390. Introduction to Mexican American Studies. An overview of Mexican American studies for graduate research. Prerequisite: Graduate standing.
**397R. Secondary Report.** Preparation of a report to be counted toward the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing in Mexican American studies and consent of the graduate adviser.

**698. Thesis.** The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. *Prerequisite:* For 698A, graduate standing in Mexican American studies and consent of the graduate adviser; for 698B, Mexican American Studies 698A.

**398R. Master's Report.** Preparation of a report to fulfill the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing in Mexican American studies and consent of instructor.

**398T. Supervised Teaching in Mexican American Studies.** Methods of teaching in Mexican American studies. Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing.

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**MIDDLE EASTERN STUDIES**

**Master of Arts (in Middle Eastern Studies)**

**Master of Arts (in Arabic Studies, Hebrew Studies, or Persian Studies)**

**Doctor of Philosophy (in Arabic Studies, Hebrew Studies, or Persian Studies)**

The Center for Middle Eastern Studies administers the master's degree in Middle Eastern studies. The Department of Middle Eastern Studies administers the master's and doctoral degree programs in Arabic studies, Hebrew studies, and Persian studies.

**FACILITIES FOR GRADUATE WORK**

University library holdings on the Middle East form one of the leading collections in North America. These include 150,000 volumes and 1,230 serial titles in Arabic, Hebrew, Persian, Turkish, Kurdish, Tajiki, and Azerbaijani, and more than 160,500 volumes in Western languages. This collection includes a comprehensive set of English-language reference works, general texts, basic monographs, and essential journals on the Middle East. Among the special collections are strong holdings on Shi'ism, Islamic jurisprudence, and Arabic and Persian literature; a set of Arabic manuscripts on the Yezidis of Yemen; a virtually complete set of Turkish and Azerbaijani periodicals that forms a unique national resource; and over 2,000 volumes of census records on Middle Eastern countries. The University Libraries has the largest collection of South African Jewish materials in the United States, both in belles lettres and periodicals. Electronic material supporting Middle Eastern studies is also extensive and includes the *Index Islamicus*; the *Encyclopedia of Islam*; *Records on Islam, Primary Documents, 1873–1926*; the *Encyclopaedia Judaica*; and the *Judaic Classics Library*. The Harry Ransom Humanities Research Center holds writers’ personal papers, including those of T.E. Lawrence, Paul Bowles, Freya Stark, Richard Burton, and others with a special Middle Eastern connection. The Ransom Center has significant holdings relating to Judaica, including the Isaac Bashevis Singer Archive, the Leon Uris Archive, and a portion of the literary archive of Bernard Malamud. Another unique collection is the Development Communication Archive, donated by the federal Agency for International Development, which includes 350 boxes of original records on issues ranging from agriculture and the environment to health and community development; about a quarter of the documents cover Middle Eastern projects. University faculty and students also have access to vast centralized resources such as the Center for Research Libraries in Chicago and the Yale University-sponsored OACIS project.
The Middle East Resource Center houses a collection of approximately four thousand English-language books and reference works, some twenty thousand slides, and hundreds of films and periodicals. Another important resource is UT-MENIC, the University of Texas Middle East Network Information Center, which provides a comprehensive directory of online information and links to hundreds of databases. The service, developed by the Center for Middle Eastern Studies, forms a major source of information now used widely throughout the world.

AREAS OF STUDY
The Center for Middle Eastern Studies offers the Master of Arts with a major in Middle Eastern studies, an interdisciplinary professional degree with a regional concentration on the Middle East. The degree is intended primarily for those preparing for a career in business, communication, government, information studies, law, the military, or community college teaching. There is a good deal of flexibility in meeting degree requirements; each student, in consultation with the graduate adviser, designs an individual program within the framework of the requirements described on page 389.

Students interested in a master’s degree in a single discipline with a concentration on the Middle East should contact the graduate adviser for that discipline; for example, the student might major in anthropology, art history, business, classics, comparative literature, economics, geography, government, history, linguistics, or sociology.

The Department of Middle Eastern Studies administers the degree programs in Arabic, Hebrew, and Persian. The master’s degree is offered in language, linguistics, and literature and in cultural studies in the student’s area of concentration. The doctoral degree is offered in Arabic language, linguistics, and literature; in Hebrew language, linguistics, literature, and biblical archaeology; and in Persian language and literature.

With the approval of the graduate adviser and the graduate dean, students may design special programs that include courses from outside the department that are related to their major area of study.

Graduate courses are offered in Arabic, Hebrew, Persian, and Turkish languages and literatures, Islamic and Jewish studies, and in the cultures of the Middle East. The study of these languages, literatures, and cultures may also be included in programs leading to master’s or doctoral degrees in other fields.

GRADUATE STUDIES COMMITTEES
The following faculty members served on the Graduate Studies Committees in the spring semester 2004–2005.

Middle Eastern Studies
Peter F. Abboud
Kamran S. Aghaie
Kamran Asdar Ali
Samer Ali
Aaron Bar-Adon
Persis Berlekamp
Karl W. Butzer
Mounira Charrad
Diana Davis
David J. Eaton
Yildiray Erdener
W. Parker Frisbie

George Gavrilis
Mohammad Ghanoonparvar
Kate Gillespie
Karen Grumberg
Barbara Jane Harlow
Geraldine Heng
Clement M. Henry
Michael C. Hillmann
Harold Alter Liebowitz
W. Roger Louis
Ian R. Manners
Abraham Marcus
Arabic Studies, Hebrew Studies, and Persian Studies

Peter F. Abboud
Kamran S. Aghaie
Kamran Asdar Ali
Samer Ali
Aaron Bar-Adon
Persis Berlekamp
Mounira Charrad
Diana Davis
David J. Eaton
Yildiray Erdener
Mohammad Ghanoonparvar
Kate Gillespie
Karen Grumberg
Barbara Jane Harlow
Clement M. Henry
Michael C. Hillmann
Harold Alter Liebowitz
W. Roger Louis
Ian R. Manners
Abraham Marcus
Mohammad A. Mohammad
Adam Zachary Newton
Esther L. Raizen
Faegheh Shirazi
Denise A. Spellberg
Keith Walters
Karin Wilkins
Avraham Zilkha

ADMISSION REQUIREMENTS

Master of Arts

Middle Eastern studies. The entering student must have a bachelor's degree from an accredited college or university. While the center admits students holding a variety of undergraduate degrees, previous academic work on the region and some proficiency in one of its languages is recommended.

Arabic studies. Participation in the program assumes a Bachelor of Arts in Arabic language and literature, or the equivalent. It requires a level of competence in Modern Standard Arabic (Fusḥā) that enables students to participate fully in courses conducted exclusively in Arabic: that is, proficiency of advanced or better in at least three of the four skills on a nationally recognized scale. Courses taken to make up undergraduate deficiencies may not be counted toward the degree.

Hebrew studies. Entering students should have a Bachelor of Arts in Hebrew language and literature, or the equivalent. Those who do not must take three undergraduate core courses (Hebrew 321, Hebrew Grammar, Hebrew 322, Introduction to Hebrew Literature, and Hebrew 325, Advanced Conversation and Composition), before taking graduate Hebrew courses. Entering students must also demonstrate a level of competence in Hebrew that enables them to participate fully in courses conducted exclusively in Hebrew: that is, proficiency of intermediate-mid or better in at least three of the four skills on a nationally recognized scale. For students planning to specialize in ancient Hebrew culture or biblical archaeology, the language requirement is determined by the Hebrew faculty and the graduate adviser. The undergraduate core courses may not be counted toward the degree.

Persian studies. Participation in the program assumes practical mastery of the modern Persian language. One year of Arabic is also required. Credit for coursework taken to make up language deficiencies and for any coursework in Persian that the student needs to develop reading competence may not be counted toward the degree.
Doctor of Philosophy
Participation in the doctoral degree program requires a master’s degree or the equivalent in the relevant area and language.

DEGREE REQUIREMENTS

Master of Arts

Middle Eastern studies. This program consists of at least thirty semester hours, including a six-semester-hour thesis; or at least thirty-three semester hours, including a three-semester-hour report. Under either option, all courses, including Middle Eastern Studies 698 or 398R, must have Middle Eastern content. The student must complete six semester hours in each of the following three areas: history, social sciences, and arts/humanities.

In addition, the student must complete four semesters of formal instruction, or the equivalent, in a Middle Eastern language; equivalent knowledge must be demonstrated by satisfactory performance on an examination. In either case, no credit toward the degree is earned by fulfillment of the language requirement. Students who are native speakers of a Middle Eastern language must fulfill this language requirement in a second Middle Eastern language.

Arabic studies. This program offers graduate training in Arabic language (Modern Standard Arabic and the classical language), linguistics, and literature; provides training in linguistic analysis, literary and cultural history, and literary criticism; and introduces research methods leading to independent investigation.

The Master of Arts with thesis requires thirty semester hours of coursework: eighteen hours of linguistics, literature, and Islamic studies; six hours of electives chosen in consultation with a faculty adviser; and six hours in the thesis course. No more than nine hours may be in upper-division courses. The thesis is normally written in English; under certain circumstances and with written consent of the graduate dean, it may be written in Arabic.

The Master of Arts with report requires thirty-three semester hours of coursework: twenty-one hours of linguistics, literature, and Islamic studies; nine hours of electives chosen in consultation with a faculty adviser; and three hours in the report course. No more than nine hours may be in upper-division courses. With special permission, the report may be written in Arabic.

Hebrew studies. This program offers graduate training in Hebrew language, linguistics, and literature (biblical, rabbinic, modern); Jewish thought; the culture of ancient and modern Israel; and biblical archaeology. The program trains students in research methods leading to independent investigation. To earn a master’s degree, students are expected to demonstrate a level of competence in Modern Hebrew of intermediate high or better on a nationally accepted proficiency scale. For students specializing in ancient Hebrew culture or biblical archaeology, the language requirement is determined by the Hebrew faculty and the graduate adviser. At least thirty semester hours of coursework are required, including a six-semester-hour thesis course. The thesis is normally written in English; under certain circumstances and with written consent of the graduate dean, it may be written in Hebrew.

Persian studies. This program offers graduate training in Persian language and literature. It provides exposure to major literary texts and genres and introduces research methods leading to independent work.
The Master of Arts with thesis requires thirty semester hours of coursework: (1) Persian 388, *Research Methods and Bibliography in Persian Studies*, (2) a seminar in Iranian history, (3) a seminar in Persian literature in translation, (4) a survey of Persian literature from 1921 to the present, (5) a survey a classical Persian poetry from 900 to 1500, (6) a course on a topic in modern Persian literature, (7) a course on a topic in Persian language and culture, (8) a three-semester-hour course in general literary criticism, and (9) a six-semester-hour thesis course. The requirements for the Master of Arts with report are the same, except that a relevant course with Iranian or Islamic studies content and the three-semester-hour report course replace the thesis course.

**Doctor of Philosophy**

The program is designed to increase the breadth and depth of the student’s knowledge and to develop his or her capacity for independent scholarly research. The courses required are determined by the student’s interests. For research purposes, reading knowledge in one or two languages is required in addition to the student’s language of concentration; another Middle Eastern language of relevance to the student’s research is expected. A period of study and research is recommended in a country where the language of concentration is used. To be admitted to candidacy for the degree, the student must pass a qualifying examination at a time approved by the graduate adviser.

An examination committee oversees the student’s progress and eventually administers a comprehensive examination. After passing this examination, the candidate sets up a dissertation committee with the help of the graduate adviser. This committee approves the dissertation proposal, guides the student in writing the dissertation, and administers the final oral defense. The dissertation is normally written in English; under certain circumstances and with the written consent of the graduate dean, it may be written in the language of concentration.

**Arabic studies and Hebrew studies.** Students choose between a specialization in literature and culture with supporting work in language and linguistics and a specialization in language and linguistics with supporting work in literature and culture. They normally take relevant courses in such fields as Islamic studies or Jewish studies, language pedagogy, and history and anthropology of the Middle East. Students who specialize in literature must take two courses in literary criticism; the culture track does not require these courses. Students who specialize in language and linguistics must take Linguistics 380K and 380L or their equivalents. Arabic studies students must have sufficient competence in Modern Standard Arabic (*Fiṣḥā*) to participate fully in courses conducted exclusively in Arabic and must pass a test to demonstrate the advanced proficiency needed to use scholarly publications and participate in scholarly activities in Arabic. Hebrew studies students must demonstrate the ability to read Hebrew scholarly publications and to participate in scholarly activities in Hebrew.

**Persian studies.** Students must take at least two years of Arabic and are expected to take two advanced courses in literary criticism through the Department of English or the program in comparative literature, as well as selected relevant area studies courses in such fields as art, history, and government.
DUAL DEGREE PROGRAMS

The Center for Middle Eastern Studies offers the following dual degree programs in cooperation with other divisions of the University. Each program allows the student to earn the Master of Arts with a major in Middle Eastern studies and a second master's degree simultaneously. Degrees are awarded when the student has completed the required work in both areas.

Students seeking admission to any dual degree program must apply to both programs through the Graduate and International Admissions Center and must be accepted by each individual program in order to be admitted to the dual program. Like all other graduate applicants, the student is responsible for submitting any additional information required by the Graduate Studies Committee for each program.

Students in each dual degree program are expected to demonstrate proficiency in Arabic, Hebrew, Persian, or Turkish equivalent to that shown by completion of two years of coursework. This requirement may be met either by coursework or by examination. Students who are native speakers of a Middle Eastern language must fulfill this language requirement in a second Middle Eastern language.

Master of Arts/Doctor of Jurisprudence

This dual degree program is offered by the School of Law and the Center for Middle Eastern Studies to combine the study of law with interdisciplinary area studies and language. It is one of the few programs in the United States designed to meet the need in both the public and the private sector for legal specialists with a thorough understanding of the economics, geography, history, politics, and culture of the Middle East and North Africa.

Students must complete 119 semester hours of coursework in law and Middle Eastern studies, including a three-hour report course based on original research and co-supervised by a faculty member from the School of Law and a faculty member from the Center for Middle Eastern Studies. During the first year, students must complete the normal first year of coursework at the School of Law. This must be done before they take any language courses or other courses on the Middle East. After the first year, students should arrange their schedules so that they complete the requirements of both degrees in the same semester. Generally, a student with the requisite language background can obtain both degrees in eight semesters. Students with no previous knowledge of a Middle Eastern language are advised to enroll in intensive language courses during the summer before they begin the dual degree program.

Master of Arts/Master of Arts with a Major in Journalism

The School of Journalism and the Center for Middle Eastern Studies offer a dual program that combines advanced communication studies with interdisciplinary area studies and language. It responds to a need in both the public and the private sector for communication specialists with a thorough understanding of the culture, economics, geography, history, and politics of the Middle East and North Africa.

The dual degree program is structured so that students can earn the two master's degrees simultaneously in approximately three academic years. Students must complete sixty-three semester hours of work in the School of Journalism and the Center for Middle Eastern Studies, including a thesis based on original research and co-supervised by a journalism and a Middle Eastern studies faculty member.

Students are encouraged to achieve the required level of language proficiency as early as possible. Those with no previous knowledge of a Middle Eastern language are advised to enroll in intensive language courses during the summer before they begin the dual degree program.
Master of Arts/Master of Arts with a Major in Radio-Television-Film
The Department of Radio-Television-Film and the Center for Middle Eastern Studies offer a dual program that combines advanced communication studies with interdisciplinary area studies and language. It responds to a need in both the public and the private sector for communication specialists with a thorough understanding of the culture, economics, geography, history, and politics of the Middle East and North Africa.

The dual degree program is structured so that students can earn the two master's degrees simultaneously in approximately three academic years. Students must complete sixty-three semester hours of work in the Department of Radio-Television-Film and the Center for Middle Eastern Studies, including a thesis based on original research and co-supervised by a radio-television-film and a Middle Eastern studies faculty member.

Students are encouraged to achieve the required level of language proficiency as early as possible. Those with no previous knowledge of a Middle Eastern language are advised to enroll in intensive language courses during the summer before they begin the dual degree program.

Master of Arts/Master of Business Administration
This dual degree program is offered with the McCombs School of Business. It is designed to provide students with the skills and perspective necessary to work effectively in business, particularly in its application to the contemporary Middle East.

Upon admission to this dual degree program, the student must pay a nonrefundable enrollment deposit to indicate that he or she accepts the offer of admission. The deposit serves to confirm the student's intention of enrolling in both programs and is applied to the payment of fees when the student enrolls. Students who demonstrate financial need may qualify for assistance to cover the deposit.

The dual degree program is structured so that students can earn the two master's degrees simultaneously in approximately three academic years. The student must complete sixty-nine hours of coursework in the McCombs School of Business and the Center for Middle Eastern Studies, including a professional report. Students are urged to complete the language requirement outlined on page 391 in the first two years of the program.

Master of Arts/Master of Public Affairs
This dual degree program is offered with the Lyndon B. Johnson School of Public Affairs. It combines advanced policy studies with interdisciplinary area studies, responding to a need in both the public and the private sector for policy specialists with a thorough understanding of Middle Eastern politics and cultures. The dual degree program is structured so that students can earn both master's degrees simultaneously in three academic years. Some students, particularly those who enter the program with a language deficiency, may need to enroll for an additional semester or summer session to complete all the requirements of the program. Students must complete at least sixty-nine semester hours in public affairs and Middle Eastern studies, including a master's report and summer internship. Although the program is flexible, students generally take courses in both public affairs and Middle Eastern studies every semester and take the internship in the summer between the second and third years. Students are urged to complete the language requirement in the first two years of the program.

392  Fields of Study
The curriculum includes twenty-one semester hours of required public affairs core courses, including Public Affairs 383C, 384C, 391, and 693; Public Affairs 682; three hours of elective coursework in public affairs; eighteen hours of required coursework in Middle Eastern studies, equally distributed among history, arts/humanities, and social sciences; six hours of elective coursework in Middle Eastern studies related to the student’s thesis; six hours of general electives; a summer internship in or related to the Middle East; and a master’s report on a Middle Eastern/public affairs topic.

Master of Arts/Master of Science in Information Studies

This program, offered in cooperation with the School of Information, combines study of the cultures and societies of the Middle East and North Africa with training in information studies.

The dual degree program is structured so that students can earn the two master’s degrees simultaneously in approximately three academic years. Students must complete at least seventy-three semester hours of coursework, including a professional report co-supervised by a faculty member from the School of Information and a faculty member from the Center for Middle Eastern Studies.

FOR MORE INFORMATION

Middle Eastern Studies

Campus address: West Mall Office Building (WMB) 6.102, phone (512) 471-3881, fax (512) 471-7834; campus mail code: F9400

Mailing address: The University of Texas at Austin, Graduate Program, Center for Middle Eastern Studies, 1 University Station F9400, Austin TX 78712

E-mail: cmes@menic.utexas.edu

URL: http://www.utexas.edu/cola/depts/mes/

Arabic Studies, Hebrew Studies, and Persian Studies

Campus address: West Mall Office Building (WMB) 6.102, phone (512) 471-3881, fax (512) 471-7834; campus mail code: F9400

Mailing address: The University of Texas at Austin, Graduate Program, Department of Middle Eastern Studies, 1 University Station F9400, Austin TX 78712

E-mail: dmes@uts.cc.utexas.edu

URL: http://www.utexas.edu/cola/depts/mes/
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Arabic: ARA

380C. Topics in Arabic Language. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Arabic Readings and Grammar I. Additional prerequisite: Arabic 412L or the equivalent.

Topic 2: Arabic Readings and Grammar II. Additional prerequisite: Arabic 380C (Topic 1: Arabic Readings and Grammar I) or the equivalent.

Topic 3: Advanced Readings in Arabic I. Additional prerequisite: Arabic 380C (Topic 2: Arabic Readings and Grammar II) or the equivalent.

Topic 4: Advanced Readings in Arabic II. Additional prerequisite: Arabic 380C (Topic 3: Advanced Readings in Arabic I) or the equivalent.

Topic 5: Levantine Arabic I. Additional prerequisite: Arabic 412L or the equivalent and consent of instructor.

Topic 6: Levantine Arabic II. Additional prerequisite: Arabic 380C (Topic 5: Levantine Arabic I).

Topic 7: Reading Islamic Texts in Arabic. Additional prerequisite: Arabic 320L and 382 (Topic 2: Grammar of the Arabic Language) or 382 (Topic 5: The Qur'an: A Linguistic Analysis).

382C. Topics in Arabic Linguistics and Philology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.


Topic 3: Arab Grammarians. Additional prerequisite: Arabic 380C (Topic 2: Arabic Readings and Grammar II) or the equivalent.


Topic 5: The Qur'an: A Linguistic Analysis. Additional prerequisite: Arabic 380C (Topic 2: Arabic Readings and Grammar II) or the equivalent, or consent of instructor.

383C. Topics in Arabic Language Teaching, Pedagogy, and Applied Linguistics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing. Arabic 412L or the equivalent, and consent of instructor.

384C. Topics in Arabic Literature. For a list of courses offered under this course number, consult each semester’s Course Schedule. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, Arabic 320L or the equivalent, and consent of instructor.

387. Topics in Arab Culture. May be repeated for credit when the topics vary. Prerequisite: Graduate standing. Arabic 320L or the equivalent, and consent of instructor.

388. Research Methods and Bibliography in Arabic Studies. Arabic classical and modern sources on a variety of subjects, as well as modern scholarship in Arabic studies both in the West and in the Arab world. Prerequisite: Graduate standing, Arabic 412L or the equivalent, and consent of instructor.

389. Conference Course in Arabic Studies. Supervised individual study of selected problems in Arabic studies. May be repeated for credit when the subject matter varies. Prerequisite: Graduate standing. Arabic 412L or the equivalent, and consent of instructor.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in Arabic studies and consent of the graduate adviser; for 698B, Arabic 698A.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in Arabic studies and consent of the graduate adviser.
**Middle Eastern Studies: MES**

**380. International Business Fellows Seminar.** Same as Asian Studies 391 (Topic 6: International Business Fellows Seminar); Latin American Studies 381 (Topic 8: International Business Fellows Seminar); and Russian, East European, and Eurasian Studies 380. Multidisciplinary seminar for students in area studies, business administration, law, and public policy. The faculty includes both academics and business leaders. Offered on the letter-grade basis only. International Business 395 (Topic: International Business Fellows Seminar) and Middle Eastern Studies 380 may not both be counted. Prerequisite: Graduate standing.

**381. Seminar in Middle Eastern Civilizations and Cultures.** Advanced studies of various aspects of the civilizations and cultures of the Middle East and North Africa. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

**380C. Topics in Hebrew and Related Semitic Languages.** May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 2: Advanced Readings in Modern Hebrew.

Topic 3: Dead Sea Scrolls: Language and Literature.

Topic 4: Biblical Aramaic. Hebrew 380C (Topic 4) and Linguistics 393 (Topic 7: Biblical Aramaic) may not both be counted.

Topic 5: Mishnaic Hebrew/Talmud Aramaic.


**382C. Topics in Hebrew Linguistics and Philology and Related Semitics.** May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Biblical Hebrew Grammar.

**384C. Topics in Hebrew Literature.** May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 2: Contemporary Israeli Fiction.

**385. Hebrew Literature in Translation.** May be repeated for credit when the topics vary, but no more than six hours may be counted toward the Master of Arts in Hebrew studies or the Doctor of Philosophy in Hebrew studies. Prerequisite: Graduate standing.

Topic 1: Post-Zionist Perspectives in Israeli Literature and Film. Israeli literature and cinema through the context of the historical, cultural, and artistic movement known as post-Zionism.

**389. Conference Course in Hebrew Studies.** Supervised individual study of selected problems in Hebrew studies. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

**698. Thesis.** The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in Hebrew studies and consent of the graduate adviser; for 698B, Hebrew 698A.

**399R, 699R, 999R. Dissertation.** Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

**399W, 699W, 999W. Dissertation.** Offered on the credit/no credit basis only. Prerequisite: Arabic 399R, 699R, or 999R.
Topic 26: Turkic Cultures and Languages in Central Asia. Same as Linguistics 396 (Topic 4: Turkic Cultures and Languages in Central Asia), Middle Eastern Languages and Cultures 395 (Topic 3: Turkic Cultures and Languages in Central Asia) and Middle Eastern Studies 381 (Topic 26) may not both be counted. Additional prerequisite: Consent of instructor.


Topic 29: Environment and Development in the Middle East. Same as Geography 383C (Topic 2: Environment and Development in the Middle East). Topic 30: Language and Politics in Language Planning. Same as Curriculum and Instruction 385G (Topic 7: Language and Politics in Language Planning). Only one of the following may be counted: Linguistics 396 (Topic 5: Language and Politics in Language Planning), Middle Eastern Languages and Cultures 395 (Topic 4: Language and Politics in Language Planning), Middle Eastern Studies 381 (Topic 30). Additional prerequisite: Consent of instructor.

Topic 31: Mapping the Middle East. Same as Geography 381C. Ways in which the Middle East is and has been represented cartographically. Cartographic representations of the region during the fifteenth and sixteenth centuries; the nature and evolution of a distinctive Islamic cartographic tradition; the role and use of maps during the nineteenth and twentieth centuries both in the extension of colonialism and in the creation of modern states; and the contemporary use, applications, and implications of geographic information systems in organizing and representing data spatially. Additional prerequisite: Consent of instructor.

Topic 32: The Jordan River Basin after the Peace Agreements. Additional prerequisite: Consent of instructor.

Topic 33: Translation: Theory, History, and Practice. Only one of the following may be counted: Linguistics 393 (Topic 5: Translation: Theory, History, and Practice), Middle Eastern Languages and Cultures 391 (Topic 1: Translation: Theory, History, and Practice), Middle Eastern Studies 381 (Topic 33). Additional prerequisite: Consent of instructor.


Topic 35: Women in Islamic Societies. Same as Asian Studies 391 (Topic 7: Women in Islamic Societies) and History 382N (Topic 2: Women in Islamic Societies). Only one of the following may be counted: Asian Studies 380T (Topic: Women in Islamic Societies), History 388K (Topic: Women in Islamic Societies), Middle Eastern Studies 381 (Topic 35).

Topic 36: Business in Emerging Markets. Same as Latin American Studies 381 (Topic 21: Business in Emerging Markets). Only one of the following may be counted: Latin American Studies 381 (Topic: Business in Developing Countries), Middle Eastern Studies 381 (Topic 36), 381 (Topic: Business in Developing Countries).


Topic 38: Music Cultures of the Middle East: Past and Present.

382. Conference Course. Individual research on various aspects, periods, civilizations, and cultures of the Middle East and North Africa. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

390. Topics in Islamic Studies. May be repeated for credit when the topics vary. Middle Eastern Languages and Cultures 390 and Middle Eastern Studies 390 may not both be counted unless the topics vary. Prerequisite: Graduate standing.

392. Topics in Judaic Studies. May be repeated for credit when the topics vary. Middle Eastern Languages and Cultures 392 and Middle Eastern Studies 392 may not both be counted unless the topics vary. Prerequisite: Graduate standing.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in Middle Eastern studies and consent of the graduate adviser; for 698B, Middle Eastern Studies 698A.
398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in Middle Eastern studies and consent of the graduate adviser.

398T. Supervised Teaching in Middle Eastern Studies. Teaching under the close supervision of a faculty member; weekly group meetings with the instructor, individual consultation, and reports throughout the teaching period. Prerequisite: Graduate standing and appointment as a teaching assistant or assistant instructor.

Persian: PRS

380C. Topics in Persian Language. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and six semester hours of upper-division coursework in Persian or consent of instructor.

382C. Topics in Persian Linguistics and Philology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in Persian studies.

384C. Topics in Persian Literature. Study of various aspects and periods of Persian language and literature. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, three semester hours of upper-division coursework in Persian, and consent of instructor.

Topic 1: Ferdowsi’s Shâhnâmeh.
Topic 2: Sa’di’s Golestân.
Topic 4: Sadeq Hedayat and Twentieth-Century Persian Prose Fiction.
Topic 5: Forugh Farrokhzad and Modernist Persian Poetry.
Topic 6: Iranian Women Writers.
Topic 7: Persian Prose Nonfiction, Past and Present.
Topic 9: Iranian Drama.
Topic 10: Iranian Film and Fiction. Same as Middle Eastern Studies 381 (Topic 7: Iranian Film and Fiction). Persian 361 (Topic 5: Iranian Film and Fiction) and 384C (Topic 10) may not both be counted.

388. Research Methods and Bibliography in Persian Studies. Prerequisite: Graduate standing in Persian studies.

389. Conference Course in Persian Studies. Supervised individual study of selected problems in Persian studies. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in Persian studies and consent of the graduate adviser; for 698B, Persian 698A.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in Persian studies and consent of the graduate adviser.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Persian 399R, 699R, or 999R.

Turkish: TUR

380. Topics in Turkish Language and Literature. Study of various aspects or eras of Turkish language and literature. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and Turkish 412L or the equivalent.

389. Conference Course in Turkish Studies. Supervised individual study of selected problems in Turkish studies. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

390K. Advanced Turkish I. Intermediate to high-level Turkish in four basic language skills: speaking, listening, reading, and writing. Turkish culture. Prerequisite: Graduate standing, and Turkish 412L or the equivalent.

390L. Advanced Turkish II. Continuation of Turkish 390K. Prerequisite: Graduate standing, and Turkish 390K or the equivalent.
PHILOSOPHY

Master of Arts
Doctor of Philosophy

AREAS OF STUDY

The Department of Philosophy offers areas of concentration across the discipline and offers special programs in cooperation with other departments: (1) ancient philosophy, with the Department of Classics; (2) history and philosophy of science, with the Department of History; and (3) philosophy and cognitive science, with the Departments of Linguistics, Psychology, and Computer Sciences. For descriptions of these programs, students should consult the graduate adviser, Department of Philosophy.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Edwin B. Allaire
Ignazio Angelelli
Nicholas M. Asher
George Bealer
Daniel A. Bonevac
Robert S. Boyer
David Braybrooke
J. Budziszewski
Robert Louis Causey
Jonathan P. Dancy
John Deigh
Joshua Dever
R. J. Hankinson
Kathleen M. Higgins
Herbert I. Hochberg
Cory Juhl
Robert Hilary Kane
Robert Charles Koons
Frederick M. Kronz
Brian Leiter
Aloysius P. Martinich
Alexander P. D. Mourelatos
Stephen H. Phillips
R. Mark Sainsbury
Sahotra Sarkar
Thomas K. Seung
Tara Smith
Robert C. Solomon
E. David Sosa
Michael Tye
Stephen A. White
Paul B. Woodruff

DEGREE REQUIREMENTS

Master of Arts

The master's degree program with report requires completion of Philosophy 384F and 398R; twenty-one additional semester hours of graduate coursework in philosophy; and six hours of upper-division or graduate coursework in a supporting subject. The master's degree program with thesis requires completion of twenty-four hours of graduate coursework in philosophy, including Philosophy 698; and six hours of upper-division or graduate coursework in a supporting subject.

Doctor of Philosophy

In addition to the general requirements given in chapter 3, the requirements for the doctoral degree are as follows:

1. Philosophy 384F and 389, completed in the first year of graduate study.
2. A graduate course in each of the following: history of philosophy (any period up to or including Kant), metaphysics and epistemology, and ethics.
3. Philosophy 398T, a one-semester teaching internship.
4. Five additional graduate courses in philosophy.
5. Demonstration of proficiency in a foreign language. The required level of proficiency is demonstrated by having completed four semesters of coursework or passing an equivalent examination.
6. Three courses of supporting work.
7. Completion and defense of a dissertation prospectus, by the end of the third year.

FOR MORE INFORMATION

Campus address: Waggener Hall (WAG) 329, phone (512) 471-6093, fax (512) 471-4806; campus mail code: C3500
Mailing address: The University of Texas at Austin, Graduate Program, Department of Philosophy, 1 University Station C3500, Austin TX 78712
E-mail: jilljg@mail.utexas.edu
URL: http://www.utexas.edu/cola/depts/philosophy/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three hours a week for one semester.

Philosophy: PHL

380. Contemporary Philosophy. Past topics include pragmatism; postmodernism; contemporary Marxism; critical theory. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

381. History of Philosophy. Past topics include major figures and movements in ancient, medieval, early modern, and nineteenth- and twentieth-century philosophy. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

382. Metaphysics. Past topics include basic issues in metaphysics; particulars and universals; identity and individuation; realism and antirealism; mind-body issues. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

383. Theory of Knowledge. Past topics include basic issues in epistemology; theories of belief and rationality; justification and truth. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.


384F. First-Year Seminar. Central problems in philosophy. Prerequisite: Graduate standing in philosophy, or graduate standing and consent of the graduate adviser.

384K. The Analytic Tradition. A selective examination of works by major figures such as Frege, Moore, Russell, and Wittgenstein. Prerequisite: Graduate standing.
385. Theory of Value. Past topics include basic issues in value theory; the objectivity of value; literature and philosophy; philosophy of art; literary criticism. May be repeated for credit when the topics vary. 
Prerequisite: Graduate standing and consent of the graduate adviser.

386. Philosophy of Science. Past topics include basic issues in the philosophy of science; theories and explanations; philosophy of quantum mechanics; philosophy of the social sciences. May be repeated for credit when the topics vary. 
Prerequisite: Graduate standing and consent of the graduate adviser.

387. Ethical, Political, and Legal Philosophy. Past topics include contemporary ethical theory; theories of justice; philosophy of law; social contract theories; political philosophy. May be repeated for credit when the topics vary. 
Prerequisite: Graduate standing and consent of the graduate adviser.

388. Conference Course. Mainly a reading course in the works of classical and modern philosophers. The equivalent of three lecture hours a week for one semester. May be repeated for credit. 
Prerequisite: Graduate standing and consent of the graduate adviser.

388C. Conference Course. Mainly a reading course for development of a dissertation prospectus. The equivalent of three lecture hours a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. 
Prerequisite: Graduate standing and consent of the graduate adviser.

389. Logic. Rigorous definitions of syntax and semantics. Proofs of soundness and completeness of sentential and predicate logics; other topics in metatheory. May include extensions of and alternatives to classical logic. Philosophical significance of logic and metalogical results. May be repeated for credit when the topics vary. 
Prerequisite: Graduate standing and consent of the graduate adviser.

391. Logic and Philosophy. Past topics include identity and substitutivity; philosophy of logic; discourse representation. May be repeated for credit when the topics vary. 
Prerequisite: Graduate standing and consent of the graduate adviser.

394K. Philosophy of Language. Same as Linguistics 394K. Only one of the following may be counted: Linguistics 393S (Topic: Philosophy of Language), Philosophy 391 (Topic: Philosophy of Language), 394K. 
Prerequisite: Graduate standing and consent of instructor.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. For 698A, graduate standing in philosophy, twelve semester hours of upper-division or graduate coursework in philosophy, and consent of the graduate adviser; for 698B, Philosophy 698A.

398R. Master's Report. Preparation of a report to fulfill the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. 
Prerequisite: Graduate standing in philosophy and consent of the graduate adviser.

398T. Supervised Teaching in Philosophy. Teaching experience developed through an apprentice relationship between student and faculty member. Offered on the credit/no credit basis only. Students may register for this course as many as four times, but only three semester hours of credit in this course may be applied toward a graduate degree. 
Prerequisite: Graduate standing and consent of the graduate adviser.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. 
Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. 
Prerequisite: Philosophy 399R, 699R, or 999R.
PSYCHOLOGY

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

The Department of Psychology is located in the Sarah M. and Charles E. Seay Building. Except for laboratories in behavioral neuroscience, which are housed in the Animal Resources Center across the street, the Seay Building houses all the activities of the department. State-of-the-art computer networking is integrated into the building; there are computer facilities, computerized laboratories, and technological support for students and faculty members. Laboratory facilities include environmental control of sound, light, and temperature, with vibration-free areas for auditory and vision research. A number of specialized research centers are located in the building, including the Children's Research Laboratory, the Institute for Neuroscience, the Center for Perceptual Systems, the Human Factors Research Project, the Center for Cognitive Science, the Laboratory for the Study of Anxiety Disorders, the Female Sexual Psychophysiology Laboratory, and the Clinical Training Clinic.

Graduate students and faculty members in the Department of Psychology participate in research programs with graduate students and faculty members in the graduate program in human development and family sciences, also housed in the Seay Building, and in many other fields, including biological sciences, communication, computer sciences, educational psychology, kinesiology, linguistics, pharmacy, and sociology. The Hogg Foundation for Mental Health and the Waggoner Center for Alcohol and Addiction Research provide additional collaborative opportunities.

AREAS OF STUDY

Graduate work is offered in the following areas of specialization: behavioral neuroscience; sensory neuroscience; cognition and perception; clinical psychology; developmental psychology; individual differences and evolutionary psychology; and social and personality psychology. Students are admitted for graduate work in one of these areas. The program in clinical psychology has been approved by the Committee on Accreditation of the American Psychological Association.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Duane G. Albrecht
Adriana A. Alcantara
Christopher G. Beevers
Rebecca Bigler
Clarke A. Burnham
Arnold H. Buss
David M. Buss
Caryn L. Carlson
Leslie B. Cohen
Lawrence K. Cormack
David P. Crews
Yvon Delville
Randy L. Diehl
Michael P. Domjan
Catharine H. Echols

Kim Fromme
Wilson S. Geisler III
David L. Gilden
Francisco Gonzalez-Lima
Samuel D. Gosling
Robert L. Helmreich
Charles J. Holahan
George W. Holden
Aletha C. Huston
Ted L. Huston
Theresa Jones
Robert A. Josephs
Judith H. Langlois
Marc S. Lewis
Norman P. Li
DEGREE REQUIREMENTS

Master of Arts

The graduate program in psychology is designed primarily to lead to the degree of Doctor of Philosophy. Students intending to earn the doctoral degree may enroll for the Master of Arts with special permission. The department's requirements for the Master of Arts include the first statistics course and the core courses listed below, plus fulfillment of the general requirements of the Graduate School. A thesis is required.

Doctor of Philosophy

Graduate training in the Department of Psychology is flexible, and every effort is made to permit students to take courses that fit their own interests and goals. Thus, individual students may engage in considerable work in computer sciences, biology, sociology, mathematics, or other fields. All graduate students must complete at least two advanced statistics courses, one to be taken during the first year, and four core courses, including at least one in each of the following core topics: (1) physiological psychology, principles of neuroscience, learning and motivation; (2) perception, cognition, cognitive development; and (3) abnormal psychology, individual differences and evolutionary psychology, social psychology, personality psychology, social and personality development. Two core courses must be taken the first year; the remaining requirements must be fulfilled during the first three years.

Students are formally evaluated by the entire faculty at the end of the first year. This evaluation is based on the student's performance in the first-year core courses and other coursework, demonstration of research aptitude, and, when appropriate, potential for professional competence. In subsequent years, students are expected to demonstrate competence in their area of specialization, develop research skills, and, when appropriate, develop professional skills. Each of the areas has established criteria for evaluating student performance.

The department's general requirements for the doctoral degree include completion of the core courses and other appropriate courses, completion of area requirements, and preliminary and final oral examinations related to a dissertation that gives evidence of the student's ability to carry out independent investigation in the major field. Clinical students are also expected to complete an internship and to demonstrate ultimate suitability for the practice of professional psychology. Further information about requirements for the doctoral program is available from the graduate adviser and the heads of the areas of specialization.
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Psychology: PSY

380C. Human Neuropsychology. Basic issues in normal and abnormal human brain function reviewed with emphasis on disorders of higher cerebral functioning. Prerequisite: Graduate standing, and Psychology 383C or consent of instructor.

380D. Neuropsychological Assessment. Diagnostic neuropsychological testing procedures, including techniques for evaluating motor, sensory, memory, language, and higher cortical functions. Three lecture hours a week for one semester, with three practicum hours to be arranged. Prerequisite: Graduate standing and Psychology 380C.

380E. Vision Systems. Introduction to the anatomy, physiology, and psychophysics of human vision from an information-processing and computational perspective. Neuroscience 380E and Psychology 380E may not both be counted. Prerequisite: Graduate standing and consent of instructor.

382K. Internship in Clinical Psychology. Application of psychological principles, methods of measurement, and clinical procedures within the area of personality; systematic study and investigations. Practicum hours to be arranged. May be repeated for credit. Prerequisite: Admission to candidacy for the doctoral degree in clinical psychology.

382T. Principles of Neuroscience: Cellular and Molecular Neuroscience. A proseminar covering the core material on essential topics in neuroscience from the molecular to the systems level. Only one of the following may be counted: Biology 381C, Kinesiology 382T, Neuroscience 382T, Pharmacy 382T, Psychology 382T, Zoology 382T. Prerequisite: Graduate standing, consent of instructor, and concurrent enrollment in Neuroscience 185.

383C. Functional Neuroanatomy. An examination of the anatomy of the brain and spinal cord, emphasizing connections and functions of neural systems. Neuroscience 383C and Psychology 383C may not both be counted. Prerequisite: Graduate standing and consent of instructor.

383M. Fundamentals of Physiological Psychology. Survey of important theories and research in physiological psychology, with emphasis on current problems. A core course option. Prerequisite: Graduate standing and consent of instructor.

383T. Principles of Neuroscience: Systems and Behavioral Neuroscience. A proseminar covering the core material on essential topics in neuroscience from the molecular to the systems level. Only one of the following may be counted: Biology 381D, Kinesiology 383T, Neuroscience 383T, Pharmacy 383T, Psychology 383T, Zoology 383T. Prerequisite: Graduate standing, consent of instructor, and concurrent enrollment in Neuroscience 186.

384K. Advanced Statistics: Experimental Design. Consideration of problems of analysis and design commonly encountered in psychological research. Prerequisite: Graduate standing, an undergraduate statistics course, and consent of instructor.

384M. Advanced Statistics: Inferential. Same as Neuroscience 384M. Covers t-test, chi-square, analysis of variance, and nonparametric tests. Prerequisite: Graduate standing, an undergraduate statistics course, and consent of instructor.
385N. Fundamentals of Personality Psychology. Survey of important theories and research in personality psychology, with emphasis on current problems. A core course option. Prerequisite: Graduate standing and consent of instructor.

385P. Fundamentals of Social Psychology. Survey of important theories and research in social psychology, with emphasis on current problems. A core course option. Prerequisite: Graduate standing and consent of instructor.

386N. Fundamentals of Psycholinguistics. Survey of important theories and research in psycholinguistics, with emphasis on current problems. A core course option. Prerequisite: Graduate standing and consent of instructor.

387N. Fundamentals of Perception. Overview of theory and research in visual perception and perceptual information processing. A core course option. Prerequisite: Graduate standing and consent of instructor.

387R. Fundamentals of Cognition. Review of theories and empirical research on pattern recognition, attention, memory, imagery, and problem solving. A core course option. Prerequisite: Graduate standing and consent of instructor.

388D. Individual Differences and Evolutionary Psychology. Differences among individuals in abilities, motives, and personality: their measurement, their genetic and environmental sources, and their societal implications. Neuroscience 388D and Psychology 388D may not both be counted. A core course option. Prerequisite: Graduate standing and consent of instructor.

388K. Conference on Special Topics. Readings, conferences, and other work on individually selected topics. Conference course. May be repeated for credit. Prerequisite: Graduate standing and twelve semester hours of upper-division coursework in psychology. Students must sign up in the Department of Psychology Graduate Office prior to registering.

389K. Theory and Techniques of Assessment I. Diagnostic interviewing, observational methods, case study methods; introduction to diagnostic testing procedures and projective techniques. Three lecture hours a week for one semester, with three to six hours of supervision to be arranged. Prerequisite: Graduate standing and approval of the committee on admission to clinical training.

389L. Theory and Techniques of Assessment II. Advanced diagnostic testing procedures; Rorschach, Thematic Apperception Test, and related techniques; special diagnostic devices. Three lecture hours a week for one semester, with three to six hours of supervision to be arranged. Prerequisite: Graduate standing and Psychology 389K.

190, 290, 390. Research. Individual research. May be repeated for credit. Prerequisite: Graduate standing and twelve semester hours of upper-division coursework in psychology. Students must sign up in the Department of Psychology Graduate Office prior to registering.

391N. Learning and Memory. Presentation and analysis of recent and current theoretical developments in learning and motivation. A core course option. Prerequisite: Graduate standing and consent of instructor.

391P. Design, Measurement, and Analysis. Selected topics on the design and analysis of psychological research. Prerequisite: Graduate standing and consent of instructor.

391R. Psychometrics. The theory underlying testing and test construction, and the application of that theory. Prerequisite: Graduate standing, Psychology 384M or the equivalent, and consent of instructor.

392N. Fundamentals of Comparative Psychology. History and current status of comparative psychology, emphasizing several biological disciplines, including behavior genetics, ethology, evolutionary biology, and sociobiology. A core course option. Prerequisite: Graduate standing and consent of instructor.

393. Clinical Practicum I. Supervised practical experience in the use of clinical techniques. Three lecture hours a week for one semester, with ten to twelve hours of practicum experience to be arranged. Prerequisite: Graduate standing, Psychology 389K, and consent of instructor.

393K. Clinical Practicum II. Continuation of supervised practical experience in the use of clinical techniques. Three lecture hours a week for one semester, with ten to twelve hours of practicum experience to be arranged. Prerequisite: Graduate standing, Psychology 393, and consent of instructor.

394K. Fundamentals of Social and Personality Development. Survey of important theories, issues, and research in social and personality development. A core course option. Prerequisite: Graduate standing and consent of instructor.

394N. Fundamentals of Cognitive Development. Survey of important theories, issues, and research in the development of perception, language, and cognition. A core course option. Prerequisite: Graduate standing and consent of instructor.
394P. Seminars in Behavioral Neuroscience and Biopsychology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.
Topic 1: Current Topics in Behavioral Neuroscience. Brain-behavior relationships, particularly recent research in behavioral neuroscience, including the anatomical and neurochemical mechanisms of behavioral events, and behavioral influences on the brain. Offered on the credit/no credit basis only. Neuroscience 394P (Topic: Current Topics in Behavioral Neuroscience) and Psychology 394P (Topic 1) may not both be counted.
Topic 2: Clinical Psychopharmacology. Recent findings concerning the mechanisms of action and the behavioral effects of psychoactive drugs, particularly those used in psychiatry. Various drug types (such as sedative-hypnotics, hallucinogens, and drugs used to treat depression, schizophrenia, Parkinson's disease, and anxiety) and pathways in the brain are discussed to examine the neurochemical basis of psychiatric disorders and substance abuse. Neuroscience 394P (Topic 2: Clinical Psychopharmacology) and Psychology 394P (Topic 2) may not both be counted.
Topic 3: Neurobiology of Learning and Memory. Neuroanatomical systems that are functionally related to basic forms of learning and memory in mammals. Neuroscience 394P (Topic 3: Neurobiology of Learning and Memory) and Psychology 394P (Topic 3) may not both be counted.
Topic 4: Animal Communication.
Topic 7: Advanced Topics in Neuroanatomy. Neuroanatomical systems that are functionally related to basic forms of neuroanatomy in mammals. Neuroscience 394P (Topic 4: Advanced Topics in Neuroanatomy) and Psychology 394P (Topic 7) may not both be counted.

394Q. Seminars in Clinical Psychology. One or three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.
Topic 1: Current Topics in Clinical Psychology. Offered on the credit/no credit basis only.
Topic 2: Psychopathology II.
Topic 4: Advanced Practicum in Clinical Psychology.
Topic 5: Human Neuropsychology II.
Topic 8: Assessment Practicum I. Offered on the credit/no credit basis only.
Topic 9: Assessment Practicum II. Offered on the credit/no credit basis only.

394S. Seminars in Developmental Psychology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.
Topic 1: Current Topics in Developmental Psychology. Offered on the credit/no credit basis only.
Topic 2: Children's Racial/Gender Schemata.
Topic 3: Literacy Acquisition.
Topic 4: Psychological Processes in Family Violence.
Topic 5: Language and Conceptual Development.
Topic 7: Professional Issues in Academia.

394T. Seminars in Individual Differences and Evolutionary Psychology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.
Topic 1: Current Topics in Cognition and Perception. Offered on the credit/no credit basis only.
Topic 2: History of Psychology.
Topic 4: Cognition.
Topic 5: Psychoacoustics. Anatomy and physiology of the peripheral auditory system; behavioral measures of auditory performance-masking, sound localization, pitch and loudness perception, temporary and permanent hearing loss. Only one of the following may be counted: Communication Sciences and Disorders 394K (Topic 2: Psychoacoustics), Neuroscience 394U (Topic 1: Psychoacoustics), Psychology 394U (Topic 5).
Topic 6: Memory.
Topic 7: Speech Perception.
Topic 8: Topics in Vision and Hearing. Current research in human vision and/or hearing. Neuroscience 394U (Topic 2: Topics in Vision and Hearing) and Psychology 394U (Topic 8) may not both be counted.
Topic 9: Visual Perception. Offered on the credit/no credit basis only.
394V. Seminars in Social and Personality Psychology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Current Topics in Social and Personality Psychology. Offered on the credit/no credit basis only.

Topic 3: Cross-Cultural Psychology.
Topic 4: Individualism and Collectivism.
Topic 6: The Self.
Topic 7: Social Stereotypes.

396. Advanced Behavior Pathology. Evaluation of the experimental and theoretical literature concerning major behavioral disorders. A core course option. Prerequisite: Graduate standing and consent of instructor.

396C. Child and Adolescent Psychopathology. The epidemiology, etiology, associated features, developmental course, and prognosis of childhood and adolescent behavior disorders. A core course option. Prerequisite: Graduate standing and consent of instructor.

396D. Clinical Psychopharmacology. Same as Neuroscience 396D. Recent findings concerning the mechanism of action and the behavioral effects of psychoactive drugs, particularly those used in psychiatry. Prerequisite: Graduate standing and consent of instructor.

397L. Mental Health and Human Service Systems. Consideration of current mental health theories and practices; problems of criteria, pertinent research areas, and experimental designs. The equivalent of three lecture hours a week for one semester. Prerequisite: Graduate standing in psychology or a related discipline, and consent of instructor.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in psychology, twelve semester hours of upper-division or graduate coursework in psychology, and consent of the graduate adviser; for 698B, Psychology 698A.

398T. Supervised Teaching in Psychology. Teaching under close supervision of course instructor for two semesters; weekly meetings of two to four hours during the semester; individual consultation and reports throughout the teaching period. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and appointment as a teaching assistant.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Psychology 399R, 699R, or 999R.

RELIGIOUS STUDIES

180. Proseminar. An introduction to the research methodology and ancillary disciplines used in current religious studies. One lecture hour a week for one semester. May be repeated for credit when the topics vary. Offered on the credit/no credit basis only. Prerequisite: Graduate standing.

381. Conference Course in Religious Studies. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

383. Topical Seminars. Three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.
RUSSIAN, EAST EUROPEAN, AND EURASIAN STUDIES

Master of Arts

FACILITIES FOR GRADUATE WORK

The University Libraries contain about eighty thousand volumes and excellent supporting material on Russia and Eastern Europe. The Harry Ransom Humanities Research Center holds important original documents, including the Alexander Kerensky papers and collections on Soviet history and literature. The Population Research Center houses extensive census data for Eastern Europe and the former Soviet Union, dating back to the Russian census of 1897. The Audio Visual Library in the Undergraduate Library has several hundred films and videotapes from Russia, Eastern Europe, and Eurasia.

The Center for Russian, East European, and Eurasian Studies Resource Center houses about five hundred books and journals on the region, as well as audio- and videotapes. The center maintains the Russian and East European Network Information Center (REENIC), which gives Internet users easy access to databases worldwide.

Sixty-four faculty members regularly teach courses dealing with Russia, Eastern Europe, and Eurasia.

AREAS OF STUDY

The Master of Arts in Russian, East European, and Eurasian studies is a two-year, multidisciplinary program that offers advanced scholarly training for students who seek integrated knowledge of the language, history, society, and culture of the former Soviet Union and Eastern and Central Europe, or one or more of their subareas. The program is designed for students preparing for careers in the professions, and for those seeking an intermediate, interdisciplinary master’s degree before pursuing a doctorate in a particular discipline. Within the requirements of the program, the student may choose an individual course of study to meet his or her needs and may have a broader choice of courses than is possible in a disciplinary master’s degree program.

The program may involve work in any of the following academic disciplines: anthropology, architecture, art history, business, comparative literature, economics, geography, government, history, law, linguistics, music, philosophy, public affairs, radio-television-film, sociology, Slavic languages and literatures, and Turkic languages.

Students who complete this degree are expected to have an extensive understanding of the country or countries of their specialization, including a working knowledge of one of the region’s languages.

ADMISSION REQUIREMENTS

The entering student must have a bachelor’s degree. He or she must have completed at least nine semester hours in upper-division undergraduate courses, other than language courses, that focus primarily or exclusively on the former Soviet Union or East/Central Europe, and three years or the equivalent of formal language training in a language of the area. An applicant who does not meet these requirements may be admitted conditionally, but he or she must make up the deficiencies while obtaining the degree. The amount of coursework to be made up is determined by the graduate adviser before the student is admitted to the program.
GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Zoltan D. Barany  Robert Moser
Cynthia J. Buckley Joan Neuberger
James K. Galbraith Mary C. Neuburger
Thomas J. Garza Leslie C. O’Bell
William P. Glade Hana Pichova
Lawrence S. Graham Gilbert C. Rappaport
John S. Kolsti Danilo F. Udovicki-Selb
Keith A. Livers Seth L. Wolitz
Edward Manouelian Charters Wynn
Inga Markovits

DEGREE REQUIREMENTS
The requirements of the program are designed to give students a broad background in the Russian, East European, and Eurasian area. Students may choose the thesis option, consisting of at least thirty semester hours of coursework, including the thesis; or the report option, consisting of at least thirty-three semester hours, including the report.

Under either option, at least eighteen hours must be in nonlanguage graduate coursework that deals primarily with the Russian, East European, and Eurasian area. In addition to the interdisciplinary core course, Russian, East European, and Eurasian Studies 381, each student must take at least one course from each of the following groups: literature and culture; history, economics, and government; and sociology, geography, and anthropology. All courses counted toward the degree must have content relevant to the former Soviet Union or East/Central Europe. The student must also complete a fourth year or the equivalent of formal language instruction. He or she must pass a proficiency test in the language at the Interagency Language Roundtable level 2 or the American Council of Teachers of Russian advanced level. Credit earned in fulfilling the language requirement may not be counted toward the degree, since language competence is considered a necessary tool for graduate study in Russian, East European, and Eurasian studies.

DUAL DEGREE PROGRAMS
A student seeking admission to any of the following programs must apply through the Graduate and International Admissions Center. He or she must be accepted by each program in order to be admitted to the dual program. Like all other graduate applicants, the student is responsible for submitting any additional information required by the Graduate Studies Committee for each program. The student may submit applications to each program simultaneously or may apply to the dual program during the first year in graduate school.

Students in each dual program must complete a fourth year or the equivalent of formal instruction in a language of the area and must pass a proficiency test in the language.
Master of Arts/Doctor of Jurisprudence
This dual program is designed for students who wish to study law and Russian, East European, and Eurasian issues in an integrated and interdisciplinary manner and who plan to be involved in government service or legal practice with a focus in this region. The student must complete eighty-six semester hours of work for the Doctor of Jurisprudence, including the normal first-year coursework in the School of Law, and thirty-three hours for the Master of Arts.

Master of Arts/Master of Arts with a Major in Radio-Television-Film
This dual program combines advanced communication studies with interdisciplinary area studies, responding to a need in both the public and the private sector for specialists with a thorough understanding of the former Soviet Union and East/Central Europe. Students must complete at least sixty-three semester hours of coursework in radio-television-film and Russian, East European, and Eurasian studies. The program must include a summer internship in or related to the former Soviet Union or East/ Central Europe and a thesis on a topic involving both fields.

Master of Arts/Master of Business Administration
The objective of this dual program is to provide students with the skills and perspective necessary to work effectively in business, particularly in its application to contemporary Russia, Eastern Europe, and Eurasia. Students must complete a total of sixty-nine semester hours of coursework in the McCombs School of Business and Russian, East European, and Eurasian studies, including a professional report.

Upon admission to this dual degree program, the student must pay a nonrefundable enrollment deposit to indicate that he or she accepts the offer of admission. The deposit serves to confirm the student's intention of enrolling in both programs and is applied to the payment of fees when the student enrolls. Students who demonstrate financial need may qualify for assistance to cover the deposit.

Master of Arts/Master of Public Affairs
This dual program combines advanced policy studies with interdisciplinary area studies, responding to a need in both the public and the private sector for policy specialists with a thorough understanding of the former Soviet Union and East/Central Europe. Students must complete at least thirty-six semester hours of graduate work in public affairs and at least thirty hours of graduate work in Russian, East European, and Eurasian studies, including a six-semester-hour thesis and a four-semester-hour summer internship.

FOR MORE INFORMATION
Campus address: Geography Building (GRG) 106, phone (512) 471-7782, fax (512) 471-3368; campus mail code: A1600
Mailing address: The University of Texas at Austin, Graduate Program, Center for Russian, East European, and Eurasian Studies, 1 University Station A1600, Austin TX 78712
E-mail: creees-gradinfo@reenic.utexas.edu
URL: http://www.utexas.edu/cola/depts/creees/
GRADUATE COURSES

The following courses are offered by the Center for Russian, East European, and Eurasian Studies. Courses in some languages of the area are offered by the Department of Slavic and Eurasian Studies; they are listed on pages 413–414.

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Russian, East European, and Eurasian Studies: REE

380. International Business Fellows Seminar. Same as Asian Studies 391 (Topic 6: International Business Fellows Seminar), Latin American Studies 381 (Topic 8: International Business Fellows Seminar), and Middle Eastern Studies 380. Multidisciplinary seminar for students in area studies, business administration, law, and public policy. The faculty includes both academics and business leaders. Offered on the letter-grade basis only. International Business 395 (Topic: International Business Fellows Seminar) and Russian, East European, and Eurasian Studies 380 may not both be counted. Prerequisite: Graduate standing.

381. Seminar in Russian, East European, and Eurasian Civilizations and Cultures. Core course. Prerequisite: Graduate standing.

382. Conference Course in Russian, East European, and Eurasian Studies. Individual instruction on some aspect of the former Soviet Union or Eastern Europe. May be repeated for credit. Prerequisite: Graduate standing and consent of the graduate adviser.

385. Topics in Russian, East European, and Eurasian Studies. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; additional prerequisites vary with the topic and are given in the Course Schedule.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in Russian, East European, and Eurasian studies; for 698B, Russian, East European, and Eurasian Studies 698A.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in Russian, East European, and Eurasian studies.
SLAVIC LANGUAGES AND LITERATURES

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

The University Libraries, anchored by the Perry-Castañeda Library, contain extensive holdings in the primary and secondary works, reference materials, and periodicals needed for advanced research in the languages and cultures of the Slavic lands. The Harry Ransom Humanities Research Center is an archival resource that houses the Alexander Kerensky archive and an extensive collection of diaries, correspondence, and other material dealing with the cultural and political life of Russia and the Soviet Union. Liberal Arts Instructional Technology Services has extensive audio, video, and computer-based resources, including recordings of folklore and dialect speech.

The Center for Russian, East European, and Eurasian Studies offers resources related to the Slavic languages and cultures in print, video, and audio form; it also organizes an extensive program of visitors, conferences, and other events. The Department of Slavic and Eurasian Studies has its own reference room and multimedia resources, including an extensive film collection. As the faculty places increasing emphasis on electronic media resources in teaching and research, facilities for Internet access and use are being expanded.

AREAS OF STUDY

The department offers coursework in Slavic linguistics, Slavic literatures and cultures, and applied linguistics/pedagogy. Each degree plan includes coursework in a supporting field.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Thomas J. Garza
John S. Kolsti
Keith A. Livers
Edward Manouelian
Sidney Monas

Leslie C. O’Bell
Hana Pichova
Gilbert C. Rappaport
Seth L. Wolitz

ADMISSION REQUIREMENTS

Students entering the master's degree program should have a bachelor's degree with a major in Russian or another field of Slavic studies, or they must demonstrate equivalent knowledge. A student admitted to the program without this background must acquire it by special coursework for which no graduate credit is given. To be admitted to the doctoral degree program, the student must have a master's degree in Russian or Slavic languages.
DEGREE REQUIREMENTS

Master of Arts
The degree plan consists of Russian 390 (Topic: Old Church Slavonic); eighteen additional semester hours of coursework in Slavic languages and literatures; six hours of supporting work; a three-hour graduate course in a primary Slavic language; a one-hour proseminar in Slavic studies, Slavic 180K; and six hours in the thesis course. Supporting work typically is taken outside the Department of Slavic and Eurasian Studies; it may be taken within the department, with the consent of the graduate adviser, if there is a substantial comparative component. A master’s report (three hours) and three additional hours of coursework in Slavic languages and literatures may be substituted for the thesis. Students must pass a reading skills examination in Russian as early as possible and must demonstrate a sound knowledge of a second Slavic language by examination or by coursework taken without graduate credit. Finally, each student must present an acceptable master's thesis or report.

Further information about the master's degree program is available from the graduate adviser.

Doctor of Philosophy
Students must choose one of three major fields of concentration: literature and culture, linguistics, or applied linguistics/pedagogy. Students may minor in another of these three areas or, with approval of the graduate adviser, in a related discipline outside the department.

The degree program consists of fifteen semester hours of coursework in the major, nine hours in the minor, and a three-hour graduate course in a primary Slavic language, all beyond the coursework counted toward the master’s degree; and six hours in the dissertation course. Each student must demonstrate reading knowledge of a non-Slavic research language. Linguistics majors must demonstrate a sound knowledge of a third Slavic language. Both of these language requirements may be met by examination or by coursework taken without graduate credit. To be admitted to candidacy, all students must pass advanced examinations of oral and writing skills in a primary Slavic language and a set of comprehensive examinations based on coursework and a departmental reading list for the major field of concentration. The dissertation must be in the major field.

Further information about the doctoral degree program is available from the graduate adviser.

FOR MORE INFORMATION
Campus address: Calhoun Hall (CAL) 415, phone (512) 471-3607, fax (512) 471-6710; campus mail code: F3600
Mailing address: The University of Texas at Austin, Graduate Program, Department of Slavic and Eurasian Studies, P O Box 7217, Austin TX 78713-7217
URL: http://www.utexas.edu/cola/depts/slavic/
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Czech: CZ

383. Periods in Czech Literature. Advanced work in selected periods of Czech literature. Topics may include Old Czech literature, literature of the National Revival, romanticism, realism, naturalism, decadence, poetism, and contemporary literature. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in the Department of Slavic and Eurasian Studies, or graduate standing and consent of instructor.

391. Studies in Czech Literature. Topics may include Czech fiction, poetry, drama, comparative Slavic literature, Czech oral literature. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in the Department of Slavic and Eurasian Studies, or graduate standing and consent of instructor.

395. Conference Course. Survey of Czech literature, language, culture, linguistics, history, and politics. Individual instruction. May be repeated for credit. Prerequisite: Graduate standing.

Polish: POL

395. Conference Course. Study of individual problems in Polish language, literature, and culture. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in the Department of Slavic and Eurasian Studies, or graduate standing and consent of instructor.

Russian: RUS

380C. Advanced Russian Composition and Conversation I. Analysis of stylistic characteristics of texts and development of practical stylistic skills in written and spoken Russian. Prerequisite: Graduate standing and three years of Russian.

380D. Advanced Russian Composition and Conversation II. Analysis of stylistic characteristics of texts and development of practical stylistic skills in written and spoken Russian. Prerequisite: Graduate standing and Russian 380C.

380P. Political Russian. An intermediate course in Russian language for graduate students in the social sciences. Offered on the credit/no credit basis only. Prerequisite: Graduate standing, and two years of Russian or the equivalent.
392. **Studies in Slavic Languages and Literatures other than Russian.** Topics include Bulgarian, Macedonian, Serbian/Croatian, Slovenian, Czech, Sorbian, Polish, Slovak, Ukrainian, and Belorussian. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing in the Department of Slavic and Eurasian Studies, or graduate standing and consent of instructor.

395. **Conference Course.** Study of individual problems in Slavic languages. May be repeated for credit. **Prerequisite:** Graduate standing in the Department of Slavic and Eurasian Studies.

397P. **Topics in Applied Linguistics and Pedagogy.** Study of topics in applied linguistics related to the teaching of Russian and other Slavic languages. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor.

698. **Thesis.** The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. **Prerequisite:** For 698A, graduate standing in the Department of Slavic and Eurasian Studies and consent of the graduate adviser; for 698B, Russian 698A.

398R. **Master’s Report.** Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. **Prerequisite:** Graduate standing in the Department of Slavic and Eurasian Studies and consent of the graduate adviser.

398T. **Supervised Teaching in Russian.** Principles and methods of teaching Russian. Analysis of relevant foreign language teaching theories and methodologies, curriculum and curricular materials development for university and secondary school teachers of Russian. **Prerequisite:** Graduate standing and appointment as a teaching assistant.

399R, 699R, 999R. **Dissertation.** Offered on the credit/no credit basis only. **Prerequisite:** Admission to candidacy for the doctoral degree.

399W, 699W, 999W. **Dissertation.** Offered on the credit/no credit basis only. **Prerequisite:** Russian 399R, 699R, or 999R.

**Serbian/Croatian: S C**

395. **Conference Course.** Study of individual problems in Serbian and Croatian languages, literature, and culture. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing in the Department of Slavic and Eurasian Studies, or graduate standing and consent of instructor.

**Slavic: SLA**

380. **Studies in Slavic Culture.** Study of various intellectual, artistic, and social movements in the cultures of the Slavic-speaking countries. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing.

180K. **Proseminar on Slavic Studies.** Introduction to literary study, linguistics, foreign language methodology, area studies, research methods, and library resources. One lecture hour a week for one semester. Offered on the credit/no credit basis only. **Prerequisite:** Graduate standing.

395. **Conference Course.** Study of individual problems in or among Slavic languages, literatures, and culture. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing in the Department of Slavic and Eurasian Studies, or graduate standing and consent of instructor.
SOCIOLOGY

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

The Department of Sociology is located in Burdine Hall, which also houses the Liberal Arts Computer Instruction Laboratory (LACIL), a facility shared by the Departments of Sociology and Government. LACIL houses a variety of microcomputers, terminals linked to the campus mainframes, printers, and specialized software; staff members are available to help undergraduate and graduate students use the laboratory for classwork in social statistics and for individual projects. The University has access through the Inter-University Consortium for Political and Social Research to a wide range of social surveys.

Many sociology faculty members and graduate students are affiliated with the Population Research Center (PRC), one of the preeminent research and training centers in population studies in the United States. Many research grant and fellowship opportunities are available through the PRC. The research foci of the PRC include health and aging; fertility and child health and development; transitions to adulthood; family demography and dynamics; and race/ethnicity. The PRC has an extensive library, a microcomputer laboratory, data archives, and a weekly lecture series.

The Hogg Foundation for Mental Health, closely associated with the department, affords outstanding resources for research bearing on mental health. Federal, state, and local agencies in Austin provide excellent sources of data, specialized advisory personnel, and fieldwork opportunities.

The Center for Criminology and Criminal Justice Research is a multidisciplinary research institute that conducts basic research on crime and its causes and consequences, as well as policy and program evaluation research in criminal justice and criminal justice administration. The center’s mission includes providing a public forum for faculty members, criminal justice administrators, policy makers, and practitioners to exchange knowledge and expertise; facilitating collaborative research between the University and the state and local criminal justice communities; and enhancing graduate research and training opportunities in criminology and criminal justice.

AREAS OF STUDY

Graduate study is offered in theory, social organizations, education, health, family, race and ethnic relations, comparative studies of development, stratification, gender, political sociology, criminology/delinquency, religion, and demography.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Ari Adut
Jacqueline L. Angel
Ronald J. Angel
Cynthia J. Buckley
John Sibley Butler
Benjamin Carrington
Mounira Charrad
Chiquita A. Collins

Robert Crosnoe
Sheldon Ekland-Olson
Christopher G. Ellison
Toni L. Falbo
W. Parker Frisbie
Omer R. Galle
Norval D. Glenn
Gloria González-López
DEGREE REQUIREMENTS

Master of Arts

Students typically earn the Master of Arts in the course of work leading to a doctoral degree, rather than as an end in itself. The master's degree requires thirty semester hours of graduate work, including six hours in the thesis course. The coursework must include two courses in social statistics, one in research methods, and two in theory; two graduate courses outside the department; and two electives. The degree program usually takes two years. Students often enter the graduate program with a master's degree from another university. Such students must take the required courses at the University or transfer credit for them as described on page 24.

Doctor of Philosophy

The doctoral program requires at least fifty-four semester hours of graduate coursework in addition to the dissertation courses; fifty-seven hours in addition to the dissertation are required for the specialization in demography and ecology. The coursework requirements include the twenty-four semester hours of work required for the master's degree, one additional course in methods, an additional graduate course outside the department, and a variety of substantive courses in sociology. Additional information is available from the department.

To be admitted to candidacy for the doctoral degree, the student must have completed all master's degree requirements and the doctoral course requirements, must satisfy a foreign language requirement, must pass a comprehensive examination in the area of specialization, and must defend a dissertation proposal. The degree is awarded after completion and defense of the dissertation. Most students need three or four years beyond the master's degree to complete the doctorate.

FOR MORE INFORMATION

Campus address: Burdine Hall (BUR) 336, phone (512) 471-1122, fax (512) 471-1748; campus mail code: A1700

Mailing address: The University of Texas at Austin, Graduate Program, Department of Sociology, 1 University Station A1700, Austin TX 78712

E-mail: gradsoc@mail.la.utexas.edu

URL: http://www.utexas.edu/cola/depts/sociology/
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Sociology: SOC

180, 280, 380. Conference Course. Sociological topics not otherwise offered at the graduate level. The equivalent of one, two, or three lecture hours a week for one semester. May be repeated for credit, but no more than six semester hours may be counted toward the Master of Arts and no more than twelve semester hours may be counted toward the doctoral degree. May not be substituted for required courses in statistics, methods, or theory. nor may more than one of the three other area requirements be fulfilled by Sociology 380. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

383K. Seminars in Social Psychology. Substantive issues and current topics in social psychology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: History and Theories of Social Psychology. May be counted toward elective requirements.

384L. Social Statistics: Basic Concepts and Methods. Review of descriptive statistics; probability concepts; statistical inference, bivariate correlation and regression, multiple regression, dummy variables, analysis of variance, analysis of covariance; applications of statistical computing packages to social science data. May be counted toward the statistics and methods requirement. Required of all graduate students during their first semester of study. Prerequisite: Graduate standing.

384M. Seminar in Data Analysis. Quantitative sociological research integrating the use of statistical analysis with computer applications and survey data. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and Sociology 384L or the equivalent.

385K. Social Statistics: Discrete Multivariate Models. Assumptions, estimation, testing, and parameter interpretation for models using categorical data; applications of statistical computing packages and programs to social science data. May be counted toward the statistics and methods requirement. Required of all graduate students during their first semester of study. Prerequisite: Graduate standing, and Sociology 384L or the equivalent.

385L. Social Statistics: Linear Models and Structural Equation Systems. Model specification; review of simple regression; multiple regression in matrix form; ordinary and generalized least squares; recursive and nonrecursive structural equation models; measurement error and unobserved variables. May be counted toward the statistics and methods requirement. Prerequisite: Graduate standing, and Sociology 384L or the equivalent.

386L. Social Statistics: Dynamic Models and Longitudinal Data Analysis. Applications of dynamic models to data collected at successive points in time. Dynamic structural equation models; statistical time-series analysis; stochastic processes, panel, and event-history analysis. May be counted toward the statistics and methods requirement. Prerequisite: Graduate standing, and Sociology 384L or the equivalent.

387J. Fundamentals of Research Methods. Fundamental assumptions and procedures for conducting sociological research, including the logic of science, the links between theory and methods, measurement, experiments, sampling, surveys, qualitative methods, and ethics. May be counted toward the statistics and methods requirement. Required of all graduate students during their first semester of study. Prerequisite: Graduate standing.

387L. Survey Research Methods. Theory and application of survey research techniques in the social sciences; sampling, measurement; questionnaire construction and distribution; response effects; validity and reliability; scaling data sources; data reduction and analysis. May be counted toward the statistics and methods requirement. Sociology 387J and 387T may not both be counted. Prerequisite: Graduate standing, and Sociology 384L or the equivalent.
387T. Constructing the Texas Survey. Restricted to students in the Texas Survey Project. Principles of sampling, questionnaire design, and survey implementation. May be counted toward the statistics and methods requirement. Sociology 387L and 387T may not both be counted. Prerequisite: Graduate standing and consent of instructor.

388K. Field and Observational Methods. Rationale and logic for field research; participant and nonparticipant observation; informants and conversational interviewing; personal documents, records, and physical traces; life histories; sources of error and bias; personal and ethical dilemmas; modes of analysis. May be counted toward the statistics and methods requirement. Prerequisite: Graduate standing.

388L. Historical and Comparative Methods. Scope and methods of historical and comparative sociology; application of historical sources to answer sociological questions, various kinds of historical sources available to sociologists, and ways these sources may be used. May be counted toward the statistics and methods requirement. Prerequisite: Graduate standing.

388M. Integrating Qualitative and Quantitative Methods. New approaches in the use of qualitative methodologies, including focus groups and ethnography, that complement traditional quantitative methodologies in the study of social phenomena. May be counted toward the statistics and methods requirement. Prerequisite: Graduate standing, and Sociology 387L or the equivalent.

388T. Analysis of the Texas Survey. Restricted to students in the Texas Survey Project. Data cleaning, analysis, and reporting, including final projects based on survey data. May be counted toward the statistics and methods requirement. Prerequisite: Graduate standing, consent of instructor, and Sociology 387L or 387T.

389K. Seminars in Demography. Substantive issues and current topics in population studies and social demography. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: General Approaches to the Study of Population. May be counted toward the demography specialization. Required for all students specializing in demography.

Topic 2: Human Fertility. May be counted toward either the demography or the health specialization, but not both.

Topic 3: Human Mortality. May be counted toward either the demography or the health specialization, but not both.

Topic 4: Migration. Same as Latin American Studies 381 (Topic 1: Migration). May be counted toward either the demography or the race and ethnicity specialization, but not both.

Topic 6: Training Seminar in Demography. Offered on the credit/no credit basis only. May be counted toward the demography specialization. Required for all students specializing in demography.

Topic 8: Demography of Minorities. May be counted toward either the demography or the race and ethnicity specialization, but not both.

Topic 9: Immigration. May not be counted by students with credit for Sociology 389K (Topic: Immigration and Immigration Policy or Immigration: Patterns and Policies). May be counted toward either the demography or the race and ethnicity specialization, but not both.

389L. Seminars in Human Ecology. Methods of human ecology and their comparative applications, both regional and international. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Urban Ecology. May be counted toward either the demography or the social organizations specialization, but not both.

190K, 290K, 390K, 690K, 990K. Proposal Preparation. Preparation of proposal for the doctoral dissertation. For each semester hour of credit earned, the equivalent of one lecture hour a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing, completion of all coursework, and consent of instructor.

391L. Basic Demographic Methods and Materials. Population composition, change, and distribution; methods of standardizing and decomposing rates; life tables and population models; analysis of data from advanced and developing countries; applications of computer programs for demographic analysis. May be counted toward the statistics and methods requirement. Required of all students specializing in demography. Prerequisite: Graduate standing, and Sociology 384L or the equivalent.

391M. Advanced Methods of Demographic Analysis. Theory and estimation methods for single-decrement, multiple-decrement, and increment-decrement life tables; reproductivity; the stable population model; graduation, interpolation, and other data adjustments for faulty data; applications of computer packages for demographic analysis. May be counted toward the statistics and methods requirement. Recommended for all students specializing in demography. Prerequisite: Graduate standing and Sociology 391L.
394K. Seminars in Sociological Theory. Development of social thought; the emergence of systematic sociological theory; interrelations with other social sciences. May be repeated for credit when the topics vary. Graduate students in sociology must take at least two of the first three topics. Prerequisite: Graduate standing.

Topic 1: Basic Issues in Sociological Theory. May be counted toward the theory specialization.

Topic 2: Current Debates. May be counted toward the theory requirement. Required of all graduate students during their second semester of study.

Topic 3: Background of Sociology (Pre–Twentieth Century). May be counted toward the theory requirement. Required of all graduate students during their first semester of study.

Topic 4: Evolutionary Theory (including Sociobiology). May be counted toward the theory specialization.

395D. Seminars in Development. May be repeated for credit when the topics vary. Not all topics are offered every year. Prerequisite: Graduate standing.

Topic 1: Economic Development and Social Change. Sociology 395D (Topic 1) and 395K (Topic 9: Economic Development and Social Change) may not both be counted. May be counted toward the development and political sociology specializations.

Topic 2: Introduction to the Sociology of Latin America. Same as Latin American Studies 381 (Topic 14: Introduction to the Sociology of Latin America). Sociology 395D (Topic 2) and 395K (Topic 14: Introduction to the Sociology of Latin America) may not both be counted. May be counted toward the development specialization.

Topic 3: The Mexican Political System in Transition. Sociology 395D (Topic 3) and 395K (Topic: Mexican Political System in Transition) may not both be counted. May be counted toward the development and political sociology specializations.

Topic 4: Health and Development in Latin America. Same as Latin American Studies 381 (Topic 5: Health and Development in Latin America). Sociology 395D (Topic 4) and 396L (Topic 6: Health and Development in Latin America) may not both be counted. May be counted toward the development and health specializations.

Topic 5: Housing Practices and Public Policy in Latin America. Same as Latin American Studies 381 (Topic 6: Housing Practices and Public Policy in Latin America). Sociology 395D (Topic 5) and 396L (Topic 8: Housing Practices and Public Policy in Latin America) may not both be counted. May be counted toward the development and social organizations specializations.

Topic 6: New Approaches to Third-World Development. Same as Latin American Studies 381 (Topic 18: New Approaches to Third-World Development). Sociology 395D (Topic 6) and 396L (Topic 9: New Approaches to Third-World Development) may not both be counted. May be counted toward the development specialization.

Topic 7: Citizenship and Social Policy in Latin America. Sociology 395D (Topic 7) and 395K (Topic: Citizenship/Social Policy in Latin America) may not both be counted. May be counted toward the development and political sociology specializations.

Topic 8: Economic Sociology. Sociology 395D (Topic 6) and 396L (Topic: Economic Sociology) may not both be counted. May be counted toward the development specialization.

395F. Seminars in Family. May be repeated for credit when the topics vary. Not all topics are offered every year. Prerequisite: Graduate standing.

Topic 2: Marriage, Family, and Kinship. Sociology 395F (Topic 2) and 396L (Topic 2: Marriage, Family, and Kinship) may not both be counted. May be counted toward the family specialization.

Topic 3: Family and Health. Sociology 395F (Topic 3) and 396L (Topic: Family and Health) may not both be counted. May be counted toward the family and health specializations.

Topic 4: Family Life. Sociology 395F (Topic 4) and 396L (Topic: Family Life) may not both be counted. May be counted toward the family specialization.

Topic 5: Poverty and the Family. Sociology 395F (Topic 5) and 396L (Topic: Poverty and the Family) may not both be counted. May be counted toward the family specialization.

Topic 6: Controversial Family Issues in Modern Society. Sociology 395F (Topic 6) and 396L (Topic: Controversial Family Issues in Modern Society) may not both be counted. May be counted toward the family specialization.

395G. Seminars in Gender. May be repeated for credit when the topics vary. Not all topics are offered every year. Prerequisite: Graduate standing.

Topic 1: Gender Stratification. Sociology 395G (Topic 2) and 395K (Topic 4: Gender Stratification) may not both be counted. May be counted toward the gender and social organizations specializations.

Topic 2: Gender Differentiation. Sociology 395G (Topic 3) and 395K (Topic 10: Gender Differentiation) may not both be counted. May be counted toward the gender specialization.
Topic 3: Gender and Family. Sociology 395G (Topic 4) and 395K (Topic: Gender and Family) may not both be counted. May be counted toward the gender and family specializations.

Topic 4: Gender and Health. Sociology 383K (Topic 3: Gender and Health) and 395G (Topic 4) may not both be counted. May be counted toward the gender and health specializations.

Topic 5: Gender and Development. May be counted toward the gender and development specializations.

395J. Seminars in Health. May be repeated for credit when the topics vary. Not all topics are offered every year. Prerequisite: Graduate standing.

Topic 1: Sociology of Health and Illness. Sociology 395J (Topic 1) and 396L. (Topic 4: Sociology of Health and Illness) may not both be counted. May be counted toward the health specialization.

Topic 2: The Politics of Health and Long-Term Care Reform. Sociology 395J (Topic 2) and 396L. (Topic: Politics of Health/Long-Term Care Reform) may not both be counted. May be counted toward the health and political sociology specializations.

Topic 3: Politics and Policies in Aging Populations. Sociology 395J (Topic 3) and 395K (Topic: Politics/Policies in Aging Populations) may not both be counted. May be counted toward the health and political sociology specializations.

Topic 4: Comparative Social Welfare Systems. Sociology 395J (Topic 4) and 396L. (Topic: Comparative Social Welfare Systems) may not both be counted. May be counted toward the health and social organizations specializations.

Topic 5: US–Mexico Border Health. Sociology 395J ( Topic 5) and 396L. (Topic: US–Mexico Border Health) may not both be counted. May be counted toward the health and development specializations.

395K. Seminars in Social Differentiation. Stratification and nonhierarchical differentiation; plural and homogeneous ethnic systems, social mobility. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

395L. Seminars in Racial and Ethnic Relations. Sociological theories and findings concerning various aspects of racial and ethnic relations. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Comparative Perspectives in Racial and Ethnic Relations. May be counted toward the race and ethnicity specialization.

Topic 2: Blacks in the United States. May be counted toward the race and ethnicity specialization.

Topic 3: Mexican Americans. May be counted toward the race and ethnicity specialization.

Topic 7: Asian Americans. May be counted toward the race and ethnicity specialization.

Topic 8: Race, Media, and Culture. May be counted toward the race and ethnicity specialization.

396L. Seminars in Complex Organizations and Institutions. The equivalent of three lecture hours a week for one semester. May be repeated for credit when the topics vary. Some topics are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing.

Topic 1: Formal Organizations. May be counted toward the social organizations specialization.

Topic 3: Community. May be counted toward the social organizations specialization.

Topic 7: Evaluation Research. May be counted toward the social organizations specialization. Additional prerequisite: Consent of instructor.

Topic 10: Stratification and Social Mobility. Sociology 395K (Topic 1: Stratification and Social Mobility) and 396L. (Topic 10) may not both be counted. May be counted toward the social organizations specialization.

Topic 11: Sociology of Organizational Cultures. May be counted toward the social organizations specialization.

Topic 12: Sociology of Education. May be counted toward the social organizations specialization.

Topic 13: Opportunity Creation of Entrepreneurs. May be counted toward the social organizations specialization.

Topic 14: Opportunity Identification for Entrepreneurs. May be counted toward the social organizations specialization.

396M. Seminars in Deviance and Social Control. Substantive issues and current topics in the study of deviance and social control. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 2: Social Control. May be counted toward the criminology specialization.

Topic 6: Deviance. May be counted toward the criminology specialization.

396N. Seminars in Criminology and Criminal Justice. Substantive issues and current topics in the study of criminology and criminal justice. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Criminology. May be counted toward the criminology specialization.

Topic 2: Theories of Crime Causation. May be counted toward the criminology specialization.

Topic 3: Criminal Justice. May be counted toward the criminology specialization.
396P. Seminars in Political Sociology. May be repeated for credit when the topics vary. Not all topics are offered every year. Prerequisite: Graduate standing.

Topic 1: Political Sociology. Sociology 395K (Topic 3: Political Sociology) and 396P (Topic 1) may not both be counted. May be counted toward the political sociology specialization.

Topic 2: Social Movements. Sociology 395K (Topic 5: Social Movements) and 396P (Topic 2) may not both be counted. May be counted toward the political sociology specialization.

Topic 3: Social Change. Sociology 395K (Topic 12: Social Change) and 396P (Topic 3) may not both be counted. May be counted toward the political sociology specialization.

Topic 4: Postcommunist Societies. Sociology 395K (Topic 8: Postcommunist Societies) and 396P (Topic 4) may not both be counted. May be counted toward the political sociology specialization.

Topic 5: Nonviolent Social Movements. Sociology 395K (Topic 11: Nonviolent Social Movements) and 396P (Topic 5) may not both be counted. May be counted toward the political sociology specialization.

Topic 6: Elites. Same as Government 390L (Topic 10: Elites). Sociology 395K (Topic 13: Elites) and 396P (Topic 6) may not both be counted. May be counted toward the political sociology specialization.

Topic 7: Peace, Conflict, and Violence. Sociology 396L (Topic: Peace, Conflict, and Violence) and 396P (Topic 7) may not both be counted. May be counted toward the political sociology specialization.

Topic 8: Cultural Sociology. Sociology 394K (Topic: Cultural Sociology) and 396P (Topic 8) may not both be counted. May be counted toward the political sociology and religion specializations.

396R. Seminars in Religion. May be repeated for credit when the topics vary. Not all topics are offered every year. Prerequisite: Graduate standing.

Topic 1: Sociology of Religion. Sociology 396L (Topic 5: Sociology of Religion) and 396R (Topic 1) may not both be counted. May be counted toward the religion specialization.

397D. Publishing Papers in Sociology. Sociology 383K (Topic: Publishing Papers in Sociology) and 397D may not both be counted. May be counted toward elective requirements. Prerequisite: Graduate standing.

397P. Proseminar. A review of the requirements and responsibilities of professional sociologists. Offered on the credit/no credit basis only. Prerequisite: Graduate standing.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in sociology, twelve semester hours of graduate coursework in sociology, and consent of the graduate adviser; for 698B, Sociology 698A.

398T. Supervised Teaching in Sociology. Teaching under the close supervision of the course instructor for two semesters; weekly group meetings with the instructor, individual consultations, and reports throughout the teaching period. Prerequisite: Graduate standing.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Sociology 399R, 699R, or 999R.
SPANISH AND PORTUGUESE

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

The Perry-Castañeda Library contains extensive holdings related to the history, languages, and cultures of Spain, Portugal, and Latin America. Students also have access to an array of electronic databases, journals, and books related to these areas through the University Libraries Web site, http://www.lib.utexas.edu/. In addition, the Benson Latin American Collection is the world’s foremost university research collection for Latin American studies, with over eight hundred thousand volumes as well as extensive collections of manuscripts, maps, photographs, and broadsides.

The several language and computer laboratories furnish excellent opportunities for technical and professional preparation for teaching and research in Romance languages and linguistics. A large collection of tape recordings of dialect materials is also available.

AREAS OF STUDY

Graduate work in Spanish and Portuguese is divided into the following areas: Portuguese (Luso-Brazilian language and literature), Spanish (Hispanic language and literature), Ibero-Romance philology and linguistics, and, in conjunction with the Department of French and Italian, Romance linguistics.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Jossianna Arroyo Martínez Matthew Bailey
Leopoldo M. Bernucci Héctor Domínguez
Enrique Fierro Michael Paul Harney
Frederick G. Hensey Virginia Higginbotham
R. Rolando Hinojosa-Smith Vance R. Holloway
Orlando Rene Kelm Dale April Koike
Naomi Lindstrom

ADMISSION AND DEGREE REQUIREMENTS

Master of Arts

The entering student must hold a bachelor’s degree with a major in Spanish or Portuguese or must demonstrate equivalent knowledge. A student admitted without this background must acquire it by supplemental reading and coursework before undertaking a regular degree program.

Students seeking the Master of Arts with one of the first three concentrations described below must earn thirty-three semester hours of credit. They may choose either Plan A or Plan B.
Plan A: Nine organized courses (twenty-seven semester hours) and a thesis (six hours)

Plan B: Ten organized courses (thirty hours) and a report (three hours)

Concentration in Hispanic literature. In this program, the student must take at least nine semester hours of Spanish literature and nine semester hours of Spanish American literature. At least three hours must be taken in each of the following periods: (1) beginnings through fifteenth century; (2) sixteenth and seventeenth centuries; (3) eighteenth and nineteenth centuries; and (4) twentieth century. At least one of these courses must contain a substantial critical theory component, as approved by the graduate adviser. A civilization course covering the same period may replace one of the four literature courses. The student must also take two graduate linguistics courses from the Department of Spanish and Portuguese.

Concentration in Luso-Brazilian literature. The Master of Arts degree program in Portuguese consists of courses in literature, language, and civilization prescribed by the Portuguese faculty in consultation with the graduate adviser. Both continental and Brazilian literature must be represented. The courses in civilization may be taken in the Department of Spanish and Portuguese or in another department but must have Luso-Brazilian content. All students must take a course in literary theory.

Concentration in Ibero-Romance philology and linguistics. In this program, the student must take twelve semester hours of Hispanic linguistics in the Department of Spanish and Portuguese, covering both synchronic and diachronic dimensions; three hours in the Department of Linguistics; six hours of supporting work in related fields; and six hours of graduate coursework in Hispanic literature. Courses in supporting work may be taken within the Department of Spanish and Portuguese or in other departments, depending on the student’s academic interests.

All students in the preceding concentrations must demonstrate proficiency in a second language. The second language may be either (1) Spanish (for Portuguese majors) or Portuguese (for Spanish majors); or (2) a language other than English, Spanish, or Portuguese that is relevant to the student's field and is approved by the graduate adviser. Students who choose Spanish or Portuguese as the second language must demonstrate proficiency equivalent to that shown by completion of Spanish 508K and 612 or Portuguese 508 and 516 with a grade of at least B in each course. Those who choose a language other than English, Spanish, or Portuguese must demonstrate reading knowledge of the language by earning a grade of at least B in a reading course approved by the graduate adviser, in a fourth-semester college course, or on an examination specified by the graduate adviser.

Upon completion of required coursework, the student must pass a written comprehensive examination. Lists of fundamental works in literature or linguistics are provided by the graduate adviser to help the student prepare.

Concentration in Romance linguistics. This program, offered in conjunction with the Department of French and Italian, does not require the number of hours of credit given above for Plans A and B. Instead, students earn either thirty hours, consisting of eight organized courses and the thesis; or thirty-three hours, consisting of nine organized courses and the report. The program is made up of approved courses in two of four major Romance languages, distributed as follows: (1) introduction to Romance linguistics; (2) four linguistics courses in the first language (Spanish or Portuguese); and (3) three courses in a second language.
Doctor of Philosophy

Although the PhD is not awarded on the basis of a specific number of courses or hours of credit, twelve courses (thirty-six hours) beyond the master's degree are usually recommended. Depending on the student's academic background, the supervising committee, the graduate adviser, or the Graduate Studies Committee may require additional coursework. Nine of the thirty-six semester hours must be in one or more related fields outside the Department of Spanish and Portuguese, such as other foreign languages, English, history, linguistics, and philosophy.

Concentration in Hispanic literature. The student must take (1) two courses in early Hispanic literature (medieval, Renaissance, golden age, colonial); (2) one course in eighteenth-, nineteenth-, or twentieth-century Spanish (Peninsular) literature; (3) one course in nineteenth- or twentieth-century Spanish American literature; (4) two linguistics courses in the Department of Spanish and Portuguese, usually including a course in the history of the language; and (5) three courses in supporting work outside the major areas and, if possible, outside the department.

Concentration in Luso-Brazilian literature. The student must take (1) one course in early Portuguese literature (medieval through baroque) or colonial Brazilian literature; (2) one or two courses in nineteenth-century Portuguese/Brazilian literature; (3) one or two courses in twentieth-century Portuguese/Brazilian literature and culture; (4) two courses in linguistics; (5) one course in literary theory; and (6) two courses in supporting work outside the major areas.

Concentration in Ibero-Romance philology and linguistics. The student must take at least twelve courses beyond the master's degree, depending on his or her academic background. The twelve courses must consist of five courses in the main area; three or four in a second area; and three or four in supporting work. The student must choose either Spanish or Portuguese linguistics as the major field of concentration, covering both diachronic and synchronic dimensions. For the second field, the student may choose from the following options: (1) a second Romance language, preferably Portuguese; (2) an area of literary concentration related to the student's linguistic studies; (3) an area that can be fulfilled with courses outside the department, such as applied linguistics, theoretical linguistics, sociolinguistics, or psycholinguistics. Supporting work, intended to broaden the student's theoretical foundation and methodology for work in the fields of concentration, is chosen from appropriate offerings in corresponding departments. A more detailed description of the program is available from the graduate adviser.

Concentration in Romance linguistics. The student must take at least twenty-two courses beyond the Bachelor of Arts degree in the following areas: (1) seventeen courses from among the linguistics offerings in the Department of French and Italian and the Department of Spanish and Portuguese, including a required course in comparative Romance linguistics; (2) five courses of supporting work from appropriate graduate linguistics courses in other departments. Language requirements for this degree are an adequate knowledge of the four major Romance languages, as well as a reading knowledge of German and a basic knowledge of Latin. A detailed description of the program is available from the graduate adviser.

Upon completion of course requirements, all doctoral students must pass a comprehensive examination in order to gain admission to candidacy for the degree. Students concentrating in Hispanic literature must take written and oral examinations based on four fields of concentration. Those concentrating in Luso-Brazilian literature must take a written examination based on the general doctoral reading list and an oral examination based on three fields of concentration. The student chooses the fields
for in-depth study in consultation with the graduate adviser and with the approval of the Graduate Studies Committee. Students in Ibero-Romance philology and linguistics and Romance linguistics must take a written comprehensive examination in the areas of concentration prepared by a faculty committee. Before admission to candidacy, the student must have advanced proficiency in a second Romance language, usually Portuguese or Spanish. In addition, students in linguistics must have a basic knowledge of Latin; students in literature must have a basic knowledge of Latin or a reading knowledge of a language other than English, Spanish, or Portuguese, chosen in consultation with the graduate adviser on the basis of the student’s needs. The student may not use his or her native language to fulfill any language requirement.

FOR MORE INFORMATION

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Mailing address: The University of Texas at Austin, Graduate Program, Department of Spanish and Portuguese, 1 University Station B3700, Austin TX 78712

URL: http://www.utexas.edu/cola/depts/spanish/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Portuguese: POR

380. Studies in Luso-Brazilian Civilization and Culture. Topics in the social, political, and cultural ideas of Portugal and Brazil. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, six semester hours of upper-division coursework in Portuguese, and consent of the graduate adviser.

381. Studies in Brazilian Literature. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, six semester hours of upper-division coursework in Portuguese, and consent of the graduate adviser.

382. Studies in Portuguese Literature. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and six semester hours of upper-division coursework in Portuguese.

385L, 385L. Conference Course in Luso-Brazilian Literatures and Linguistics. For students with special interests not met by other courses offered in any one semester. May be repeated for credit. Prerequisite: Graduate standing and written consent of the graduate adviser.

393. Topics in Luso-Brazilian Literatures and Linguistics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

395L. Comprehensive Examination Preparation. Supervised preparation for the Comprehensive Examination for the doctoral degree. Conference course. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and completion of all course requirements for the doctoral degree.

396K. Comparative Romance Linguistics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in languages and consent of instructor and the graduate adviser.

Topic 1: Comparative Studies in the Literatures of Brazil and Spanish America. Same as Spanish 380K (Topic 1: Comparative Studies in the Literatures of Brazil and Spanish America).

Topic 2: Introduction to Romance Linguistics. Same as Italian 396K (Topic 1: Comparative Romance Linguistics), Linguistics 383 (Topic 3: Introduction to Romance Linguistics), French 396K (Topic 1: Introduction to Romance Linguistics), and Spanish 396K (Topic 2: Introduction to Romance Linguistics).
698. **Thesis.** The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in Portuguese and consent of the graduate adviser; for 698B, Portuguese 698A.

398R. **Master's Report.** Preparation of a report to fulfill the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in Portuguese and consent of the graduate adviser.

398T. **Supervised Teaching in Portuguese.** Same as Spanish 398T. Fundamentals of foreign language teaching methodology, with particular reference to the teaching of Portuguese. Presentation of theoretical concepts on which classroom practice is based, in conjunction with teaching under close supervision of the course instructor, individual consultations, reading assignments, and reports. Offered on the credit/no credit basis only. Required for teaching assistants during the first semester that they teach. Prerequisite: Graduate standing, appointment as a teaching assistant, and consent of the graduate adviser.

399R, 699R, 999R. **Dissertation.** Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree and consent of the graduate adviser.

399W, 699W, 999W. **Dissertation.** Offered on the credit/no credit basis only. Prerequisite: Portuguese 399R, 699R, or 999R, and consent of the graduate adviser.

**Spanish: SPN**

380K. **Studies in Spanish American Literature.** Topics include *Modernismo;* the short story; contemporary trends of the Spanish American novel; the literary prose of Sarmiento; gauchito literature; Rubén Darío; contemporary Argentine fiction. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, twelve semester hours of upper-division coursework in Spanish, and consent of the graduate adviser.

Topic 1: *Comparative Studies in the Literatures of Brazil and Spanish America.* Same as Portuguese 381 (Topic 1: *Comparative Studies in the Literatures of Brazil and Spanish America*).

380M. **Studies in the History of Ideas in Spain and Latin America.** Intensive study of cultural and ideological currents, especially as they are reflected in the works of essayists and other writers. Topics include Spain and European culture; European thought in Latin America; the Renaissance in Spanish literature and social life; Spain and the Western tradition; Spain between Islam and Christianity; the search for national identity in Mexico; three intellectual generations in Argentina; Hispano-Arabic culture. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, twelve semester hours of upper-division coursework in Spanish, and consent of the graduate adviser.

381M. **Studies in Criticism and Literary Genres.** Examination of the development of certain genres or critical ideas. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, twelve semester hours of upper-division coursework in Spanish, and consent of the graduate adviser.

182M. **Proseminar: Methods and Procedures of Graduate Degree Preparation.** Basic procedural information about preparation for comprehensive and qualifying examinations. Discussion of methods of preparation and the nature of departmental expectations. One lecture hour a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of the graduate adviser.

383M. **Methods of Study in Spanish Linguistics.** Examination of various methods of linguistic analysis in Spanish, such as Spanish syntax, discourse analysis, sociolinguistics, or applied linguistics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in Spanish or in linguistics, six semester hours of upper-division coursework in Spanish, and consent of the graduate adviser.

383N. **Studies in Spanish Linguistics.** Advanced topics in specialized aspects of Spanish linguistics, such as Spanish historical linguistics, Hispanic phonology, Spanish morpho-syntax, Spanish semantics, Spanish-English contrastive analysis, Spanish dialectology, the Spanish of the Americas, and Spanish language acquisition. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, twelve semester hours of upper-division coursework in Spanish, and consent of the graduate adviser.

285L, 385L. **Conference Course in Hispanic Literatures and Linguistics.** For students needing specialized courses not normally or not often included in the regular course offerings. May be repeated for credit. Prerequisite: Graduate standing and written consent of the graduate adviser.
385M. Studies in Spanish Literature since 1700. Intensive examination of a period or a major writer. Topics include eighteenth-century essayists, Galdós, la generación del ‘98, Miguel de Unamuno, romanticism, Pardo Bazán and Clarín, the theatre of García Lorca, contemporary Spanish poetry. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, twelve semester hours of upper-division coursework in Spanish, and consent of the graduate adviser.

386. Old Spanish Language. Prerequisite: Graduate standing, twelve semester hours of upper-division coursework in Spanish, and consent of the graduate adviser.

387. Old Spanish Literature. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, twelve semester hours of upper-division coursework in Spanish, and consent of the graduate adviser.

391. Studies in Renaissance and Golden Age Literature of Spain. Topics include Don Quijote, Gongorism, La Celestina, the picaresque novel, Lope de Vega, new literary forms of the Golden Age. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, twelve semester hours of upper-division coursework in Spanish, and consent of the graduate adviser.

393T. Topics in Hispanic Literatures and Linguistics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

295L, 395L. Comprehensive Examination Preparation. Supervised preparation for the comprehensive examination for the doctoral degree. Conference course. Offered on the credit/no credit basis only. Prerequisite: Satisfactory completion of all course requirements for the doctoral degree.

396K. Comparative Romance Linguistics. General survey of the development of spoken Latin in Italy, Spain, Portugal, and France; main traits of phonology, morphology, and syntax of each modern derivative language. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in languages and consent of instructor and the graduate adviser.

Topic 1: Comparative Romance Linguistics. Same as Portuguese 396K (Topic 1: Introduction to Romance Linguistics), Italian 396K (Topic 1: Introduction to Romance Linguistics), Linguistics 383 (Topic 3: Introduction to Romance Linguistics), and Portuguese 396K (Topic 2: Introduction to Romance Linguistics).

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in Spanish and consent of the graduate adviser; for 698B, Spanish 698A and consent of the graduate adviser.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in Spanish and consent of the graduate adviser.

398T. Supervised Teaching in Spanish. Same as Portuguese 398T. Required for teaching assistants during the first semester that they teach. Fundamentals of foreign language teaching methodology, with particular reference to the teaching of Spanish. Presentation of theoretical concepts on which classroom practice is based, in conjunction with teaching under close supervision of the course instructor, individual consultations, reading assignments, and reports. Offered on the credit/no credit basis only. Prerequisite: Graduate standing, appointment as a teaching assistant, and consent of the graduate adviser.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree and consent of the graduate adviser.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Spanish 399R, 699R, or 999R, and consent of the graduate adviser.
WOMEN’S AND GENDER STUDIES

Master of Arts

FACILITIES FOR GRADUATE WORK

The Center for Women’s and Gender Studies, which administers the master’s degree program in women’s and gender studies, is a campus-wide interdisciplinary program with more than two hundred affiliated faculty members from almost all colleges and schools. The center hosts a major lecture series or scholarly conference each year and an annual Emerging Scholarship in Women’s and Gender Studies Conference in which graduate and undergraduate students present their work.

The University offers several unique resources for interdisciplinary and cross-cultural research in women’s and gender studies. The Harry Ransom Humanities Research Center includes celebrated rare book and manuscript collections in American and modern literature; the Gernsheim Collection, one of the world’s largest archives of photographs, negatives, and books related to the history of photography; the Performing Arts Collection, with materials related to the theatre, movies, vaudeville, the circus, and the history of magic; and the New York Journal-American photographic archive. The Nettie Lee Benson Latin American Collection is one of the world’s great archives of materials about and from Latin America, and the Center for American History contains the early archives of Texas, the largest collection now extant of historical manuscripts dealing with Texas, and an extensive collection of rare and scarce books, pamphlets, and broadsides related to Texas and Southwestern history.

The University’s rich archival collections include manuscripts of the Austin Women’s Suffrage Association; the Ima Hogg Papers; the Natchez Trace Collection; oral history collections, including the Voices of American Homemakers Collection and Today’s Pioneer Women Oral Histories; and numerous collections of manuscripts and materials related to important women writers, artists, and activists. The University Libraries also houses microfilm sets of such notables as Eleanor Roosevelt, Margaret Sanger, and Elizabeth Cady Stanton. Additional information about women’s studies holdings can be found at http://www.lib.utexas.edu/subject/gender/.

Convenient to the University are other research facilities, including the Lyndon Baines Johnson Library and Museum, the State Library and Archives of Texas, the United Daughters of the Confederacy Library, the Catholic Archives of Texas, the Episcopal Archives of the United States, and the Daughters of the Republic of Texas Museum.

AREAS OF STUDY

Women’s and gender studies comprises research or creative work that raises new questions, formulates theories, or carries out empirical investigations that further understanding of science, social science, history, the humanities and arts, education, public and social policy, and paradigms of knowledge in applied and professional fields in such a way that women and gender systems are brought to the center of scholarship. Students pursue disciplinary and interdisciplinary research or creative work that prepares them for research or professional careers in which knowledge about women and gender is crucial. The master’s degree in women’s and gender studies is excellent preparation for further training in public policy, social work, health care, education, the arts, technology, and business. It also prepares graduates to pursue doctoral work in a traditional discipline or in women’s and gender studies at another institution.
GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

P. Elizabeth Abel
Kimberly A. Alidio
Katherine M. Arens
Phillip Barrish
Kirsten Belgum
Rebecca Bigler
Pascale R. Bos
Joanna Brooks
Cynthia J. Buckley
Elizabeth Butler Cullingford
Charlotte Canning
Mia E. Carter
Dana L. Cloud
Judith G. Coffin
David F. Crew
Ann Luja Cvetkovich
Ann Daly
Janet M. Davis
Andrew F. Dell'Antonio
Jill S. Dolan
Laura Furman
Dorje J. Gilbert
Lucia A. Gilbert
Gloria González-López
Darlene Grant
Benjamin Gregg
Susan Grobe
Susanne Hafner
Barbara Jane Harlow
Elizabeth A. Hedrick
Susan Heinzelman
Geraldine Heng
Carole K. Holahan
Aletha C. Huston
Bob Jensen
Joni L. Jones
Mary Celeste Kearney
Carol Hanbery MacKay
Ruth G. McRoy
Lynn C. Miller
Gail Minault
Lisa L. Moore
Joan Neuberger
Mary C. Neuburger
Martha G. Newman
Shelley M. Payne
Donna Lynn Rew
Ann Morris Reynolds
Gretchen Ritter
América Rodriguez
Victoria E. Rodriguez
Faegheh Shirazi
Waneen Wyrick Spirduso
Janet Staiger
Allucquere Rosanne Stone
Pauline T. Strong
Sharon L. Strover
Catherine A. Surra
Gayle M. Timmerman
Janice S. Todd
Elizabeth Vandewater
Anita L. Vangelisti
Kamala Visweswaran
Lorraine O. Walker
Samuel Craig Watkins
Lynn R. Wilkinson
Christine L. Williams
Zipporah B. Wiseman
Helena Woodard

ADMISSION REQUIREMENTS

An admission committee composed of Graduate Studies Committee members evaluates all applications. The committee looks for candidates with a strong academic background and a clear sense of the topics or areas they wish to pursue through the master’s degree. Applicants should have three letters of recommendation sent directly to the graduate adviser.
DEGREE REQUIREMENTS

Students pursuing a master’s degree in women’s and gender studies may write either a thesis or a report at the end of their coursework. The thesis option requires thirty semester hours of coursework, of which six hours are earned in the thesis course. The report option requires thirty-three semester hours of coursework, of which three hours are earned in the report course. All students must complete the three core courses: Women’s and Gender Studies 390, Foundations I: Introduction to Women’s and Gender Studies; 391, Foundations II: Feminist Theories; and 392, Research Seminar in Women’s and Gender Studies. In addition, each student must demonstrate competence in the research skills appropriate to the student’s overall academic and career objectives and to the final thesis or report. Three or four additional courses related to women, gender, sexuality, or feminism may be selected from the extensive offerings of faculty members affiliated with the Center for Women’s and Gender Studies.

FOR MORE INFORMATION

Campus address: Walter Webb Hall (WWH) 401, phone (512) 471-5765, fax (512) 475-8146; campus mail code: A4900

Mailing address: The University of Texas at Austin, Graduate Program, Center for Women’s and Gender Studies, 405 West 25th Street, Suite 401, Austin TX 78705-4831

E-mail: cwgs@uts.cc.utexas.edu

URL: http://www.utexas.edu/cola/cwgs/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Women’s and Gender Studies: WGS

384N. Internship in Women’s and Gender Studies. Practical working involvement with participating nonprofit and research agencies. The equivalent of ten class hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of the graduate adviser.

390. Foundations I: Introduction to Women’s and Gender Studies. Offered in the fall semester only. Women’s and Gender Studies 390 and Women’s Studies 390 may not both be counted. Prerequisite: Graduate standing and consent of the graduate adviser.

391. Foundations II: Feminist Theories. Introduction to the feminist theories and methods used in various disciplines; the ways these theories can inform interdisciplinary perspectives in the student’s own field of study. Offered in the spring semester only. Women’s and Gender Studies 391 and Women’s Studies 391 may not both be counted. Prerequisite: Graduate standing, Women’s and Gender Studies 390, and consent of the graduate adviser.

392. Research Seminar in Women’s and Gender Studies. Women’s and Gender Studies 392 and Women’s Studies 392 may not both be counted. Prerequisite: Graduate standing, Women’s and Gender Studies 391, and consent of the graduate adviser.
393. **Seminar: Topics in Women's and Gender Studies.** May be repeated for credit when the topics vary. Women's and Gender Studies 393 and Women's Studies 393 may not both be counted unless the topics vary. *Prerequisite:* Graduate standing and consent of the graduate adviser. Additional prerequisites vary with the topic and are given in the *Course Schedule.*

394. **Conference Course in Women's and Gender Studies.** Individual directed readings and conferences on selected problems or topics in women's and gender studies. May be repeated for credit when the topics vary. Women's and Gender Studies 394 and Women's Studies 394 may not both be counted unless the topics vary. *Prerequisite:* Graduate standing and consent of the graduate adviser.

698. **Thesis.** The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Women's and Gender Studies 698A and Women's Studies 698A may not both be counted. *Prerequisite:* For 698A, graduate standing in women's and gender studies and consent of the graduate adviser; for 698B, Women's and Gender Studies 698A.

398R. **Master's Report.** Preparation of a report to fulfill the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing in women's and gender studies and consent of the graduate adviser.
ASTRONOMY

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

Facilities for research in astronomy are located on the campus in Austin, at the McDonald Observatory in West Texas, and at the California Institute of Technology Submillimeter Observatory on Mauna Kea, Hawaii. Equipment in Austin includes a 16-inch reflector and several smaller telescopes. In addition to the facilities of Information Technology Services, a dedicated Sun Enterprise 3501 server, one hundred Sun workstations, and numerous desktop computers serve the Department of Astronomy and McDonald Observatory for data reduction and analysis, image processing, and other computer needs. The department operates an electronics shop, engineering and instrumentation laboratories, and a well-stocked research library. The Kuehne Physics Mathematics Astronomy Library is located in Robert Lee Moore Hall.

Facilities for research at McDonald Observatory include the 2.7-m reflector, which has Cassegrain and coudé foci and a variety of auxiliary instruments, including Cassegrain and coudé spectrometers equipped with digital detectors. The telescope is supplemented by a versatile computer system. The 2.1-m Struve reflector is used at the Cassegrain focus, or with a large spectrograph at the coudé focus. Cassegrain instrumentation includes a low-resolution spectrograph with linear detectors, direct and intensified cameras, two-channel high-speed photometers, a polarimeter, and a Fabry-Pérot interferometer.

The Hobby-Eberly telescope is a composite mirror instrument with an effective aperture of about 8.5-m, intended primarily for spectroscopic work. A low-resolution spectrograph, a medium-resolution spectrograph, and a high-resolution spectrograph are available and provide useful data. Two smaller reflectors, 0.9-m and 0.8-m, are used primarily for photometric photometry and CCD surveys. An excellent library is maintained for research and instruction, and other facilities include darkrooms, instrument and machine shops, and transient quarters.

The 10-m submillimeter-wavelength radio telescope built by the California Institute of Technology on Mauna Kea, Hawaii, is also used by faculty members and students in astronomy; three weeks a year are dedicated to University of Texas at Austin research. This research involves primarily the study of radiation from interstellar molecules and dust; it also includes the development of novel instrumentation.
AREAS OF STUDY
Graduate instruction and research are conducted in observational astronomy and astrophysics. Observational opportunities are available in conventional photometry, polarimetry, fast photometry of stellar oscillations, spectroscopy and spectrophotometry of planets, stars, nebulae, galaxies, and quasars, galactic and extragalactic research, planetary and cometary studies, infrared and millimeter astronomy, radio astronomy and instrumentation, and space astronomy. There are also instruction and research opportunities in theoretical astrophysics, including the origin of the elements, celestial mechanics, cosmology, stellar structure and evolution, stellar atmospheres, and interstellar material. There are opportunities for cooperative interdepartmental research with groups in the Department of Physics and the Department of Aerospace Engineering and Engineering Mechanics.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Frank N. Bash  
Volker Bromm  
Harriet L. Dinerstein  
Neal J. Evans II  
Karl Gebhardt  
Paul M. Harvey  
Daniel T. Jaffe  
Shardha Jogee  
Eiichiro Komatsu  
John Kormendy  
Pawan Kumar  
John H. Lacy  
David L. Lambert  
Edward L. Robinson  
John M. Scalo  
Paul R. Shapiro  
Gregory Alan Shields  
Christopher A. Sneden  
J. Craig Wheeler  
Derek Wills  
Donald E. Winget

ADMISSION REQUIREMENTS
Prerequisites for graduate work in astronomy are at least fifteen to eighteen semester hours of upper-division coursework in astronomy and physics, including courses in mechanics, electricity and magnetism, statistical physics, and quantum mechanics; and a satisfactory score on the Graduate Record Examinations Physics Test. The Physics Test must be taken in addition to the General Test of the Graduate Record Examinations, which is required for admission to the Graduate School. An applicant who does not present a satisfactory score on the Physics Test may, on recommendation of the Graduate Studies Committee, be granted a conditional admission to the program requiring removal of deficiencies in physics. A detailed evaluation is made of each new student’s physics and astronomy background to identify any deficiencies that should be removed.

DEGREE REQUIREMENTS
Master of Arts
Students must complete six of the following introductory courses: Astronomy 380E, 381C, 382C, 383C, 383D, 386C, 392D, 392J, 393F, 396C. Students must also complete Astronomy 185C and two elective courses; the electives may include additional courses from the required group. At least thirty-three semester hours, including Astronomy 398R, or thirty hours, including Astronomy 698, are required.
Students begin research during their first year. Research is done under the supervision of an adviser and committee and normally takes a year and a half. Upon completing an acceptable research project, with thesis or report, the student is awarded a degree. An alternative program prepares the student to teach college-level astronomy. It includes teaching experience and preparation of a report and normally takes two full years to complete.

**Doctor of Philosophy**

Students must earn a grade of at least B in Astronomy 185C and in six of the following required courses: Astronomy 380E, 381C, 382C, 383C, 383D, 386C, 392D, 392J, 393E, 396C. They must also complete two elective courses; the electives may include additional courses from the required group.

Students begin research during their first year. Research is done under the supervision of an adviser and committee and normally takes four to five years. In the spring of their second year, students must present their research to date and pass an oral qualifying examination. They must apply for admission to candidacy by the end of the summer of the second year. Two presentations on research must be given in colloquia or seminars. Finally, the student must complete the dissertation and pass an oral examination on the dissertation.

**FOR MORE INFORMATION**

*Campus address:* Robert Lee Moore Hall (RLM) 15.202AA, phone (512) 471-3350, fax (512) 471-6016; campus mail code: C1400

*Mailing address:* The University of Texas at Austin, Graduate Program, Department of Astronomy, 1 University Station C1400, Austin TX 78712

*E-mail:* studentinfo@astro.as.utexas.edu

*URL:* http://www.as.utexas.edu/

**GRADUATE COURSES**

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the *Course Schedule* to determine which courses and topics will be offered during a particular semester or summer session. The *Course Schedule* may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

**Astronomy: AST**

**380E. Radiative Processes and Radiative Transfer.**
Classical and quantum radiative processes relevant to astrophysics; basic radiative transfer. *Prerequisite:* Graduate standing and consent of instructor.

**381. Theoretical Astrophysics.** Topics include stellar atmospheres, spectral line analysis, stellar structure, stellar evolution, stellar stability, cosmical electrodynamics, cosmical gas dynamics, interstellar matter and galactic nebulae, high-energy and nuclear astrophysics, atomic and diatomic spectroscopy. May be repeated for credit when the topics vary. *Prerequisite:* Graduate standing and consent of instructor.

**381C. Gravitational Dynamics.** Orbital, collective, and tidal effects of astronomical objects, such as planets, stars, galaxies, and interstellar medium, under the influence of a gravitational field. *Prerequisite:* Graduate standing and consent of instructor.
381S. Seminar in Theoretical Astrophysics. Topics to be announced. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

382C. Astrophysical Gas Dynamics. The basic principles of compressible gas dynamics and magnetohydrodynamics, developed and applied in an astrophysical context to a wide range of astronomical phenomena. Prerequisite: Graduate standing in astronomy or physics, or graduate standing and consent of instructor.

383. Stellar Astronomy. Topics include properties of stars, including double and multiple stars, clusters, stellar distances, luminosities, motions, variability, populations, and evolution; stellar spectroscopy, photometry, and spectrophotometry; fundamental astronomy and astrometry. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

383C. Stellar Atmospheres. Observational properties of stellar atmospheres; theoretical calculations of stellar atmospheres and stellar spectra. Prerequisite: Graduate standing and consent of instructor.

383D. Stellar Structure and Evolution. Theoretical calculations of the structure and evolution of stars. Prerequisite: Graduate standing and consent of instructor.

383L. Seminar in Planets and Life. Discussions concerning the solar system; the detection, formation, and evolution of planets; planetary atmospheres, climates, and meteorology; and various aspects of life in the universe. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

383T. Seminar in Stellar Astronomy. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

384T. Current Studies in Astronomy for Teachers. Lectures and laboratory work in astronomy for elementary and secondary school teachers of earth science, physical science, or astronomy. Three lecture hours and twelve laboratory hours a week for one semester. Prerequisite: Graduate standing and consent of instructor.

385. Conference Course. Three conference hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

185C. Conference on Modern Astronomy. A broad introduction to the research being conducted by the faculty and research staff in astronomy. One lecture hour a week for one semester. Prerequisite: Graduate standing and consent of instructor.

386. Extragalactic Astronomy. Topics include classification of galaxies, distance indicators, luminosities, dimensions, colors, spectra, polarization, radio emission, rotation, masses; formation and evolution; pairs, groups, clusters, superclusters, large-scale distribution, redshifts, cosmology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

386C. Properties of Galaxies. Observational properties of galaxies and their interpretation; includes a discussion of the Milky Way galaxy. Prerequisite: Graduate standing and consent of instructor.

386S. Seminar in Extragalactic Astronomy. Topics to be announced. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

389. Dynamical Astronomy. Topics include planetary and stellar motions, asymptotic representations of quasi integrals, galactic dynamics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

391. Graduate Research in Astronomy. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in astronomy and consent of instructor.

392D. Mathematical Methods of Astrophysics. Statistics, error theory, least squares and curve fitting, numerical methods, approximation theory, Fourier transforms, sampling theory, time-series analysis. Prerequisite: Graduate standing and consent of instructor.

392E. Optical Techniques in Astronomy. Topics include photometry, spectroscopy, direct imaging, interferometry and polarimetry at ultraviolet, visual, and infrared wavelengths. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

392G. Observing Techniques in Astronomy. Survey of techniques used at the McDonald Observatory. Includes workshop at the observatory. Offered in the summer session only. Prerequisite: Graduate standing and consent of instructor.
392J. Astronomical Instrumentation. A hands-on course in instrument development, including mechanical design and machining, electronics design, optical design and optics, computer interfacing, and project planning. Students use CAD programs in each area and design and build a computer-controlled instrument. Learning activities are carried out in groups and teams. One lecture hour and five laboratory hours a week for one semester. Prerequisite: Graduate standing.

393F. Survey of the Interstellar Medium. A broad introduction to the processes and properties of the interstellar medium. Topics include H I regions, H II regions, molecular clouds, interstellar dust, and the distribution of the interstellar medium in our galaxy. Prerequisite: Graduate standing and consent of instructor.

393S. Seminar in Interstellar Matter. Topics to be announced. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

396C. Elements of Cosmology. A theoretical discussion of the origin and evolution of the universe; includes a brief review of general relativity and modern particle physics. Prerequisite: Graduate standing and consent of instructor.

697. Graduate Research Project. Two-semester graduate research project in astronomy. The equivalent of three hours of work a week for two semesters. Prerequisite: For 697A, graduate standing and consent of instructor; for 697B, Astronomy 697A.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in astronomy and consent of the graduate adviser; for 698B, Astronomy 698A.

398R. Master's Report. Preparation of a report to fulfill the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in astronomy and consent of the graduate adviser.

398T. Supervised Teaching in Astronomy. Effective astronomy teaching: course design, instructional materials, test design, other methods. In-class practice teaching. Projects in astronomy education. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and current or previous appointment as a teaching assistant.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Astronomy 399R, 699R, or 999R.
BIOCHEMISTRY

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK
Research in biochemistry is carried out in the Biochemical Institute and the Department of Chemistry and Biochemistry. Facilities available through the department are listed on page 458 in the description of the graduate program in chemistry.

AREAS OF STUDY
Graduate study in biochemistry is offered in a wide range of areas, including drug metabolism; nutritive aspects of human disease; metabolic regulation; structure and function of enzymes, toxins, and contractile proteins; mechanism and regulation of protein biosynthesis; cloning, sequencing, and site-directed mutagenesis of enzyme-coding genes; enzymology of DNA repair and replication; and biochemical taxonomy. Details are available from the graduate adviser.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Creed W. Abell
Eric V. Anslyn
Dean R. Appling
Karen Browning
Kevin N. Dalby
Andrew Ellington
Walter Fast
George Georgiou
David E. Graham
Marvin L. Hackert
David W. Hoffman
Brent L. Iverson
Kenneth A. Johnson
Sean M. Kerwin
G. Barrie Kitto
Robert M. Krug

Alan M. Lambowitz
Hung-Wen (Ben) Liu
Lara K. Mahal
Edward M. Marcotte
Stephen F. Martin
Tanya T. Paull
Austen Fox Riggs II
Jon D. Robertus
Rick Russell
Christine E. Schmidt
Jason B. Shear
Scott W. Stevens
John J. G. Tesmer
Christian P. Whitman
Y. Whitney Yin
Zhiwen Zhang

ADMISSION REQUIREMENTS
Students seeking a graduate degree in biochemistry must have a bachelor’s degree or the equivalent in a cognate area, such as chemistry, biology, physics, or microbiology, with the following preparation: mathematics through one year of calculus; chemistry, including organic chemistry, biochemistry, and physical chemistry; general physics; and biology, including cell biology. Deficiencies in undergraduate courses, if not too extensive, may be corrected during the student’s first two semesters in the graduate program. These courses are usually not counted toward graduate degrees.

DEGREE REQUIREMENTS
One semester of Chemistry 398T is required of all candidates for advanced degrees.
Master of Arts

Master’s degree students must complete at least thirty semester hours of coursework and must submit a thesis based on individual research. The thesis course may be counted as six of the thirty semester hours required for the degree. A minor of at least six semester hours is required, which may be in another area of chemistry, such as organic or physical chemistry, or in a related discipline, such as biology. No more than nine semester hours of upper-division coursework may be counted; these hours must be divided between the major and the minor field, with no more than six hours in the major field and three in the minor.

Courses required for the major in biochemistry are Chemistry 387D or 387K, 394, 395G, and 395J. Most students take two and one-half years to earn the Master of Arts.

Doctor of Philosophy

For admission to candidacy for the doctoral degree, a student must complete the following courses with a grade of at least B in each: Chemistry 387D or 387K, 394, 395G, and 395J. Students are also required to complete two elective courses, which may be selected from Chemistry 395I, 395H, certain topics of Chemistry 391L, or, with the approval of the graduate adviser, other upper-division or graduate courses. Students must complete Chemistry 192G five times and make four presentations, which is normally accomplished by the end of the third year of the graduate program. A qualifying examination designed to test the student’s knowledge of the basic principles of biochemistry must be completed within the first two years. A major part of this examination consists of a research proposal written in the form used for a National Institutes of Health grant application. The student presents and defends this proposal orally and is examined in terms of his or her ability to do independent research.

After the requirements for admission to candidacy have been completed, the chair of the Graduate Studies Committee petitions the dean of the Graduate School to appoint a dissertation committee. A student must do dissertation research under the supervision of a member of the Graduate Studies Committee. Generally this faculty member, chosen by mutual consent of the student and the professor, serves as chair of the dissertation committee.

FOR MORE INFORMATION

Campus address: Robert A. Welch Hall (WEL) 2.218, phone (512) 471-4538 or (866) 471-3890, fax (512) 475-8839; campus mail code: A5300

Mailing address: The University of Texas at Austin, Graduate Program in Biochemistry, Department of Chemistry and Biochemistry, 1 University Station A5300, Austin TX 78712

URL: http://www.cm.utexas.edu/
GRADUATE COURSES
The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Chemistry: CH

387D. Physical Methods in Biochemistry and Molecular Biology. Theory of physical methods used in biochemistry and molecular biology. Prerequisite: Graduate standing, an undergraduate course in physical chemistry, and an undergraduate course in biochemistry.

387K. Biochemical Techniques. Discussion of procedures and equipment used in modern biochemical investigation, with laboratory to provide experience in techniques of general importance. Two lecture hours and seven laboratory hours a week for one semester. Prerequisite: Graduate standing, six semester hours of undergraduate coursework in biochemistry, and consent of instructor.

190. Seminar in Chemistry. The equivalent of one class hour a week for one semester. May be repeated for credit when the topics vary. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in chemistry.

Topic 1: Analytical-Physical Chemistry.
Topic 2: Organic Chemistry.
Topic 3: Biochemistry.
Topic 4: Inorganic Chemistry.

391L. Advanced Topics in Biochemistry. Topics include physical methods for the study of macromolecules; chemistry of proteins; enzyme chemistry; regulatory mechanisms for gene expression, protein–nucleic acid interactions. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

192G. Biochemistry Student Seminar. Student presentations on current research topics. The equivalent of one lecture hour a week for one semester. Prerequisite: Graduate standing and consent of instructor.

392T. Biotransformations of Drugs and Other Nonnutritive Compounds. Absorption and metabolism of naturally occurring and synthetic nonnutritive compounds. Prerequisite: Graduate standing, and Chemistry 394 or consent of instructor.

392U. Comparative Biochemistry. Comparative aspects of protein structure, metabolism, respiration, and cellular regulation. Prerequisite: Graduate standing; and Chemistry 395G and 394, or consent of instructor.

394. Chemistry of Enzyme Systems. Prerequisite: Graduate standing and Chemistry 370.

395G. Biochemistry. Same as Biology 395G and Molecular Biology 395G. Detailed consideration of the structure and function of proteins, with discussion of enzyme mechanisms and kinetics, the biochemistry of energy production, and the metabolism of lipids and nucleotides. Prerequisite: Graduate standing. A one-year undergraduate sequence in biochemistry, such as Chemistry 339K and 339L, is strongly recommended.

395J. Molecular Biology. Same as Biology 395J and Molecular Biology 395J. Detailed consideration of prokaryotic and eukaryotic mechanisms of DNA replication and transcription; posttranscriptional processing of transcription products; and mechanism and regulation of the translation of messenger RNAs. Prerequisite: Graduate standing, and Chemistry 395F and 395G, or consent of instructor.

398T. Supervised Teaching in Chemistry. Teaching under close supervision of the instructor; weekly group meetings with the instructor; individual consultations; reports. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and appointment as a teaching assistant in chemistry.

Biochemistry: BCH

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in biochemistry and consent of the graduate adviser; for 698B, Biochemistry 698A.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree and registration for Chemistry 190 when it is given.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Biochemistry 399R, 699R, or 999R; and registration for Chemistry 190 when it is given.
BIOLOGICAL SCIENCES

Master of Arts
Doctor of Philosophy

Graduate degrees in the biological sciences are offered by the School of Biological Sciences. The three degree programs—ecology, evolution, and behavior; microbiology; and plant biology—are described on pages 440–444. Each program is administered by its own Graduate Studies Committee.

FACILITIES FOR GRADUATE WORK

The primary facilities for graduate instruction and research are provided in the Biological Laboratories building, the Experimental Science Building, the Louise and James Robert Moffett Molecular Biology Building, and the J. T. Patterson Laboratories Building, and at the Marine Science Institute at Port Aransas. Additional facilities include the Life Science Library, the Brackenridge Field Laboratory, the Stengl “Lost Pines” Biological Station, the Institute for Cellular and Molecular Biology, the Plant Resources Center, the Texas Memorial Museum, the Culture Collection of Algae, the Institute of Reproductive Biology, the Center for Computational Biology and Bioinformatics, the Institute for Neuroscience, the Environmental Science Institute, and the Animal Resources Center.

AREAS OF STUDY

Graduate study supervised by the School of Biological Sciences is available in areas of specialization that cross the boundaries between the biological disciplines as classically defined. Among the broad areas of specialization are behavioral biology, biological chemistry, biophysics, cellular and molecular biology, cytology and cytogenesis, developmental biology, ecology, population biology, evolution, host-parasite biology, human biology, immunobiology, genetics, molecular genetics, neurobiology, nutrition, paleontology, physiology, systematics, and virology. Additional areas of specialization are listed in the sections for the three graduate programs below.

ECOLOGY, EVOLUTION, AND BEHAVIOR

The graduate program in ecology, evolution, and behavior is large and diverse. Research ranges from the molecular level to the ecosystem, with approaches that include fieldwork, laboratory analyses, and mathematical modeling.

Graduate Studies Committee

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Daniel I. Bolnick
Creagh Breuner
Frank H. Bronson
Jim Bull
David Cannatella
David P. Crews
Molly E. Cummings
Norma L. Fowler
Gary Freeman
Lee A. Fuiman
Lawrence E. Gilbert
Robin Gutell

Dean Hendrickson
David M. Hillis
Robert K. Jansen
Thomas E. Juenger
Timothy H. Keitt
Mark Kirkpatrick
Mathew A. Leibold
Donald A. Levin
Craig Randal Linder
Marcy E. Litvak
James D. Mauseth
Lauren A. Meyers
Degree Requirements

Master of Arts

The graduate program is focused on the doctoral degree; this degree is designed for those who anticipate careers in research, possibly combined with teaching or other activities. Students seeking only the master's degree are rarely admitted. If a master's degree student is admitted, his or her proposed program must be approved by the Graduate Studies Committee. Supporting work is chosen most commonly from plant biology, chemistry, geological sciences, marine science, mathematics, microbiology, psychology, physics, or education.

Doctor of Philosophy

For the Doctor of Philosophy, preliminary training should have provided a working core of knowledge in general biology and the history of biology; other helpful areas are plant biology, vertebrate and invertebrate zoology, embryology, genetics and evolution, and physiology.

The student must take two core courses in his or her first year in the program; information about the core courses is given in the ecology, evolution, and behavior student handbook. Preliminary and parallel training is required in other natural sciences. Supporting areas are commonly chosen in plant biology, chemistry, computer sciences, geological sciences, marine science, mathematics, microbiology, molecular biology, psychology, or physics, as needed to support the area of specialization chosen. With the approval of the supervising committee, relevant courses in these fields may also be included as a part of the major.

Students are expected to fulfill all requirements for admission to candidacy by the end of the fifth long semester.

The School of Biological Sciences provides information on graduate work and on available fellowships and assistantships at http://www.biosci.utexas.edu/graduate/eeb/.

For More Information

Campus address: J.T. Patterson Laboratories Building (PAT) 141SB, phone (512) 232-2716, fax (512) 471-9651; campus mail code: C0900

Mailing address: The University of Texas at Austin; Graduate Coordinator for Ecology, Evolution, and Behavior; School of Biological Sciences; 1 University Station C0900; Austin TX 78712

E-mail: eeb@biosci.utexas.edu

URL: http://www.biosci.utexas.edu/graduate/eeb/
MICROBIOLOGY

Microbiology offers a focused program of study encompassing disciplines in bacteriology, virology, immunology, genetics, and biochemistry, using both prokaryotic and eukaryotic model systems.

Graduate Studies Committee

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Karen Artzt
Henry R. Bose Jr.
R. Malcolm Brown Jr.
Clarence S. M. Chan
Arturo De Lozanne
Jaquelin P. Dudley
Charles F. Earhart Jr.
Andrew Ellington
George Georgiou
Ellen Gottlieb
David E. Graham
Rasika M. Harshey
David L. Herrin
Jon M. Huibregtse
Vishwanath R. Iyer
Makkuni Jayaram
Arlen W. Johnson
Robert M. Krug
Alan M. Lambowitz
Richard J. Meyer
Ian J. Molineux
Theresa O’Halloran
Tanya T. Paull
Shelley M. Payne
Bob G. Sanders
Scott W. Stevens
Paul J. Szaniszlo
Ming Tian
Philip W. Tucker
James R. Walker

Degree Requirements

Master of Arts

The microbiology graduate program does not accept applications for the master's degree. However, a student accepted into and in good standing with the doctoral program may, at the discretion of the graduate adviser, be permitted to pursue a master's degree in lieu of the PhD. The student must complete thirty semester hours of coursework, including Biology 395F, 395G, 395H, 395J, 698, and 398T, and six hours in related fields outside the microbiology program. He or she must earn a grade of at least B in Biology 395F, 395G, 395H, and 395J. Each semester, he or she must register for a weekly journal club that is offered by a member of the Graduate Studies Committee or approved by the graduate adviser. No more than nine semester hours of upper-division coursework may be counted toward the degree, and no more than six of these nine may be in any one field of study. In addition to the above requirements, a master’s degree student must either successfully complete Part A of the doctoral preliminary examination or pursue original research under the direction of a faculty member and submit an approved thesis.

Doctor of Philosophy

To be admitted to candidacy for the doctoral degree, the student must complete during the first three years a two-part preliminary examination. Part A, taken in the spring of the student’s second year, consists of presentation and defense of a mock National Institutes of Health grant proposal. Part B, taken about six months later, consists of presentation of a proposal for dissertation research. Individual programs of study are tailored to the student’s interests, but each student must complete Biology 395F, 395G, 395H, 395J (with a grade of at least B in each), 398T, and at least six additional hours in graduate lecture courses approved by the graduate adviser. He or she must attend a weekly journal club each semester. The student must also pursue independent, original research under the direction of a faculty member; the results of this
research constitute the dissertation, which fulfills the requirements of the required courses Biology 399R and 399W. Each student must serve as a teaching assistant for two long-session semesters; two six-week summer terms are considered equivalent to a semester. A well-qualified student can usually complete the doctoral degree program in five to six years.

For More Information

**Campus address:** Experimental Science Building (ESB) 216, phone (512) 471-4181, fax (512) 471-7088; campus mail code: A5000

**Mailing address:** The University of Texas at Austin, Graduate Coordinator for Microbiology, School of Biological Sciences, 1 University Station A5000, Austin TX 78712

**E-mail:** microbiology@biosci.utexas.edu

**URL:** http://www.biosci.utexas.edu/graduate/micro/

### PLANT BIOLOGY

Graduate study in plant biology is available in the following areas: algal physiology, plant biochemistry, cell biology, development, ecology, evolution, molecular biology, natural products chemistry, photobiology, phycology, plant anatomy, plant biogeography, plant morphology, plant physiology, population biology, systematics, and ultrastructure.

### Graduate Studies Committee

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

- Jerry J. Brand
- Karen Browning
- Su Dharmawardhane
- Norma L. Fowler
- Lawrence E. Gilbert
- David L. Herrin
- Enamul Huq
- Robert K. Jansen
- Thomas E. Juenger
- John W. La Claire II
- Donald A. Levin
- Craig Randal Linder
- Marcy E. Litvak
- Alan Martin Lloyd
- Tom J. Mabry
- James D. Mauseth
- Mona Mehdy
- José L. Panero
- Stanley J. Roux Jr.
- Beryl B. Simpson
- Edward C. Theriot

### Admission Requirements

The undergraduate training of students planning to undertake graduate study in plant biology should ordinarily include at least twenty-four semester hours in plant biology and/or other biological sciences. At least twelve of these must be in upper-division work. This requirement in the major should be supported by coursework in the other sciences, especially chemistry, physics, and mathematics.

### Degree Requirements

#### Master of Arts

At least thirty semester hours of coursework, including Biology 698, or thirty-three semester hours, including Biology 398R, are required. The coursework must include a minor of six to nine hours of work acceptable for graduate credit in another area or areas. In general, at least one full year (including the summer) is needed to meet the requirements for the master's degree.
Doctor of Philosophy

Mastery of an integrated and meaningful program of graduate study is deemed more important than the completion of a prescribed number of semester hours. Most programs include at least four graduate courses in plant biology. Further supporting work in related sciences augments the program.

Admission to candidacy for the Doctor of Philosophy degree requires approval of the Graduate Studies Committee and is based on the total record of the student, performance in graduate courses, and such further examinations as the committee may require. An oral examination covering the major area of study is administered by the student's Qualifying Examination Committee no later than the end of the student's fourth long-session semester of residence.

For More Information

Campus address: Biological Laboratories (BIO) 316, phone (512) 471-8490, fax (512) 471-3878; campus mail code: A6720

Mailing address: The University of Texas at Austin, Graduate Coordinator for Plant Biology, School of Biological Sciences, 1 University Station A6720, Austin TX 78712

E-mail: plantbio@biosci.utexas.edu

URL: http://www.biosci.utexas.edu/graduate/plantbio/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

The abbreviations EEB, MIC, and PB in the following list identify the program(s) in the School of Biological Sciences with which the course is most closely associated. The abbreviation EEB represents ecology, evolution, and behavior; MIC, microbiology; and PB, plant biology.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

**Biology: BIO**

380M. *Topics in Biology (Cooperative Programs).*

EEB, MIC, PB. Formal, organized courses taught at institutions other than the University of Texas at Austin. Not all topics are offered every year. May be repeated for credit when the topics vary. Biology 380M and 388 may not both be counted unless the topics vary. **Prerequisite:** Graduate standing, consent of the student's graduate adviser or department chair and the University's graduate dean, and consent of the graduate dean at the host institution. Additional prerequisites vary with the topic and are given in the Course Schedule.

180R, 280R, 380R. *Advanced Readings in the Biological Sciences.* EEB. For each semester hour of credit earned, the equivalent of one class hour a week for one semester. **Prerequisite:** Graduate standing, and consent of instructor and the graduate adviser.

380T. *Current Concepts in Biology.* EEB. Designed for beginning graduate students seeking a review of modern biological concepts. With consent of instructor, may be repeated for credit when the topics vary. **Prerequisite:** Graduate standing in the School of Biological Sciences, and consent of instructor and the graduate adviser.
381C. Principles of Neuroscience: Cellular and Molecular Neuroscience. EEB. A proseminar covering the core material on essential topics in neuroscience from the molecular to the systems level. Only one of the following may be counted: Biology 381C, Kinesiology 382T, Neuroscience 382T, Pharmacy 382T, Psychology 382T. Prerequisite: Graduate standing, consent of instructor and the graduate adviser, and concurrent enrollment in Neuroscience 183.

381D. Principles of Neuroscience: Systems and Behavioral Neuroscience. EEB. A proseminar covering the core material on essential topics in neuroscience from the molecular to the systems level. Only one of the following may be counted: Biology 381D, Kinesiology 383T, Neuroscience 383T, Pharmacy 383T, Psychology 383T, Zoology 383T. Prerequisite: Graduate standing, consent of instructor, and concurrent enrollment in Neuroscience 186.

381K. Ecology, Evolution, and Behavior: Physiology and Biophysics. Lectures, conference discussion, and laboratory projects, depending on topic. Not all topics are offered every year. May be repeated for credit when the topics vary. Some topics are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing, consent of instructor and the graduate adviser. Additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Topics in Biophysics. EEB. Irritability of living systems and the principles of energy transformation and transfer in organisms; emphasis on bioelectrical processes and electrical energy changes. Three lecture hours a week for one semester. Biology 381K (Topic 1) and Zoology 385L (Topic 1: Topics in Biophysics) may not both be counted.

Topic 2: Comparative Neurophysiology. EEB. General treatment of the physiology of neurons, synapses, sensory and motor systems; neural basis of behavior; emphasis on invertebrates. Three lecture hours a week for one semester. Biology 381K (Topic 2) and Zoology 385L (Topic 10: Comparative Neurophysiology) may not both be counted.

Topic 3: Sensory Physiology. EEB. Physiology and biophysics of the transduction and peripheral processes of the major sensory systems. Three lecture hours a week for one semester. Biology 381K (Topic 3) and Zoology 385L (Topic 12: Sensory Physiology) may not both be counted.

Topic 4: Current Concepts in Neurobiology. EEB. A series of seminars designed to give students a broad background in neurobiology. Three lecture hours a week for one semester. Only one of the following may be counted: Biology 381K (Topic 4), Neuroscience 385L (Topic 2: Current Concepts in Neurobiology), Zoology 385L (Topic 15: Current Concepts in Neurobiology).

Topic 5: Laboratory in Neurophysiology. EEB. Training in research techniques useful for the neurophysiological study of vertebrate and invertebrate nervous systems. Three lecture hours a week for one semester. Biology 381K (Topic 5) and Zoology 385L (Topic 18: Laboratory in Neurophysiology) may not both be counted.

Topic 6: Insect Physiology. EEB. An in-depth study of the physiology of insect organs systems, development, and behavior. Three lecture hours a week for one semester. Biology 381K (Topic 6) and Zoology 385L (Topic 19: Insect Physiology) may not both be counted.

Topic 7: Developmental Neurobiology. EEB. Neurological cell lineage and differentiation, neuronal migration, axon guidance, neural cell death, synapse formation and maintenance. Three lecture hours a week for one semester. Biology 381K (Topic 7) and Zoology 385L (Topic 20: Developmental Neurobiology) may not both be counted.

Topic 8: Addiction Biology. EEB. Three lecture hours a week for one semester.

Topic 9: Comparative Animal Physiology. EEB. Three lecture hours a week for one semester.

Topic 10: Basic Processes of Nerve Cells. EEB. Study of information processing by, and trophic functions of, nerve cells. Three lecture hours a week for one semester. Only one of the following may be counted: Biology 381K (Topic 10), Neuroscience 385L (Topic 1: Basic Processes of Nerve Cells), Zoology 385L (Topic 13: Basic Processes of Nerve Cells).

Topic 11: Current Concepts in Neurophysiology. EEB. Three lecture hours a week for one semester. Biology 381K (Topic 11) and Zoology 385L (Topic 22: Seminar in Neurophysiology) may not both be counted.

182, 282, 382. Advanced Study and Research. EEB, MIC, PB. For each semester hour of credit earned, the equivalent of one class hour a week for one semester. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.
383K. Ecology, Evolution, and Behavior: Development and Reproduction. Three lecture hours a week for one semester, or as required by the topic. Not all topics are offered every year. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and consent of instructor and the graduate advisor.

Topic 1: Hormonal Control of Development and Reproduction. EEB. Biology 383K (Topic 1) and Zoology 390K (Topic 1: Hormonal Control of Development and Reproduction) may not both be counted.

Topic 2: Techniques in the Study of Development and Reproduction. EEB. Eight laboratory hours a week for one semester. Biology 383K (Topic 2) and Zoology 390K (Topic 5: Techniques in the Study of Development and Reproduction) may not both be counted.

Topic 3: Comparative Endocrinology. EEB. Structure, function, and interrelationships of endocrine glands, with emphasis on the control of hormone synthesis and secretion and mechanisms of hormone action. Biology 383K (Topic 3) and Zoology 390K (Topic 8: Comparative Endocrinology) may not both be counted.

Topic 4: Recent Advances in Development and Reproduction. EEB. Discussion of recent scientific papers and their contribution to modern work in development and reproduction. Biology 383K (Topic 4) and Zoology 390K (Topic 9: Recent Advances in Development and Reproduction) may not both be counted.

Topic 5: Molecular Analysis of Development. EEB. Lectures and discussion concerning the principles of animal development at the molecular level. Biology 383K (Topic 5) and Zoology 390K (Topic 10: Molecular Analysis of Development) may not both be counted.

Topic 6: Current Literature in Cell and Developmental Biology. EEB. Offered on the credit/no credit basis only. Biology 383K (Topic 6) and Zoology 390K (Topic 11: Current Literature in Developmental Biology) may not both be counted.

Topic 7: Seminar in Physiology and Behavior. EEB. Biology 383K (Topic 7) and Zoology 390K (Topic 17: Seminar in Physiology and Behavior) may not both be counted.

Topic 8: Development and Evolution. EEB. Biology 383K (Topic 8) and Zoology 390K (Topic 18: Development and Evolution) may not both be counted.

Topic 9: Survey of Animal Development. EEB. Offered on the credit/no credit basis only. Biology 383K (Topic 9) and Zoology 390K (Topic 14: Graduate Survey of Animal Development) may not both be counted.

384C. Introduction to Ecology, Evolution, and Behavior I. EEB. Designed for beginning graduate students in ecology, evolution, and behavior. A review of modern biological concepts and techniques relating to ecology, evolution, and behavior. Prerequisite: Graduate standing, and consent of instructor and the graduate advisor.

384D. Introduction to Ecology, Evolution, and Behavior II. EEB. Continuation of Biology 384C. Prerequisite: Graduate standing, Biology 384C, and consent of instructor and the graduate advisor.

384E. Population Ecology. EEB. Concepts, research methods, and current questions of population ecology. Both plant and animal examples are discussed. Only one of the following may be counted: Biology 384E, 384K (Topic 1: Population Ecology), Zoology 384L (Topic 1: Population Ecology). Prerequisite: Graduate standing, an upper-division undergraduate course in ecology, and consent of instructor and the graduate advisor.

384K. Ecology, Evolution, and Behavior. Basic concepts and methods of laboratory and field analysis in various fields of biology; systematics and ecology of natural populations. Lectures, conference discussions, and laboratory work, depending on topic. May be repeated for credit when the topics vary. Some topics are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing, and consent of instructor and the graduate advisor. Additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 2: Ornithology. EEB. Behavior and ecology of birds, with emphasis on recent developments in the field. Three lecture hours a week for one semester. Biology 384K (Topic 2) and Zoology 384L (Topic 2: Ornithology) may not both be counted.

Topic 3: Herpetology. EEB. Classification, speciation, morphological adaptations, mode of life, history, and ecology of amphibians and reptiles; emphasis on recent advances in the field. Three lecture hours a week for one semester. Biology 384K (Topic 3) and Zoology 384L (Topic 3: Herpetology) may not both be counted.

Topic 4: Ichthyology. EEB. Evolution and ecology of fishes. Three lecture hours a week for one semester. Biology 384K (Topic 4) and Zoology 384L (Topic 4: Ichthyology) may not both be counted.

Topic 5: Entomology. EEB. Survey of original publications, research methods, and recent developments in the field, with emphasis on taxonomy, insecticides and repellants, and the role of insects in disease transmission. Three lecture hours a week for one semester. Biology 384K (Topic 5) and Zoology 384L (Topic 5: Entomology) may not both be counted.
Topic 6: Invertebrate Zoology. EEB. Study of the physiological ecology of animals, with emphasis on the invertebrates. Three lecture hours a week for one semester. Biology 384K (Topic 6) and Zoology 384L (Topic 6: Invertebrate Zoology) may not both be counted.

Topic 7: Animal Behavior. EEB. Causal basis, ontogeny, adaptive significance, and evolution of behavior patterns in animals. Three lecture hours a week for one semester. Biology 384K (Topic 7) and Zoology 384L (Topic 7: Animal Behavior) may not both be counted.

Topic 8: Environment and Evolution. EEB. The role of environment in shaping populations and communities, with emphasis on terrestrial vertebrate animals and terrestrial communities. Three lecture hours a week for one semester. Biology 384K (Topic 8) and Zoology 384L (Topic 8: Environment and Evolution) may not both be counted.

Topic 9: Community and Ecosystem Ecology. EEB. Study of the ecological processes that produce and bring about change in the functional structure of communities: dispersal, colonization, population growth, competition. Three lecture hours a week for one semester. Biology 384K (Topic 9) and Zoology 384L (Topic 9: Community and Ecosystem Ecology) may not both be counted.

Topic 10: Ecological Studies in a Tropical–Temperate Transition. EEB. Survey of the variety of habitats along a transect from southeastern Texas to southwestern Tamaulipas, from the standpoint of experimental field ecology. Three lecture hours a week for one semester. Biology 384K (Topic 10) and Zoology 384L (Topic 10: Ecological Studies in a Tropical–Temperate Transition) may not both be counted.

Topic 11: Ecological and Historical Biogeography. EEB. Study of geographic assemblages of organisms, of ecological factors governing distributions, and of historical factors producing differences between ecologically similar regions. Three lecture hours a week for one semester. Biology 384K (Topic 11) and Zoology 384L (Topic 11: Ecological and Historical Biogeography) may not both be counted.

Topic 12: Mathematical Ecology. EEB. An introduction to the mathematical methods and models used in current ecological theory. Three lecture hours a week for one semester. Biology 384K (Topic 12) and Zoology 384L (Topic 12: Mathematical Ecology) may not both be counted.

Topic 13: Aquatic Entomology. EEB. A guide to the taxonomy of aquatic insects and to their use in biomonitoring. Two lecture hours and three laboratory hours a week for one semester. Only one of the following may be counted: Biology 321, 321L, 370C (Topic: Applied Aquatic Entomology), 384, 384K (Topic 13), 388 (Topic: Applied Aquatic Entomology).

Topic 14: Advanced Systematics. EEB. Survey of systematic theory and methods, with emphasis on molecular phylogenetics and computational methods. Three lecture hours and three laboratory hours a week for one semester. Biology 384K (Topic 14) and Zoology 384L (Topic 20: Systematics) may not both be counted. Additional prerequisite: Biology 458L or the equivalent or consent of instructor.

Topic 15: Insect-Plant Relationships. EEB. Three lecture hours a week for one semester. Biology 384K (Topic 15) and Zoology 384L (Topic 21: Insect-Plant Relationships) may not both be counted.

Topic 16: Molecular Evolution. EEB. Three lecture hours a week for one semester. Biology 384K (Topic 16) and Zoology 384L (Topic 22: Molecular Evolution) may not both be counted.

Topic 17: Behavioral Ecology. EEB. Advanced topics in behavioral ecology, considering the following in detail: animal communication, altruism, sexual selection, plant-animal interactions. Three lecture hours a week for one semester. Biology 384K (Topic 17) and Zoology 384L (Topic 23: Behavioral Ecology) may not both be counted.

Topic 18: Biomechanics and Vertebrate Functional Morphology. EEB. Functional analysis of organismal design in ecological and evolutionary contexts. Three lecture hours a week for one semester. Biology 384K (Topic 18) and Zoology 384L (Topic 24: Biomechanics and Vertebrate Functional Morphology) may not both be counted.

Topic 19: Natural Resource Management. EEB. Three lecture hours a week for one semester. Biology 384K (Topic 19) and Zoology 384L (Topic 25: Natural Resource Management) may not both be counted.

Topic 20: Recent Advances in Computational Biology. EEB. Discussion of current scientific papers, methods, and ideas in computational biology and bioinformatics. Three lecture hours a week for one semester. Biology 384K (Topic 20) and Zoology 384L (Topic 26: Recent Advances in Computational Biology) may not both be counted.

Topic 21: Recent Advances in Ecology and Systematics. EEB. Discussion of recent scientific papers and their contributions to modern work in systematic and environmental zoology. Three lecture hours a week for one semester. Biology 384K (Topic 21) and Zoology 384L (Topic 14: Recent Advances in Ecology and Systematics) may not both be counted.
384L. Issues in Population Biology. EEB. Analysis at an advanced level of currently active areas of research in population biology. Offered on the credit/no credit basis only. Biology 384L and Zoology 391L may not both be counted. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser.

385C. Conservation Genetics. EEB, PB. Genetic attributes of rare plant and animal species, especially as they affect conservation; germ plasm resource conservation in wild and domesticated species. Only one of the following may be counted: Biology 376, 385C, Botany 376C, 386C. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser.

385K. Ecology, Evolution, and Behavior: Genetics. Training in the fields of genetics shown by the topics. Lectures, conference discussion, or lecture and laboratory, depending on topic. Not all topics are offered every year. May be repeated for credit when the topics vary. Some topics are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser. Additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Developmental Genetics. EEB. Discussion of biological processes controlling development, with particular attention to recent experimental investigations. Three lecture hours a week for one semester. Biology 385K (Topic 1) and Zoology 382L (Topic 4: Developmental Genetics) may not both be counted.

Topic 2: Evolution. EEB, PB. Current problems and developments in evolution theory. Three lecture hours a week for one semester. Only one of the following may be counted: Biology 370, 385K (Topic 2), Botany 370M, 387L, Zoology 382L. (Topic 7: Evolution).

Topic 3: Recent Advances in Population Genetics. EEB. Discussion of recent scientific papers and their impact on theory and practice in population genetics. Three lecture hours a week for one semester. Biology 385K (Topic 3) and Zoology 382L. (Topic 14: Recent Advances in Population Genetics) may not both be counted.

Topic 4: Population Genetics. EEB. Dynamics and statistics of genetic populations. Three lecture hours a week for one semester. Biology 385K (Topic 4) and Zoology 382L (Topic 10: Population Genetics) may not both be counted.

Topic 5: Research Design in Biology. EEB. Formulation and criticism of research plans; the analysis and interpretation of biological observations. Three lecture hours a week for one semester. Biology 385K (Topic 5) and Zoology 382L (Topic 18: Research Design in Biology) may not both be counted.

386. Topics in Plant Science: Ecology and Evolution. May be repeated for credit when the topics vary. Some topics are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser. Additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Biogeography. EEB, PB. Biology 386 (Topic 1) and Botany 394 (Topic 2: Biogeography) may not both be counted.

Topic 2: Methods of Systematics. EEB, PB. Biology 386 (Topic 2) and Botany 394 (Topic 7: Methods of Systematics) may not both be counted.

Topic 3: Philosophies of Systematics. EEB, PB. Biology 386 (Topic 3) and Botany 394 (Topic 9: Philosophies of Systematics) may not both be counted.

Topic 4: Plant Population Biology Seminar. EEB, PB. Biology 386 (Topic 4) and Botany 394 (Topic 12: Plant Population Biology Seminar) may not both be counted.


Topic 6: Principles and Methods of Plant Monography. EEB, PB. Biology 386 (Topic 6) and Botany 394 (Topic 14: Principles and Methods of Plant Monography) may not both be counted.

Topic 7: Principles of Pollination Biology. EEB, PB. Biology 386 (Topic 7) and Botany 394 (Topic 15: Principles of Pollination Biology) may not both be counted.

Topic 8: Global Environmental Change. EEB, PB. Global change as it affects terrestrial ecosystems, including feedbacks between ecosystems and the atmosphere. Topics include greenhouse gases and global warming, ozone, biological invasions, and land-use change. Biology 386 (Topic 8) and Botany 394 (Topic 19: Global Environmental Change) may not both be counted.

Topic 9: Synantherology. PB. Only one of the following may be counted: Biology 386 (Topic 9), 389 (Topic 10: Synantherology), Botany 394 (Topic 17: Synantherology).
387C. Plant Genetics. EEB, PB. Genes, gene systems, linkage systems, and genetic systems in higher plants. Only one of the following may be counted: Biology 367, 387C, Botany 367K, 387K. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser.

387D. Biometry. EEB, PB. An introduction to a variety of statistical techniques, including ANOVA, regression, and contingency table analysis. Students analyze their own data. Emphasis on biological applications. Biology 387D and Botany 381R may not both be counted. Prerequisite: Graduate standing, consent of instructor and the graduate adviser, and concurrent enrollment in Biology 387J.

387E. Plant Speciation. EEB, PB. Nature of species in higher plants, speciation phenomena in plants, natural hybridization, polyploidy, agamospermy, evolution of hybrid complexes. Only one of the following may be counted: Biology 363, 387E, Botany 362L, 382L. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser.

287F. Plant Systematics. EEB, PB. Principles of plant taxonomy, as exemplified by families of flowering plants found seasonally around Austin. Two lecture hours a week for one semester. Biology 287F and Botany 283C may not both be counted. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser.

487G. Taxonomic Plant Anatomy. EEB, PB. An advanced course that emphasizes those aspects of plant anatomy that are most reliable and useful for systematic purposes. Three lecture hours and two laboratory hours a week for one semester. Only one of the following may be counted: Biology 472L, 487G, Botany 474L, 484L. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser.

387J. Advanced Plant Anatomy. EEB, PB. Plant anatomy in relation to development and differentiation, systematics, and evolution. Biology 387J and Botany 388K may not both be counted. Prerequisite: Graduate standing, consent of instructor and the graduate adviser, and concurrent enrollment in Biology 187L.

387K. Plant Evolution. EEB, PB. The properties of plant populations, considered from genetic and ecological perspectives; mechanisms of evolution within and among populations. May be repeated for credit. Biology 387K and Botany 388L may not both be counted. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser.
387S. Laboratory Methods in Molecular Ecology and Systematics. EEB, PB. An introduction to DNA methods in the study of molecular ecology, systematics, and evolution: DNA isolation and purification; DNA quantification; polymerase chain reaction; restriction fragment length polymorphism; random amplified polymorphic DNA; amplified fragment length polymorphism; cloning; simple sequence repeat (microsatellite) marker development; DNA sequencing; automated sequencing; automated genotyping; phylogenetic and population genetic analyses. Seven laboratory hours a week for one semester. Biology 387S and Botany 394C may not both be counted. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser.

287T. Angiosperm Diversity Laboratory. PB. Practical experience in recognizing, identifying, and classifying families of flowering plants. Four laboratory hours a week for one semester. Biology 287T and Botany 283D may not both be counted. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser.

388C. Transmembrane Signaling Mechanisms. PB. Mechanisms by which hormones, light, and other stimuli trigger changes in plant and animal cell metabolism. Only one of the following may be counted: Biology 343M, 388C, Botany 343M, 383M. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser.

388D. Research Topics in Plant Biology. PB. An introduction to various fields of plant biology. Students attend seminars, faculty research presentations, and other meetings. Three lecture hours a week for one semester, with additional meeting times to be arranged. Prerequisite: Graduate standing in the School of Biological Sciences.

388E. Plant Growth and Development. PB. Emphasis on whole plant physiology, especially growth and development, water relations, and mineral nutrition of vascular plants. Biology 388E and Botany 383K may not both be counted. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser.

388J. General Phycology. PB. Survey of the algae, including significant biological aspects of selected genera, research techniques, and readings in the literature. Only one of the following may be counted: Biology 327, 388J, Botany 327, 385K. Prerequisite: Graduate standing, consent of instructor and the graduate adviser, and concurrent enrollment in Biology 188K.

188K. Laboratory in General Phycology. PB. Survey of various algal groups, including direct observations of their biology, exposure to research techniques, and instruction in cultural procedures. Three laboratory hours a week for one semester. Biology 188K and Botany 185L may not both be counted. Prerequisite: Graduate standing, consent of instructor and the graduate adviser, and concurrent enrollment in Biology 388J.

388L. Laboratory Studies in Cell Biology: Plant Biology. PB. Research exercises involving light microscopy, including polarization, phase contrast, Nomarski interference, darkfield, fluorescence, and brightfield optics. High-resolution transmission electron microscopy. Hands-on experience with atomic and molecular imaging, including digital image processing and time-lapse video microscopy. One lecture hour and four laboratory hours a week for one semester. Biology 388L and Botany 395L may not both be counted. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser.

388M. Plant Molecular Biology. PB. Fundamentals of plant molecular biology, including structure and expression of the chloroplast and mitochondrial genomes. Only one of the following may be counted: Biology 350M, 388M, Botany 350M, 390M. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser.

389. Topics in Plant Science: Cell and Development. May be repeated for credit when the topics vary. Some topics are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser. Additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Advanced Studies in Light Microscopy. PB. Biology 389 (Topic 1) and Botany 394 (Topic 1: Advanced Studies in Light Microscopy) may not both be counted.

Topic 2: Biology of the Blue-green Algae. PB. Biology 389 (Topic 2) and Botany 394 (Topic 3: Biology of the Blue-green Algae) may not both be counted.

Topic 3: Cell Biology Seminar. PB. Biology 389 (Topic 3) and Botany 394 (Topic 4: Cell Biology Seminar) may not both be counted.

Topic 4: Genetic Engineering of Plants: Basic and Applied Aspects. PB. Strategies for isolation and characterization of genes; transfer of genes into plants; basic and applied uses of genetic engineering and the impact on agriculture and the environment. Biology 389 (Topic 4) and Botany 394 (Topic 5: Genetic Engineering of Plants: Basic and Applied Aspects) may not both be counted.
Topic 6: Natural Products Chemistry. PB. Biology 389 (Topic 6) and Botany 394 (Topic 8: Natural Products Chemistry) may not both be counted.

Topic 7: Phycology Seminar. PB. Biology 389 (Topic 7) and Botany 394 (Topic 10: Phycology Seminar) may not both be counted.

Topic 8: Plant Molecular Biology Seminar. PB. Biology 389 (Topic 8) and Botany 394 (Topic 11: Plant Molecular Biology Seminar) may not both be counted.

Topic 9: Seminars in Phytochemistry. PB. Biology 389 (Topic 9) and Botany 394 (Topic 12: Seminars in Phytochemistry) may not both be counted.

Topic 10: Structure and Function of the Cell Nucleus. PB. Structure of the nuclear envelope and nuclear pores, the assembly and disassembly of the lamina, layer, regulation, transport of RNA and protein into and out of the nuclei, RNA and DNA polymerases, topoisomerases, cyclin, aspects of cell nucleus activity. Biology 389 (Topic 11) and Botany 394 (Topic 13: Structure and Function of the Cell Nucleus) may not both be counted.

389C. Chemistry and Biology of Membranes. PB. Consideration of the origin and structure of biological membranes at the microscopic and molecular levels; describes membrane function, especially with regard to transport properties. Biology 389C and Botany 389L may not both be counted. Prerequisite: Graduate standing, Chemistry 339K or the equivalent, and consent of instructor and the graduate adviser.

389K. Advanced Cell Biology. EEB. Biology 389K and Zoology 388M (Topic 1: Advanced Cell Biology) may not both be counted. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser.

390G. Applied Public Health and Medical Microbiology. MIC. One semester (or one summer session) of full-time training in the Texas Department of Health Laboratories, with rotation in the divisions of medical microbiology, mycology, parasitology, virology, sanitary bacteriology, and biologics. Assigned reading and regular meetings with the Department of Health Laboratories staff and the molecular genetics and microbiology faculty. Forty hours of supervised fieldwork a week for one semester. Biology 890G and Microbiology 884K may not both be counted. Prerequisite: Graduate standing, consent of instructor and the graduate adviser, and courses in immunology, public health bacteriology, and virology.

290K. Scanning Electron Microscopy, Theory and Practice. MIC. PB. Theory of scanning electron microscopy and basic principles of instrument design; basic procedures in specimen preparation; hands-on experience. Two lecture hours and six laboratory hours a week for six weeks. Only one of the following may be counted: Biology 290K, Botany 297, Microbiology 297. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser.

490M. Electron Microscopy I: Theory and Practice. MIC, PB. An introduction to electron optics; emphasis on basic operation and maintenance of the transmission microscope; theory and practice of basic preparative techniques. Two lecture hours and six laboratory hours a week for one semester. Only one of the following may be counted: Biology 490M, Botany 480M, Microbiology 481M. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser.

390P. Techniques in Molecular Genetics. MIC. Laboratory training in modern molecular genetics, with emphasis on the manipulation of bacterial plasmid DNA as a model system. DNA purification, gene mapping and cloning, site-directed mutagenesis, polymerase chain reaction, and DNA sequencing. One lecture hour and seven laboratory hours a week for one semester. Only one of the following may be counted: Biology 368L, 390P, Microbiology 368, 382L. Prerequisite: Graduate standing, consent of instructor and the graduate adviser, and Biology 366.

391K. Cellular Immunology. MIC. Cell-associated immune responses, with emphasis on transplantation, immunity, tumor immunology, delayed hypersensitivity, and acquired cellular resistance. Biology 391K and Microbiology 389K may not both be counted. Prerequisite: Graduate standing, consent of instructor and the graduate adviser, and Biology 360K and 160L.

391M. Tumor Biology. MIC. Natural history and causal mechanisms of cancer; viral and chemical carcinogens. Only one of the following may be counted: Biology 336, 391M, Microbiology 342, 389M. Prerequisite: Graduate standing, consent of instructor and the graduate adviser, and Biology 360K, or 330 and 130L.

391P. Advanced Virology. MIC. Replication of and transformation by DNA and RNA animal viruses. Biology 391P and Microbiology 393 may not both be counted. Prerequisite: Graduate standing, consent of instructor and the graduate adviser, and Biology 330.
391R. Advanced Metabolism and Biochemistry of Microorganisms. MIC. Study of the metabolic processes of microorganisms, using a biochemical approach. Only one of the following may be counted: Biology 339, 391R, Microbiology 362. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

392. Problems in Host-Parasite Biology. May be repeated for credit when the topics vary. Some topics are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser. Additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Current Topics in Virology and Immunology. MIC. Biology 392 (Topic 1) and Microbiology 384 (Topic: Current Topics in Virology and Immunology) may not both be counted.

Topic 2: Current Topics in Pathogenic Mechanisms. MIC. Biology 392 (Topic 2) and Microbiology 384 (Topic: Pathogenic Mechanisms) may not both be counted.

393. Problems in Molecular Genetics. May be repeated for credit when the topics vary. Some topics are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser. Additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Current Topics in DNA Transactions. MIC. Biology 393 (Topic 1) and Microbiology 390 (Topic: DNA Replication) may not both be counted.

Topic 2: Current Topics in Fungal and Cell Molecular Biology. MIC. Biology 393 (Topic 2) and Microbiology 390 (Topic: Fungal Cell and Molecular Biology) may not both be counted.

Topic 3: Current Topics in Gene Regulation. MIC. Biology 393 (Topic 3) and Microbiology 390 (Topic: Microbial Genetics and Regulation) may not both be counted.

394. Problems in Microbial Physiology. May be repeated for credit when the topics vary. Some topics are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser. Additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Current Topics in Cell Envelope Structure and Functions. MIC. Biology 394 (Topic 1) and Microbiology 391 (Topic: Regulatory Mechanisms) may not both be counted.

Topic 2: Current Topics in Microbial Signal Transduction. MIC. Biology 394 (Topic 2) and Microbiology 391 (Topic: Signal Transduction) may not both be counted.

394M. Advanced Studies in Microbiology. In-depth study of microbiology topics. Students read original research papers in addition to text assignments. May be repeated for credit when the topics vary. Some topics are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing, and consent of instructor and the graduate adviser. Additional prerequisites vary with the topic and are given in the Course Schedule.

Topic 1: Advanced Immunology. MIC. Studies in cell signaling in the immune system, transgenic and knockout gene analysis, T and B cell selection and maturation, and development of the immune system.

Topic 2: Advanced Microbial Signal Transduction. MIC. Studies in molecular and cellular biology of a wide variety of signal transduction systems in diverse microorganisms; the role of signal transduction across biological membranes in allowing cells to recognize and respond to their environment.

Topic 3: Advanced Medical Mycology. MIC. Studies in medical mycology and an overview of research involving both the fungal zoopathogen and its host.

Topic 4: Advanced Fungal Cell and Molecular Biology. MIC. Studies of the structure, function, and biological activities of fungi, with emphasis on recent advances in research.

395. Plant Biology: Laboratory Studies in Molecular Biology. PB. Laboratory experience in modern molecular biology, including cloning using recombinant DNA methods, organelle isolation, purification of eukaryotic DNA and RNA, blot hybridization and transformation. One lecture hour and six laboratory hours a week for one semester. Biology 395 and Botany 380C may not both be counted. Prerequisite: Graduate standing; consent of instructor and the graduate adviser; and one of the following courses: Biology 320, 325, 328, 344, Chemistry 339L.

395F. Genetics. MIC. Same as Chemistry 395F and Molecular Biology 395F. Basic principles of Mendelian and molecular genetics, and an exploration of the genetic toolbox using examples of analytic methods and modern manipulations. Focus on the genetic analysis of model organisms. Use of genetic tools in dissecting complex biological pathways, developmental processes, and regulatory systems. Prerequisite: Graduate standing. An introductory course in genetics, such as Biology 325, is strongly recommended.
395G. **Biochemistry.** MIC. Same as Chemistry 395G and Molecular Biology 395G. Detailed consideration of the structure and function of proteins, with discussion of enzyme mechanisms and kinetics, the biochemistry of energy production, and the metabolism of lipids and nucleotides. **Prerequisite:** Graduate standing. A one-year undergraduate sequence in biochemistry, such as Chemistry 339K and 339L, is strongly recommended.

395H. **Cell Biology.** MIC. Same as Chemistry 395H and Molecular Biology 395H. Detailed consideration of mechanisms of growth control, cell regulation, mitosis, cell signaling, protein targeting, and the integration of these processes in various cellular processes. **Prerequisite:** Graduate standing; and Biology 395F and 395G, or consent of instructor.

395J. **Molecular Biology.** MIC. Same as Chemistry 395J and Molecular Biology 395J. Detailed consideration of prokaryotic and eukaryotic mechanisms of DNA replication and transcription; posttranscriptional processing of transcription products; and mechanism and regulation of the translation of messenger RNAs. **Prerequisite:** Graduate standing; and Biology 395F and 395G, or consent of instructor.

396. **Membranes and Walls of Bacteria.** MIC. Structure, biosynthesis, and function of bacterial envelopes and walls, including associated optional components. Biology 396 and Microbiology 380K may not both be counted. **Prerequisite:** Graduate standing, consent of instructor and the graduate adviser, and a course in general microbiology and a course in general biochemistry.

197. **Seminar in Microbiology.** MIC. One lecture hour a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Required of all molecular genetics and microbiology majors. **Prerequisite:** Graduate standing and consent of instructor and the graduate adviser.

397J. **Advanced Genetics.** MIC. Intended mainly for first- and second-year graduate students. Selected related topics of current interest with an emphasis on molecular developmental genetics, and any needed review of classical genetics. Designed to help the student to read the literature critically, deliver a good seminar, and participate in thoughtful discussion. Biology 397J and Microbiology 381J may not both be counted. May not be counted toward the doctoral degree in microbiology. **Prerequisite:** Graduate standing, consent of instructor and the graduate adviser, and a course in genetics.

698. **Thesis.** EEB, MIC, PB. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. For 698A, graduate standing in the School of Biological Sciences and consent of the graduate adviser; for 698B, Biology 698A or the equivalent.

398R. **Master’s Report.** EEB, MIC, PB. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. **Prerequisite:** Graduate standing in the School of Biological Sciences and consent of the graduate adviser.

398T. **Supervised Teaching in Biological Sciences.** EEB, MIC, PB. Teaching under the close supervision of course instructors; weekly group meetings with the instructor, individual consultations, and reports throughout the teaching period. The equivalent of three lecture hours a week for one semester. **Prerequisite:** Graduate standing and appointment as a teaching assistant.

399R, 699R, 999R. **Dissertation.** EEB, MIC, PB. Offered on the credit/no credit basis only. **Prerequisite:** Admission to candidacy for the doctoral degree.

399W, 699W, 999W. **Dissertation.** EEB, MIC, PB. May be repeated for credit. Offered on the credit/no credit basis only. **Prerequisite:** Biology 399R, 699R, 999R, or the equivalent.

**Related Courses**

The following courses are described in the section “Marine Science,” which begins on page 472.


- **Topic 1:** Marine Ecology. EEB.
- **Topic 2:** General Marine Microbiology. MIC.
- **Topic 5:** Ecology of Fishes. EEB.


- **Topic 6:** Marine Ichthyology. EEB.
- Marine Science 384E. *Marine Microbial Ecology.* MIC.
CELL AND MOLECULAR BIOLOGY

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

Facilities of this interdisciplinary program include those maintained by the participating programs in biochemistry; ecology, evolution, and behavior; microbiology; nutritional sciences; and plant biology.

AREAS OF STUDY

Cell and molecular biology encompasses disciplines in biochemistry, biology, and nutrition. Physics, mathematics, chemistry, and computer sciences support the degree programs in cell and molecular biology. University programs in pharmacy, chemical engineering, and biomedical engineering also include study in cell and molecular biology.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Creed W. Abell
Seema Agarwala
Orly Alter
Eric V. Anslyn
Dean R. Appling
Karen Artzt
Nigel S. Atkinson
Susan Bergeson
George D. Bittner
Henry R. Bose Jr.
Shawn B. Bratton
R. Malcolm Brown Jr.
Karen Browning
Jim Bull
Clarence S.M. Chan
David P. Crews
Maria Croyle
Kevin N. Dalby
Arturo De Lozanne
Su Dharmawardhane
Jaquelin P. Dudley
Charles F. Earhart Jr.
Andrew Ellington
Walter Fast
Janice Fischer
Ernst-Ludwig Florin
George Georgiou
Nace L. Golding
Andrea Gore
Ellen Gottlieb
David E. Graham
Robin Gutell
Marvin L. Hackert
Adron Harris
Rasika M. Harshey
Graeme A. Henkelman
David L. Herrin
David M. Hillis
David W. Hoffman
Jon M. Huibregtse
Enamul Huq
Brent L. Iverson
Vishwanath R. Iyer
Robert K. Jansen
Makkuni Jayaram
Arlen W. Johnson
Kenneth A. Johnson
Daniel Johnston
Christopher Jolly
Thomas E. Juenger
Klaus O. Kalthoff
James P. Kehrer
Sean M. Kerwin
G. Barrie Kitto
Kimberly Kline
Robert M. Krug
Alan M. Lambowitz
Michelle A. Lane
Hung-Wen (Ben) Liu
Alan Martin Lloyd
Paul MacDonald
Lara K. Mahal
Dmitrii E. Makarov
Edward M. Marcotte
Mia Markey
Stephen F. Martin
ADMISSION REQUIREMENTS

Applicants must provide evidence of strong accomplishment in the natural sciences, documented by undergraduate grades and a bachelor's degree or the equivalent in an area such as one of the biological sciences, chemistry, or physics. Preparation should include at least one year each of calculus, biology (genetics, molecular biology, and/or cell biology are recommended), organic chemistry, biochemistry, and general physics. Deficiencies in undergraduate work should be corrected before application to the program.

Because the graduate program is focused on the doctoral degree, students seeking only the master's degree are not admitted.

DEGREE REQUIREMENTS

Master of Arts. The master's degree is only granted under special circumstances. The student must have the approval of the graduate adviser.

Doctor of Philosophy. The doctoral degree program requires the student to accomplish creative, independent research and to document the research in a scholarly dissertation. In preparation, the student must acquire a strong foundation in biochemistry, molecular genetics, and cell biology and a working knowledge of the area of biology in which he or she intends to conduct research. This preparation is provided by the core courses and electives required for the master's degree. The student must earn a grade of at least B in each core course. To be admitted to candidacy for the degree, the student must formulate a feasible research program and pass a qualifying examination.
DUAL DEGREE PROGRAM

Doctor of Philosophy/Doctor of Medicine

The graduate program in cell and molecular biology participates in a dual degree program with the University of Texas Medical Branch at Galveston (UTMB). Applicants must apply separately to and be admitted to both the PhD program in cell and molecular biology at the University of Texas at Austin and the medical school at UTMB. Students accepted into the dual degree program spend their first two years in the medical school at UTMB, followed by three to four years of doctoral work at UT Austin and eighteen months of clinical rotations. The degrees are conferred separately by each institution. Additional information may be found at http://www.icmb.utexas.edu/cmb/utmb/.

FOR MORE INFORMATION

Campus address: Louise and James Robert Moffett Molecular Biology Building (MBB) 1.220H, phone (512) 471-2150, fax (512) 471-2149; campus mail code: A4810

Mailing address: The University of Texas at Austin, Graduate Program in Cell and Molecular Biology, 1 University Station A4810, Austin TX 78712

E-mail: grad.program@icmb.utexas.edu

URL: http://www.icmb.utexas.edu/cmb/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Molecular Biology: MOL

380. Advanced Readings in Molecular Biology. Individual instruction in the literature of molecular biology. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

190, 390. Seminar in Molecular Biology. Lectures and discussions on current topics in molecular biology. One or three lecture hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

192, 292, 392, 492, 592, 692, 792, 892, 992. Research Problems. One lecture hour a week for one semester, with additional laboratory hours. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

195. Molecular Biology Conference Course. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

395F. Genetics. Same as Biology 395F and Chemistry 395F. Basic principles of Mendelian and molecular genetics, and an exploration of the genetic toolbox using examples of analytic methods and modern manipulations. Focus on the genetic analysis of model organisms. Use of genetic tools in dissecting complex biological pathways, developmental processes, and regulatory systems. Prerequisite: Graduate standing. An introductory course in genetics, such as Biology 325, is strongly recommended.

395G. Biochemistry. Same as Biology 395G and Chemistry 395G. Detailed consideration of the structure and function of proteins, with discussion of enzyme mechanisms and kinetics, the biochemistry of energy production, and the metabolism of lipids and nucleotides. Prerequisite: Graduate standing. A one-year undergraduate sequence in biochemistry, such as Chemistry 339K and 339L, is strongly recommended.
395H. Cell Biology. Same as Biology 395H and Chemistry 395H. Detailed consideration of mechanisms of growth control, cell regulation, mitosis, cell signaling, protein targeting, and the integration of these processes in various cellular processes. Prerequisite: Graduate standing; and Molecular Biology 395F and 395G, or consent of instructor.

395J. Molecular Biology. Same as Biology 395J and Chemistry 395J. Detailed consideration of prokaryotic and eukaryotic mechanisms of DNA replication and transcription; posttranscriptional processing of transcription products; mechanism and regulation of the translation of messenger RNAs. Prerequisite: Graduate standing; and Molecular Biology 395F and 395G, or consent of instructor.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in molecular biology and consent of the graduate adviser; for 698B, Molecular Biology 698A.

398T. Supervised Teaching in Molecular Biology. Teaching under close supervision of the instructor; weekly laboratory instruction of undergraduates, group meetings with the instructor, individual consultations, and reports throughout the teaching period. Prerequisite: Graduate standing in molecular biology.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Molecular Biology 399R, 699R, or 999R.

Related Courses
Each of these courses is described in the section of this catalog for the program that offers it.

  Topic 1: Topics in Biophysics.
  Topic 2: Comparative Neurophysiology.
  Topic 3: Sensory Physiology.
  Topic 5: Laboratory in Neurophysiology.
  Topic 6: Insect Physiology.
  Topic 7: Developmental Neurobiology.
  Topic 8: Addiction Biology.
  Topic 9: Comparative Animal Physiology.
  Topic 10: Basic Processes of Nerve Cells.


  Topic 1: Developmental Genetics.
  Topic 2: Evolution.
  Topic 3: Recent Advances in Population Genetics.
  Topic 5: Research Design in Biology.

Biology 386. Topics in Plant Science: Ecology and Evolution.

Biology 388C. Transmembrane Signaling Mechanisms.

Biology 388E. Plant Growth and Development.

Biology 388M. Plant Molecular Biology.

Biology 389. Topics in Plant Science: Cell and Development.

Biology 389C. Chemistry and Biology of Membranes.

Biology 389K. Advanced Cell Biology.


Biology 390P. Techniques in Molecular Genetics.

Biology 391M. Tumor Biology.

Biology 391P. Advanced Virology.

Biology 393. Problems in Molecular Genetics.
  Topic 1: Current Topics in DNA Transactions.
  Topic 2: Current Topics in Fungal and Cell Molecular Biology.
  Topic 3: Current Topics in Gene Regulation.

Biology 394. Problems in Microbial Physiology.
  Topic 1: Current Topics in Cell Envelope Structure and Functions.
  Topic 2: Current Topics in Microbial Signal Transduction.


Chemical Engineering 384. Introduction to Research.
  Topic 17: Biomolecular Recognition.

Chemistry 387K. Biochemical Techniques.

Chemistry 391L. Advanced Topics in Biochemistry.
Chemistry 392J. *Molecular Biology of the Yeast Saccharomyces.*

Chemistry 392U. *Comparative Biochemistry.*


Topic 2: *Nutritional Immunology.*


Topic 1: *Advances in Nutritional Sciences I.*

Topic 7: *Advances in Nutritional Sciences II.*


Topic: *Research Problems in Molecular Nutritional Sciences.*

Pharmacy 386K. *Advanced Medicinal Chemistry.*

Topic: *Drug–Nucleic Acid Interactions.*

Pharmacy 386S. *Molecular Biology of the Nervous System.*

CHEMISTRY

Master of Arts

Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

The Mallet Chemistry Library is the most comprehensive chemistry library in the Southwest and one of the largest in the country. In addition to extensive print-based collections in all areas of chemistry and chemical engineering, the library provides access to major database resources such as Scifinder (chemical abstracts) and Beilstein Crossfire, as well as several hundred electronic scholarly journals. These resources are available through the University Libraries Web site, http://www.lib.utexas.edu/.

The Department of Chemistry and Biochemistry maintains suitably equipped and well-staffed shops for glassblowing, machine work, and electronics maintenance and design. There are service laboratories equipped for organic analysis and for work in spectrophotometry; spectropolarimetry; photoelectron, nuclear magnetic, and electron spin resonance; x-ray diffraction; and mass spectrometry. Other specialized equipment is available in various laboratories. The facilities of Information Technology Services are used in numerous research programs.

AREAS OF STUDY

Graduate study in chemistry is offered in the areas of biochemistry, chemical physics, and analytical, inorganic, organic, or physical chemistry. Each of these broad areas encompasses specialized aspects of the subject. Details are available from the chair of the department’s Graduate Admissions Committee. The separate graduate program in biochemistry is described on pages 437–439.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Eric V. Anslyn
Dean R. Appling
Paul F. Barbara
Allen J. Bard
Nathan L. Bauld
Christopher W. Bielawski
Jennifer S. Brodbelt
Karen Browning
Alan Campion
James R. Chelikowsky
Alan H. Cowley
Raymond E. Davis
Ananth Dodabalapur
Andrew Ellington
John C. Gilbert
John B. Goodenough
David E. Graham
Marvin L. Hackert
Graeme A. Henkelman
David W. Hoffman
James A. Holcombe
Brent L. Iverson
ADMISSION REQUIREMENTS

The preliminary training of students seeking a graduate degree in chemistry must include at least twenty-four semester hours of undergraduate work in chemistry, consisting of twelve or more semester hours of upper-division coursework and at least two courses (including laboratory) in organic chemistry and two in physical chemistry; one in analytical chemistry; and one in inorganic chemistry.

DEGREE REQUIREMENTS

One semester of Chemistry 398T is required of all candidates for advanced degrees.

Master of Arts. Master's degree students must complete thirty semester hours of coursework, including a minor of at least six semester hours. No more than nine hours of upper-division work may be counted; these hours must be divided between the major and the minor. Candidates normally must also submit a thesis based on individual research. The thesis course may be counted as six of the thirty semester hours required for the degree. In general, two and one-half years are necessary to finish the Master of Arts. The Master of Arts degree with report is available for approved programs only.

Doctor of Philosophy. Doctoral degree students who plan to specialize in biochemistry or in analytical, inorganic, organic, or physical chemistry must complete six courses on the letter-grade basis in three areas of science. The qualifying examinations are usually completed within the first eighteen months in residence or before application for candidacy. The student is examined by members of the Graduate Studies Committee in his or her areas of concentration before admission to candidacy. Four to five years of full-time study are usually required to complete the Doctor of Philosophy degree program.

FOR MORE INFORMATION

Campus address: Robert A. Welch Hall (WEL) 2.218, phone (512) 471-3890 or (866) 471-3890, fax (512) 475-8839; campus mail code: A5300

Mailing address: The University of Texas at Austin, Graduate Program in Chemistry, Department of Chemistry and Biochemistry, 1 University Station A5300, Austin TX 78712

URL: http://www.cm.utexas.edu/
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Chemistry: CH

380L. Inorganic Reactions and Structures. Prerequisite: Graduate standing and consent of instructor.

380M. Advanced Study in Chemistry. For nonchemistry majors. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, a bachelor's degree with a major in science or mathematics, and consent of the graduate adviser in chemistry.

380N. Advanced Inorganic Chemistry: Spectroscopy and Structure. Advanced inorganic chemistry, with emphasis on structure, spectroscopy, and ligand field theory. Prerequisite: Graduate standing and consent of instructor.

381M. Advanced Analytical Chemistry. Theory and application of special methods and recent advances. Prerequisite: Graduate standing in chemistry and consent of instructor.

382J. Survey of Physical Chemistry. Surface chemistry and catalysis, transport properties, macromolecules, electrochemistry and electrolyte solutions, molecular thermodynamics, solution kinetics, and photochemistry. Prerequisite: Graduate standing and consent of instructor.

382K. Advanced Physical Chemistry: Introduction to Quantum Mechanics. Prerequisite: Graduate standing, and Chemistry 354 or the equivalent.

382L. Advanced Physical Chemistry: Statistical Mechanics. Prerequisite: Graduate standing and consent of instructor.

382M. Advanced Physical Chemistry. Quantum chemistry. Prerequisite: Graduate standing, and Chemistry 354, 382K, or consent of instructor.

386J. Advanced Organic Chemistry. Advanced organic chemistry, with emphasis on theory and reaction mechanisms. Prerequisite: Graduate standing, six semester hours of coursework in organic chemistry, and six semester hours of coursework in physical chemistry.

386K. Advanced Organic Chemistry. Advanced organic chemistry, with emphasis on synthetic methods. Prerequisite: Graduate standing, six semester hours of coursework in organic chemistry, and six semester hours of coursework in physical chemistry.

387D. Physical Methods in Biochemistry and Molecular Biology. Theory of physical methods used in biochemistry and molecular biology. Prerequisite: Graduate standing, an undergraduate course in physical chemistry, and an undergraduate course in biochemistry.

387K. Biochemical Techniques. Discussion of procedures and equipment used in modern biochemical investigation, with laboratory to provide experience in techniques of general importance. Two lecture hours and seven laboratory hours a week for one semester. Prerequisite: Graduate standing, six semester hours of undergraduate coursework in biochemistry, and consent of instructor.

190. Seminar in Chemistry. The equivalent of one class hour a week for one semester. May be repeated for credit when the topics vary. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in chemistry.

Topic 1: Analytical-Physical Chemistry.
Topic 2: Organic Chemistry.
Topic 3: Biochemistry.
Topic 4: Inorganic Chemistry.

390K. Advanced Topics in Inorganic Chemistry. Topics include magnetic resonance; organometallic, main-group, and transition metal chemistry; nonaqueous solvents; high-temperature superconductors; new developments in synthetic chemistry; and aspects of inorganic chemistry relevant to material science. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in chemistry, Chemistry 380L, and consent of instructor.
390L. Advanced Topics in Analytical Chemistry. Topics include electrochemistry, electronics, mathematical methods, mass spectrometry, and optical methods. For most topics, three lecture hours a week for one semester; for topics on electronics and optical methods, two lecture hours and three laboratory hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

391. Advanced Topics in Organic Chemistry. Topics include organic photochemistry; molecular orbital theory; free radical chemistry; organometallic compounds; nuclear magnetic resonance and mass spectrometry; organic synthesis. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

391L. Advanced Topics in Biochemistry. Topics include physical methods for the study of macromolecules; chemistry of proteins; enzyme chemistry; regulatory mechanisms for gene expression, protein–nucleic acid interactions. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

192G. Biochemistry Student Seminar. Student presentations on current research topics. The equivalent of one lecture hour a week for one semester. Prerequisite: Graduate standing and consent of instructor.

392H. Biomolecular Structure by Nuclear Magnetic Resonance Spectroscopy. Theory and application of modern nuclear magnetic resonance spectroscopy methods. Emphasis on applications to biological macromolecules, including protein and nucleic acid structure determination. Prerequisite: Graduate standing and consent of instructor.

392J. Molecular Biology of the Yeast Saccharomyces. The use of yeast as a tool for the study of important areas of eukaryotic biology; the use of classical and molecular genetic techniques in the study of gene expression, DNA replication and repair, development and growth control, protein targeting, and metabolism. Prerequisite: Graduate standing, and Chemistry 329D or the equivalent or consent of instructor.

392N. Physical Chemistry of Macromolecular Systems. Theory of macromolecular solutions and methods for characterization of macromolecular systems. Prerequisite: Graduate standing, and undergraduate physical chemistry or consent of instructor.

392T. Biotransformations of Drugs and Other Nonnutritive Compounds. Absorption and metabolism of naturally occurring and synthetic nonnutritive compounds. Prerequisite: Graduate standing, and Chemistry 394 or consent of instructor.

392U. Comparative Biochemistry. Comparative aspects of protein structure, metabolism, respiration, and cellular regulation. Prerequisite: Graduate standing; and Chemistry 395G and 394, or consent of instructor.

192W. Analytical Student Seminar. Student seminar presentations covering current research topics. One lecture hour a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

393L. Advanced Topics in Physical Chemistry. Topics include magnetic resonance, electron scattering; quantum scattering in gases; chemical kinetics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in chemistry, Chemistry 382M, and consent of instructor.

394. Chemistry of Enzyme Systems. Prerequisite: Graduate standing and Chemistry 370.

395F. Genetics. Same as Biology 395F and Molecular Biology 395F. Basic principles of Mendelian and molecular genetics, and an exploration of the genetic toolbox using examples of analytic methods and modern genetic manipulations. Focus on the genetic analysis of model organisms. Use of genetic tools in dissecting complex biological pathways, developmental processes, and regulatory systems. Prerequisite: Graduate standing. An introductory course in genetics, such as Biology 325, is strongly recommended.

395G. Biochemistry. Same as Biology 395G and Molecular Biology 395G. Detailed consideration of the structure and function of proteins, with discussion of enzyme mechanisms and kinetics, the biochemistry of energy production, and the metabolism of lipids and nucleotides. Prerequisite: Graduate standing. A one-year undergraduate sequence in biochemistry, such as Chemistry 339K and 339L, is strongly recommended.

395H. Cell Biology. Same as Biology 395H and Molecular Biology 395H. Detailed consideration of mechanisms of growth control, cell cycle regulation, mitosis, cell signaling, protein targeting, and the integration of these processes. Prerequisite: Graduate standing; and Chemistry 395F and 395G, or consent of instructor.
395J. Molecular Biology. Same as Biology 395J and Molecular Biology 395J. Detailed consideration of prokaryotic and eukaryotic mechanisms of DNA replication and transcription; posttranscriptional processing of transcription products; and mechanism and regulation of the translation of messenger RNAs. *Prerequisite:* Graduate standing; and Chemistry 395F and 395G, or consent of instructor.

197C, 297C, 397C, 597C, 697C. Problems in Chemistry. Conference course with laboratory work. May be repeated for credit. Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing in chemistry and consent of instructor and the graduate adviser.

197P, 297P, 397P, 697P. Problems in Chemistry. Conference course with laboratory. May be repeated for credit. Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing in chemistry and consent of instructor.

397S. Advanced Topics in Chemistry. May be repeated for credit when the topics vary. Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing and consent of instructor.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. *Prerequisite:* For 698A, graduate standing in chemistry and consent of the graduate adviser; for 698B, Chemistry 698A.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The Master of Arts with report is available for approved programs only. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing in chemistry and consent of the graduate adviser.

398T. Supervised Teaching in Chemistry. Teaching under close supervision of the instructor; weekly group meetings with the instructor; individual consultations; reports. Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing and appointment as a teaching assistant in chemistry.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. *Prerequisite:* Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. *Prerequisite:* Chemistry 399R, 699R, or 999R.

COMPUTER SCIENCES

Master of Arts
Master of Science in Computer Sciences
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

To provide the most advanced resources for teaching and research, the Department of Computer Sciences manages its own network and systems of more than one thousand hosts.

A staff of seventeen, under the direction of the department’s associate chair for operations, specifies, buys, installs, and maintains this computing infrastructure. Through accounts on the department’s UNIX, Windows, and Macintosh workstations, students, faculty members, and staff members have access to additional public laboratories and private research equipment.

Many different computer systems are available for research use by faculty members and students in the department. The department has several research clusters: an 8-node computational biology cluster, a 144-node Linux cluster dedicated to computer architecture, and a 144-node Linux cluster with a NetApps FAS940 checkpoint server. These clusters and all public computing resources are available to users via Condor, a resource management tool for widely distributed systems. The department has an immersive theater and video wall for graphics and visualization research. Over one hundred Pentium-based machines, including twenty dual processor Xeons as well as dual and quad processor servers, are available for multimedia research.
In addition, there are seventy-five Linux boxes on graduate students’ desks. Several hundred other workstations of varying configurations and platforms are located in private research labs or on researchers’ desks.

All departmental computers are networked together using 100 Mbps or gig Ethernet. The network, managed and maintained by departmental staff, consists of over thirty Cisco switches, with a Cisco 6509 serving as its point of presence and firewall. Network servers include a research-dedicated NetApps 820 with three terabytes of storage, a NetApps F825 with six TB of RAIDed disk space that is used for home directory service, and a NetApps FAS940 with four TB of disk space, as well as many other file servers, print servers, and communication servers.

AREAS OF STUDY

Graduate study in computer sciences is offered in the areas of analysis of algorithms and programs, artificial intelligence, automated reasoning, communication protocols, compilers, computational biology, computational complexity, computational geometry, computational historical linguistics, computational visualization, computer architecture, computer graphics, computer networks, data mining, database management, distributed systems, fault-tolerant computing, formal methods, machine learning, mathematical software, mobile and ad hoc networks, natural language processing, neural networks, numerical analysis, operating systems, parallel programming, randomized computation, real-time systems, robotics, secure computing, software construction from components, system modeling, theoretical computer science, VLSI, and wireless networks.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

J. K. Aggarwal
Lorenzo Alvisi
Chandrajit L. Bajaj
Don S. Batory
Alan C. Bovik
Robert S. Boyer
James C. Browne
Douglas C. Burger
Alan K. Cline
William R. Cook
Michael D. Dahlin
Inderjit S. Dhillon
E. Allen Emerson II
Donald S. Fussell
Anna Gal
Vijay K. Garg
Joydeep Ghosh
Mohamed G. Gouda
Warren A. Hunt Jr.
Lizy K. John
Stephen W. Keckler
Adam R. Klivans
Benjamin Jack Kuipers
Simon S. Lam
Vladimir Lifschitz
Calvin Lin

Gerald Jack Lipovski
William Mark
Kathryn S. McKinley
Risto Miikkulainen
Daniel P. Miranker
Jayadev Misra
Aloysius K. Mok
Raymond J. Mooney
J Strother Moore
Gordon S. Novak Jr.
David Z. Pan
Dewayne E. Perry
Charles Gregory Plaxton
Bruce W. Porter
Lili Qiu
Vijaya Ramachandran
Vitaly Shmatikov
Peter H. Stone
Robert van de Geijn
Harrick M. Vin
Tandy Warnow
Andrew B. Whinston
Emmett Witchel
Yin Zhang
David Zuckerman
ADMISSION AND DEGREE REQUIREMENTS
Most entering graduate students have degrees in computer sciences. Students with degrees in other areas may be considered for admission; if admitted, they may be required to take undergraduate courses in computer sciences, without credit toward a graduate degree, to satisfy background requirements.
Before being admitted to candidacy for degrees in computer sciences, a student must obtain approval of an individual program of work from the Graduate Studies Committee. Students should consult the department for detailed degree requirements.

FOR MORE INFORMATION
Campus address: T. U. Taylor Hall (TAY) 2.114, phone (512) 471-9503, fax (512) 471-7866; campus mail code: C0500
Mailing address: The University of Texas at Austin, Graduate Program, Department of Computer Sciences, 1 University Station C0500, Austin TX 78712
E-mail: csadmis@cs.utexas.edu
URL: http://www.cs.utexas.edu/

GRADUATE COURSES
The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.
Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Computer Sciences: C S

380C. Compilers. Basics of static analysis and transformation techniques; exploration in depth of one aspect of compilation and optimization. Computer Sciences 380C and 395T (Topic: Compilers) may not both be counted. Prerequisite: Graduate standing; Computer Sciences 357 and 375 are recommended.

380D. Distributed Computing I. Models of distributed systems; language issues, proving properties of distributed systems; time, clocks, partial ordering of events; deadlock and termination detection; diffusing computations; computing in hostile environments; distributed resource management. Prerequisite: Graduate standing and Computer Sciences 372.

380L. Advanced Operating Systems. Study of the formal structure, design principles, organization, implementation, and performance analysis of multiprogramming and/or multiprocessor computer systems. Prerequisite: Graduate standing, and Computer Sciences 372 or consent of instructor.


381K. Artificial Intelligence. Use of computers in problem solving, game playing, theorem proving, natural language understanding, and related tasks; methods of search, knowledge representation, learning, and other topics. Prerequisite: Graduate standing, and Computer Sciences 351 or consent of instructor.

382M. Advanced Computer Architecture. Algorithms and their realizations, special techniques for coding, addressing, and control; integration of computer units; relations between programming and design considerations. Prerequisite: Graduate standing.
383C. **Numerical Analysis: Linear Algebra.** Same as Computational and Applied Mathematics 383C and Mathematics 383E. Survey of numerical methods in linear algebra: floating-point computation, solution of linear equations, least squares problems, algebraic eigenvalue problems. **Prerequisite:** Graduate standing, either consent of instructor or Mathematics 341 (or 311) or 340L, and either Mathematics 368K or Computer Sciences 367.


384G. **Computer Graphics.** Same as Computational and Applied Mathematics 384G. Advanced material in computer graphics, including in-depth treatments of techniques for realistic image synthesis, advanced geometric modeling methods, animation and dynamic simulation, scientific visualization, and high-performance graphics architectures. **Prerequisite:** Graduate standing; and Computer Sciences 354 or another introductory course in computer graphics, or equivalent background and consent of instructor.

384M. **Multimedia Systems.** Theoretical and practical issues in advanced systems, including multimedia systems, digital audio and video compression techniques, operating system and network support for digital audio and video, and multimedia conferencing systems. **Prerequisite:** Graduate standing: either Computer Sciences 356 and 372 or 380D and 380L.

384V. **Introduction to VLSI Design.** Basic techniques required to design custom negative metal oxide semiconductor digital integrated circuits. **Prerequisite:** Graduate standing, and Computer Sciences 352 or consent of instructor.

386. **Database Management.** Advanced course in database management concepts and techniques. Topics: schema, logical, physical structures; hierarchical, network, relational, and set-oriented data models; operations on data models; language interfaces; review of operational database management systems; current issues in database management systems development. **Prerequisite:** Graduate standing and Computer Sciences 347.

386K. **Numerical Treatment of Differential Equations.** Same as Computational and Applied Mathematics 386K and Mathematics 383G. The analysis of numerical methods for solving ordinary and partial differential equations. **Prerequisite:** Graduate standing; and Computational and Applied Mathematics 383D, Computer Sciences 383D, Mathematics 368K, 383E, or consent of instructor.

386L. **Programming Languages.** Topics include formal syntax representations, program correctness, typing, and data abstraction. Features and problems in languages that allow parallelism. Exploration of different programming styles, such as imperative, functional, logic, data flow, and object-oriented programming. **Prerequisite:** Graduate standing, and Computer Sciences 345 or consent of instructor.

386M. **Communication Networks.** Switching techniques, network and protocol architectures, communication protocols, resource allocation problems, internetworking, design and analysis methods. **Prerequisite:** Graduate standing.

387H. **Database System Implementation.** Principles of centralized and distributed database system implementation, parallelism in database machines, rule-based and nonrule-based query optimization, concurrency control (serializability, multigranularity locking, concurrent operations on file structures), performance modeling, object-oriented databases (inheritance, persistence, user-defined types, data languages, data models), extensible database systems, heterogeneous database systems. **Prerequisite:** Graduate standing, and Computer Sciences 347 or consent of instructor.

388. **Natural Language Processing.** Computational methods for syntactic and semantic analysis of structures representing meanings of natural language; study of current natural language processing systems; methods for computing outlines and discourse structures of descriptive text. **Prerequisite:** Graduate standing, and a course in artificial intelligence or consent of instructor.

388C. **Combinatorics and Graph Theory.** Counting, matching theory, extremal set theory, Ramsey theory, probabilistic method, linear algebra method, coding theory. Applications to computer science, including randomized algorithms. **Prerequisite:** Graduate standing, and Computer Sciences 336 or the equivalent or consent of instructor. An understanding of elementary proof and counting techniques is assumed.
388F. Automata and Formal Languages. Formal grammars, languages and related classes of automata, language hierarchies, operations on languages, decidability, related complexity issues, closure properties, other classes of automata. Prerequisite: Graduate standing, and Linguistics 340 or consent of instructor.

388G. Algorithms: Techniques and Theory. Sorting and searching algorithms, graph algorithms, algorithm design techniques, lower bound theory, fast Fourier transforms, NP-completeness. Prerequisite: Graduate standing, and Computer Sciences 357 or the equivalent or consent of instructor.

388L. Introduction to Mathematical Logic. Introduction to some of the principal topics of mathematical logic: propositional and predicate calculus; Gödel’s completeness theorem; first-order theories; formalizing mathematical reasoning; first-order arithmetic; recursive functions; Gödel’s incompleteness theorems; axiomatic set theory. Prerequisite: Graduate standing and experience in abstract mathematical thinking.

388P. Parallel Algorithms. Parallel algorithm design on shared memory machines (PRAMs); parallel complexity results; lower bounds; relationship of PRAM model to other models of parallel computation. Prerequisite: Graduate standing; and Computer Sciences 357 or the equivalent, or Computer Sciences 388G, or consent of instructor.

388S. Formal Semantics and Verification. Sequential execution: partial and total correctness; deductive, operational, and denotational semantics; formal derivation of programs; parallel execution: partial correctness, deadlock, and starvation; methodology, parallel versus distributed execution. Prerequisite: Graduate standing and consent of instructor.

388T. Theory of Computation. Models of computation, decidability, complexity theory, relations between complexity classes, reductions, and completeness; NP-complete problems, randomized computation; approximability; circuit complexity; parallel computation. Prerequisite: Graduate standing, and Computer Sciences 353 or the equivalent or consent of instructor.

389M. Principles of Object-Oriented Software Technology. Fundamental principles of object-oriented software engineering, including design and implementation of object-oriented analysis methods, software architectures, translators of high-level programming language representations, translations to multiple-software architectures. Prerequisite: Graduate standing, Computer Sciences 371S or the equivalent, and consent of instructor.

389R. Recursion and Induction I. The development of a formal theory for reasoning about computer programs, with emphasis on recursively defined functions in the LISP style and proof by mathematical induction. Heavy emphasis on student discovery and presentation of proofs. Prerequisite: Graduate standing.

390D. Distributed Computing II. Synchronous and asynchronous algorithms, with particular emphasis on notations for expressing the algorithms and logics for reasoning about them. Algorithms from a variety of application areas and for a variety of architectures. Prerequisite: Graduate standing and Computer Sciences 380D.

391K. Artificial Intelligence II. Advanced course in artificial intelligence. Topics include planning, probabilistic reasoning, truth maintenance, abduction, model-based diagnosis, and speech recognition. Prerequisite: Graduate standing, and Computer Sciences 381K or equivalent knowledge of artificial intelligence and LISP.

391L. Machine Learning. Computing systems that automatically improve their performance with experience, including various approaches to inductive classification such as version space, decision tree, rule-based, neural network, Bayesian, and instance-based methods; as well as computational learning theory, explanation-based learning, and knowledge refinement. Prerequisite: Graduate standing, and Computer Sciences 381K or equivalent knowledge of artificial intelligence and LISP.

392C. Methods and Techniques for Parallel Programming. Models of parallel fundamental concepts for representation of parallel computation structures, study of representative parallel programming languages, formulation of languages and translation methods, translation of parallel programs to multiple targets, laboratory exercises in parallel programming. Prerequisite: Graduate standing and consent of instructor.
393D. Topics in Numerical Analysis. Recent topics have included numerical methods in ordinary differential equations, numerical methods in partial differential equations, computational problems in linear algebra, numerical solution of systems of equations, numerical methods in functional approximation, numerical integration. May be repeated for credit when the topics vary. Some sections are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing and consent of instructor.

393N. Numerical Solution of Elliptic Partial Differential Equations. Same as Computational and Applied Mathematics 393M and Mathematics 393N. The numerical solution of large systems of linear algebraic equations arising in the solution of elliptic partial differential equations by discretization methods. Prerequisite: Graduate standing; and Computational and Applied Mathematics 386K, Computer Sciences 386K, Mathematics 383G, or consent of instructor.

394F. Knowledge Representation and Reasoning. Case studies of existing expert systems; choosing appropriate application domains; knowledge acquisition; knowledge representation; reasoning under uncertainty; expert system software tools. Each student constructs an expert system. Prerequisite: Graduate standing, Computer Sciences 351 and 381K or their equivalents, and consent of instructor.

394N. Neural Networks. Biological information processing; architectures and algorithms for supervised learning, self-organization, reinforcement learning, and neuro-evolution; theoretical analysis; hardware implementations and simulators; applications in engineering, artificial intelligence, and cognitive science. Prerequisite: Graduate standing and consent of instructor.

394P. Automatic Programming. Automatic generation of computer programs from high-level specifications. Program analysis, optimization, and transformation; partial evaluation; object-oriented programming; transformation of formal specifications; specialization of generic procedures; views. Prerequisite: Graduate standing. Computer Sciences 375 and 381K are recommended.

395. Conference Course. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

195T, 395T. Topics in Computer Sciences. From eight to fifteen topics are offered each semester; topics are announced in the Course Schedule. One or three lecture hours a week for one semester. May be repeated for credit when the topics vary. Computer Sciences 195T is offered on the credit/no credit basis only. Prerequisite: Graduate standing; complete prerequisite varies with the topic and is given in the Course Schedule. Topic 1: Parallel Computations. Computer Sciences 395T (Topic 1) is same as Computational and Applied Mathematics 395T (Topic 1: Parallel Computations).

396. Research Practice and Experience. Open only to those in their first two years as graduate students in computer sciences. Designed to provide an early research experience for new doctoral students in computer sciences. Students conduct an independent research project and present the results. Individual instruction. Offered on the credit/no credit basis only. May not be counted toward a master's degree in computer sciences. Prerequisite: Graduate standing.

396M. Advanced Networking Protocols. Topics include routing, multiple access, internetworking, security, performance models, and verification methods. Prerequisite: Graduate standing.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in computer sciences and consent of the graduate adviser; for 698B, Computer Sciences 698A.

398T. Supervised Teaching in Computer Sciences. Supervised teaching experience, and seminar focused on curriculum construction and teaching methods. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and appointment as a teaching assistant.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Computer Sciences 399R, 699R, or 999R.
HUMAN DEVELOPMENT AND FAMILY SCIENCES

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

The program in human development and family sciences is housed in the Sarah M. and Charles E. Seay Building, which provides excellent resources for teaching and research. Computer facilities are extensive. In addition to the facilities of Information Technology Services, students have access to the program's computer laboratory, a state-of-the-art facility equipped with advanced computers and statistical software. These resources are supplemented by extensive computer equipment in individual faculty laboratories.

The HDFS Reference Room houses a noncirculating collection of more than five hundred volumes and twenty journals.

The half-day preschool and infant/toddler programs of the University Child and Family Laboratory provide a setting for research by faculty members and graduate students, a facility for student observation and training, and a model program for children and their families. They also provide opportunities for family involvement in the classroom, parent education programs, parent conferences, and family research. Because the laboratory has served Austin families for over sixty years, the opportunities for multigenerational and longitudinal research are significant.

The program has extensive facilities for observing and recording social interaction. The Marital and Family Interaction Laboratory is available for recording husband-wife and family interaction in a comfortable setting. The laboratory consists of a naturalistic living room connected to well-equipped control rooms that enable interactions to be recorded unobtrusively. The facility is augmented by numerous other one-way observation and coding rooms that enable recorded data to be analyzed using state-of-the-art computer-video analysis systems.

The program also has excellent facilities for conducting survey research. These include a series of individual interview rooms and a telephone research center.

A laboratory for research on the impact of television on children and families is housed in the department. The video production and postproduction laboratory allows students and faculty members to produce professional-quality experimental video segments and to code videotapes of children's behavior directly to a computer database. The laboratory also contains a library of more than one thousand hours of children's television programs and educational videotapes for children.

Several rich sets of data, many of which include longitudinal data from families, are housed in the department and available to graduate students for research. These sets of data focus on a wide range of topics, including the impact of courtship experiences on marriage, the prediction of divorce, parent-child interaction, the connection between family and peer relationships, the connection between work roles and family relationships, and the impact on children of poverty, television, child care policy, and adoption policy.

PROGRAMS OF STUDY

The master's degree program examines normal development within the contexts of the family, peer group, community, and culture and develops the student's skill in generating new knowledge in the field through research.
The doctoral degree program is designed to prepare students for research, teaching, and administrative positions in colleges and universities and for positions in government, policy-related research organizations, and other public and private settings. The program emphasizes research and theory on the interplay among individual development, family relationships, and institutions outside the family. Development of the individual is considered within the contexts of the family, peer group, community, and culture. The family is studied as a system of relationships, with attention to roles, communication, conflict resolution and negotiation, and family members’ perceptions of each other and of their family. Public policies, mass media, and care settings outside the family are among the community influences considered in relation to the development of individuals and families. The program emphasizes the investigation of the family and other social processes that contribute to competence and optimal development in individuals from birth to maturity and how such competence is reflected in interpersonal relationships and family interactions.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Edward Anderson
John Daly
Theodore H. Dix
Lucia A. Gilbert
Norval D. Glenn
Sue A. Greninger
Nancy Hazen-Swann
Aletha C. Huston
Ted L. Huston

Deborah B. Jacobvitz
Karrol Ann Kitt
Mark L. Knapp
Judith H. Langlois
Timothy J. Loving
Jennifer L. Matjasko
Ruth G. McRoy
Catherine A. Surra
Elizabeth Vandewater

DEGREE REQUIREMENTS

Master of Arts. The master’s degree requires completion of at least forty-one semester hours of coursework: a core course sequence of fifteen semester hours; twelve hours in research and thesis; nine hours of electives, six of which must be taken in related disciplines; and two hours in Human Development and Family Sciences 194. Students must take Human Development and Family Sciences 194 on the credit/no credit basis. Further information is available from the graduate adviser.

Doctor of Philosophy. Detailed descriptions of admission procedures and program requirements are available from the graduate adviser. Work leading to the Doctor of Philosophy includes (1) the substantive major, which consists of a cohesive sequence of courses in human development and family sciences and related disciplines; (2) coursework in research design and statistics; (3) the supporting program, which consists of work complementary to the substantive major; (4) ongoing supervised research experience; (5) a predoctoral research project (the equivalent of a master’s thesis); (6) a comprehensive paper that reviews the student’s area of specialization; and (7) the dissertation.
FOR MORE INFORMATION

Campus address: Mary E. Gearing Hall (GEA), phone (512) 471-0337, fax (512) 471-5844

Mailing address: The University of Texas at Austin, Graduate Program in Human Development and Family Sciences, Department of Human Ecology, 1 University Station 92200, Austin TX 78712

E-mail: villanueva@mail.utexas.edu

URL: http://www.utexas.edu/depts/he/hdfs/index.htm

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after this catalog was published.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Human Development and Family Sciences: HDF

480K. Research Methods. Three lecture hours and one laboratory hour a week for one semester. May be repeated for credit when the topics vary. Child Development 480K and Human Development and Family Sciences 480K may not both be counted unless the topics vary. Prerequisite: Graduate standing in human development and family sciences, or graduate standing and consent of instructor; and three semester hours of coursework in statistics.

Topic 1: Research Methods in Human Development and Family Sciences. Human Development and Family Sciences 480K (Topic 1) and 381K may not both be counted.

Topic 2: Analysis of Structure and Change in Dyadic Relationships.

381K. Fundamental Research Methods. Social science research methods central to human development and family sciences. Human Development and Family Sciences 480K (Topic 1: Research Methods in Human Development and Family Sciences) and 381K may not both be counted. Prerequisite: Graduate standing in human development and family sciences, or graduate standing and consent of instructor.

192, 292, 392, 692. Research Problems. Directed research in various topics in the area of human development and family sciences. One, two, three, or six lecture hours a week for one semester. May be repeated for credit when the topics vary. Only one of the following may be counted unless the topics vary: Child Development 392, 692, Human Development and Family Sciences 192, 292, 392, 692. Prerequisite: Graduate standing in human development and family sciences, or graduate standing and consent of instructor.

Topic 1: Child Development.

Topic 2: Family Relationships.

Topic 3: Marital Relationships.

Topic 4: Peer Relationships.


Topic 6: The Family and Public Policy.


194, 394. Graduate Seminar. Seminars in various topics in the area of human development and family sciences. One or three lecture hours a week for one semester. Human Development and Family Sciences 194 is offered on the credit/no credit basis only. May be repeated for credit when the topics vary. Only one of the following may be counted unless the topics vary: Child Development 194, 394, Human Development and Family Sciences 194, 394. Prerequisite: Graduate standing in human development and family sciences, or graduate standing and consent of instructor.


Topic 2: Family-Peer Relationships.
**Topic 3:** Marital Relationships.
**Topic 4:** Sex Roles in Family Relationships.
**Topic 5:** Minority Groups and Family Relationships.
**Topic 6:** Intergenerational Parenting.
**Topic 7:** Divorce.
**Topic 8:** Family Systems Theory.
**Topic 9:** Children and Poverty.
**Topic 10:** Adult Development.
**Topic 11:** Issues in Early Childhood Development.
**Topic 12:** Attachment and Development through the Life Span.
**Topic 13:** Cognition in Close Relationships.
**Topic 14:** Adoptive Family Relationships.
**Topic 15:** Children and the Mass Media.
**Topic 16:** Development of Close Relationships.

**395. Recent Advances in Human Development and Family Relationships.** Research and theory focused on the interplay between individual development, family relationships, and institutions and relationships outside the family. May be repeated for credit when the topics vary. Child Development 395 and Human Development and Family Sciences 395 may not both be counted unless the topics vary. **Prerequisite:** Graduate standing in human development and family sciences, or graduate standing and consent of instructor.

**396K. Theory and Research in Human Development and Family Sciences I.** Four lecture hours a week for one semester. **Prerequisite:** Graduate standing in human development and family sciences, or graduate standing and consent of instructor.

**396L. Theory and Research in Human Development and Family Sciences II.** Four lecture hours a week for one semester. **Prerequisite:** Graduate standing in human development and family sciences, or graduate standing and consent of instructor.

**397P. Practicum in Human Development and Family Sciences.** Practicum hours to be arranged. Child Development 397P and Human Development and Family Sciences 397P may not both be counted. **Prerequisite:** Graduate standing and consent of the graduate adviser.

**698. Thesis.** The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. **Prerequisite:** For 698A, graduate standing in human development and family sciences and consent of the graduate adviser; for 698B, Human Development and Family Sciences 698A (or Child Development 698A).

**398T. Supervised Teaching in Human Development and Family Sciences.** Teaching under close supervision, group meetings, individual conferences, and reports. Conference course. **Prerequisite:** Graduate standing and appointment as a teaching assistant.

**399R, 699R, 999R. Dissertation.** Offered on the credit/no credit basis only. **Prerequisite:** Admission to candidacy for the doctoral degree.

**399W, 699W, 999W. Dissertation.** Offered on the credit/no credit basis only. **Prerequisite:** Human Development and Family Sciences 399R, 699R, or 999R (or Child Development 399R, 699R, or 999R).

**HUMAN ECOLOGY**

In addition to the following course, the Department of Human Ecology offers graduate degree programs in human development and family sciences, nutritional sciences, and textile and apparel technology. These programs are described elsewhere in this chapter.

**Human Ecology: H E**

**392. Research Problems.** Problems may be chosen from the areas of family and consumer economics or textiles and apparel. Three lecture hours a week for one semester. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor.
MARINE SCIENCE

Master of Science in Marine Science
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

Facilities for graduate work in marine science are located in Austin and at the shore-side laboratory of the Marine Science Institute in Port Aransas. The institute is located on the Aransas Pass ship channel among the dunes at the tip of Mustang Island, with easy access to bays, beaches, and the Gulf of Mexico. Environmental systems nearby include the hypersaline Laguna Madre, seagrass meadows, fresh and salt water marshes, and the continental shelf. The Port Aransas facility offers a specialized library, classrooms, laboratories, and a flowing seawater system. The institute’s primary research vessels are the 105-foot RV Longhorn and the 57-foot RV Katy. In addition there is a fleet of small boats and a pool of four-wheel-drive vehicles for work in and around shallow bay systems. There is a wide assortment of modern research equipment typical of university laboratories. The shoreside research and teaching facilities also include a cafeteria, dormitories, and graduate student apartments.

Graduate students take part of their coursework in Austin, including supporting work in other natural sciences. One academic year is normally spent on the main campus. Most students then reside in Port Aransas while they undertake thesis and dissertation research at the Marine Science Institute. These students also take additional instruction at the institute, including organized courses, seminars, and training cruises.

AREAS OF STUDY

Graduate study in marine science is offered in the areas of fish physiology/ecology, ecosystems dynamics, and biogeochemistry. Each of these broad core areas includes specialized topics. Further information is available from the graduate adviser.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.


Izhar A. Khan  Dong-Ha Min  Paul A. Montagna  Brian Scott Nuñez  Tamara K. Pease  Peter Thomas  Tracy A. Villareal

ADMISSION REQUIREMENTS

The student’s undergraduate training should include twenty-four semester hours in one of the life or physical sciences. At least twelve of these hours must be in upper-division work. Adequate preparation in mathematics is expected of all students.
DEGREE REQUIREMENTS

Master of Science in Marine Science

For the master's degree, students must complete at least thirty semester hours of acceptable graduate work in marine science and related natural sciences, including Marine Science 698. Each student must complete the three core courses listed below. Six to nine hours of graduate credit in the natural sciences, outside of the area of specialization selected by the student, make up the minor or supporting area. These may include courses from the other core areas of marine science.

Doctor of Philosophy

Doctoral candidates must complete the three core courses listed below, for a total of twelve hours. While additional courses are not specified, each student is expected to complete advanced courses as required by the Graduate Studies Committee or the supervising committee.

Students are expected to fulfill all requirements for candidacy by the end of the second year. This involves, as a minimum, completion of the required core courses, passage of a qualifying examination to demonstrate competence in the core areas, passage of a comprehensive examination to demonstrate mastery of the chosen area of specialization, and the selection of a dissertation committee and supervising professor.

Further information on graduate work and on available fellowships and assistantships may be found at http://www.utmsi.utexas.edu/ and by consultation with the graduate adviser.

Core Courses

Marine Science 481C, Marine Ecosystem Dynamics
Marine Science 482C, Marine Biogeochemistry
Marine Science 483C, Adaptations to the Marine Environment

FOR MORE INFORMATION

Location: 750 Channel View Drive, Port Aransas, phone (361) 749-6721, fax (361) 749-6777; campus mail code: T2500
Mailing address: University of Texas Marine Science Institute, Graduate Program, 750 Channel View Drive, Port Aransas TX 78373-5015
E-mail: gradinfo@utmsi.utexas.edu
URL: http://www.utmsi.utexas.edu/
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Marine Science: MNS

180, 380, 680. Research in Marine Science. Research work on the Texas coast. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Marine Ecology.
Topic 2: General Marine Microbiology.
Topic 3: Marine Geology.
Topic 4: Biology of the Microalgae.
Topic 5: Ecology of Fishes.
Topic 6: Marine Chemistry. May count as chemistry.
Topic 9: Endocrinology.
Topic 10: Comparative Physiology.
Topic 11: Biological Oceanography.
Topic 14: Marine Mining.
Topic 18: Benthic Ecology.
Topic 19: Nutrient Chemistry.
Topic 23: Fisheries and Mariculture.
Topic 24: Fish: Early Life-History Studies.
Topic 25: Marine Geochemistry.
Topic 26: Nutrient Dynamics.
Topic 28: Biogeochemistry.
Topic 29: Marine Isotope Geochemistry.
Topic 30: Fish Physiology.
Topic 31: Organic Geochemistry.
Topic 32: Chemical Oceanography.

481C. Marine Ecosystem Dynamics. Interactions between organisms and the physical processes that regulate productivity and distribution of marine life in oceanic and coastal ecosystems. Four lecture hours a week for one semester. Prerequisite: Graduate standing; and either consent of instructor or the following: six semester hours of coursework in biological sciences chosen from Biology 211, 212, 213, 214, and the equivalent; and Chemistry 301 and 302, or the equivalent.

382. Principles of Marine Science. Lectures, laboratory, and fieldwork. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 6: Marine Ichthyology. Systematics of fishes, including major classifications, comparative anatomy, embryology, and general distribution. Additional prerequisite: Comparative vertebrate anatomy or consent of instructor.

Topic 9: Endocrinology. Endocrinology, with special reference to lower vertebrates and the evolution of control systems. Marine Science 352 (Topic 9: Endocrinology) and 382 (Topic 9) may not both be counted. Additional prerequisite: Courses in physiology and consent of instructor.

Topic 14: Biology of Seagrasses. Analyses of plant and animal characteristics of seagrass ecosystems, including biomass, reciprocal salinity transplants, productivity. Marine Science 352 (Topic 14: Biology of Seagrasses) and 382 (Topic 14) may not both be counted.

482C. Marine Biogeochemistry. Study of chemical, biological, geological, and physical processes that influence cycling of bioactive elements in marine waters and sediments. Four lecture hours a week for one semester. Prerequisite: Graduate standing; and either consent of instructor or the following: Physical Science 303 and 304, or the equivalent; Chemistry 301, 302, 310M (or 610A), and 310N (or 610B), or the equivalent; and six semester hours of coursework in biological sciences chosen from Biology 211, 212, 213, 214, and the equivalent.
383. **Topics in Marine Science.** Two lecture hours and one laboratory hour a week for one semester. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor.

**Topic 1:** Biogeochemistry of Carbon. Production, distribution, composition, and preservation of organic matter in the sea. Marine Science 353 (Topic 1: Biogeochemistry of Carbon) and 383 (Topic 1) may not both be counted.

**Topic 7:** Isotope Ecology. Consideration of the stable hydrogen, carbon, nitrogen, and sulfur stable isotope ratio variations in ecological settings, including chemical fundamentals; current literature on foodwebs and source studies. Additional prerequisite: Graduate standing in one of the natural sciences.

**Topic 8:** Benthic Plants and Animals. Interactions among organisms, sediments, and physical processes of estuarine systems, including the factors that regulate primary and secondary productivity.

**Topic 9:** Planktonic Processes. Advanced study of the processes affecting the distribution and abundance of marine planktonic organisms, primary and secondary production in marine planktonic environments, and trophic interactions between planktonic species.

**Topic 10:** Methods in Marine Science. Introduction through laboratory and field work to the methods of marine science and oceanographic research. Topics include small boat handling and safety; field collection of physical, chemical, and biological data; and laboratory analysis of seawater chemistry and marine organisms.

**Topic 11:** Global Change. Study of natural and anthropogenically mediated changes in the earth's climate and biogeochemical cycles.

**Topic 12:** Larval Fish Ecology. The ecology of marine fish larvae in relation to fisheries oceanography and aquaculture. Additional prerequisite: Ability to use the World Wide Web and knowledge of Microsoft Excel.

**Topic 13:** Marine Botany. Introduction through lectures and field work to the diversity and importance of marine vegetation of the South Texas coast. Includes the evolution, taxonomy, ecology, physiology, and trophic importance of marine vegetation.

**Topic 14:** Marine Isotope Geochemistry. The use of isotopes (stable, radiogenic, uranium series, and anthropogenic) in the study of marine science.

**Topic 15:** Molecular Methods in Marine Science. Introduction to the principles and methods of molecular biology and the application of molecular techniques to research in marine science.

**Topic 16:** Zooplankton Ecology. Advanced study of the morphological, physiological, and behavioral adaptations of zooplankton to their environment.

483C. **Adaptations to the Marine Environment.** The physiological basis for organismal and population-level responses to marine environments. Four lecture hours a week for one semester. **Prerequisite:** Graduate standing; and either consent of instructor or the following: six semester hours of coursework in biological sciences chosen from Biology 211, 212, 213, 214, and the equivalent; and Chemistry 301 and 302, or the equivalent.

384C. **Benthic Ecology.** Interactions among organisms, sediments, and physical processes of estuarine and oceanic bottoms. **Prerequisite:** Graduate standing, Marine Science 354 or the equivalent, and consent of instructor.

384E. **Marine Microbial Ecology.** Metabolism of photosynthetic and chemosynthetic microorganisms in the sea. Three lecture hours and eight laboratory hours a week for one semester. Marine Science 354E and 384E may not both be counted. **Prerequisite:** Graduate standing; six semester hours of coursework in biological science chosen from Biology 302, 303, 304, or the equivalent; Chemistry 301 and 302, or the equivalent; and consent of instructor.

384F. **Marine Geology.** Development of ocean basins; marine and coastal depositional environments, processes, and sedimentary parameters; marine field techniques. Marine Science 354F and 384F may not both be counted. **Prerequisite:** Graduate standing; six semester hours of coursework in general chemistry or mineralogy; six semester hours of coursework in biology or paleontology; and six semester hours of upper-division coursework in geological sciences or consent of instructor.

384J. **Marine Ecology.** Principles of competition and of predator-prey, herbivore-plant, and reproductive interactions within diverse marine phyla. **Prerequisite:** Graduate standing, a basic course in biological science, and consent of instructor.

384K. **Ecology of Fishes.** Organismal, population, and community ecology of marine and freshwater fishes. **Prerequisite:** Graduate standing in marine science or biological sciences; and consent of instructor.

384L. **Marine Chemistry.** Chemical processes in the sea. Three lecture hours and eight laboratory hours a week for one semester. **Prerequisite:** Graduate standing, general physics, and six semester hours of upper-division coursework in chemistry.
384T. Biological Oceanographic Processes. An advanced course in biological processes in oceanic and coastal waters, with emphasis on empirical and theoretical concepts of marine ecosystem dynamics, primary and secondary production, and detrital cycling. Three lecture hours and eight laboratory hours a week for one semester. Prerequisite: Graduate standing; and either consent of instructor or the following: six semester hours of coursework in biological sciences chosen from Biology 211, 212, 213, 214, or the equivalent, and Chemistry 301 and 302, or the equivalent.

384U. Reproductive Physiology of Fishes. Endocrine and environmental control of reproductive cycles in teleost fishes. Prerequisite: Graduate standing, a beginning course in physiology, and consent of instructor.

385E. Marine Macrophytes. A lecture, laboratory, and field course that examines the systematics, ecology, and productivity of marine macroalgae and seagrasses, strategies and seasonal patterns of growth, photosynthesis, and carbon metabolism in relation to in situ light environments. Three lecture hours a week for one semester, with forty hours of laboratory and fieldwork. Prerequisite: Graduate standing, six semester hours of upper-division coursework in biology, and consent of instructor.

385F. Environmental Modeling. Introductory course in modeling, with emphasis on the models used in ecology, oceanography, and earth sciences. Two lecture hours and one and one-half laboratory hours a week for one semester. Prerequisite: Graduate standing in marine science and consent of instructor.

386. Phytoplankton Ecology. The interactions of physiology, morphology, and behavior of microalgae with physical, chemical, and biological features of the environment as related to the distribution of marine phytoplankton. Marine Science 386 and Zoology 384L (Topic 18: Phytoplankton Ecology) may not both be counted. Prerequisite: Graduate standing and consent of instructor. Biology 478L and at least one of the following courses are recommended: Biology 448L and at least one of the following courses: Biology 353L, 455L; and Biology 456L or 373.

188, 388. Marine Research Training Cruise. Shipboard training in marine research through participation in research projects and completion of report. One five- to seven-day cruise; additional laboratory work is required for 388. Prerequisite: Graduate standing and consent of instructor.

191. Seminar in Marine Science. Recent advances in the marine sciences, discussed by students, faculty and staff members, and guest lecturers. Topics to be announced. One lecture hour a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in marine science and consent of the graduate adviser; for 698B, Marine Science 698A.

398T. Supervised Teaching in Marine Science. Prerequisite: Graduate standing and consent of instructor.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Marine Science 399R, 699R, or 999R.
MATHEMATICS

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

The Kuehne Physics Mathematics Astronomy Library has a broad range of mathematical literature for study and research. The collection offers access to a wide variety of print-based and electronic research tools, including bibliographic databases and research and teaching journals in all areas of mathematics. The collection of e-journals is extensive. Electronic resources are accessible through the University Libraries Web site, http://www.lib.utexas.edu/.

The Department of Mathematics computer system is available for use in connection with courses and investigations in both pure and applied mathematics.

AREAS OF STUDY

Graduate study in mathematics is offered in the areas of algebra, number theory, analysis, topology, geometry, applied mathematics, probability and statistics, numerical analysis, and actuarial mathematics.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Daniel Allcock
Todd Arbogast
Efraim Pacillas Armendariz
William Beckner
David Ben-Zvi
Klaus R. Bichteler
Robert S. Boyer
Patrick L. Brockett
Luis A. Caffarelli
E. Ward Cheney
Alan K. Cline
James W. Daniel
Katherine M. Davis
Clint Dawson
Rafael de la Llave
John D. Dollard
John R. Durbin
Bjorn Engquist
Gavril Farkas
Daniel Freed
Charles N. Friedman
Irene Martinez Gamba
Frank E. Gerth III
John E. Gilbert
Robert E. Gompf
Oscar Gonzalez
Cameron M. Gordon
William T. Guy Jr.
Gary C. Hamrick
Tamas Hausel
Raymond C. Heitmann
Sean Keel
Daniel F. Knopf
Hans Koch
John E. Luecke
Stephen J. McAdam
Lauren A. Meyers
Edward W. Odell
J. Tinsley Oden
Martin C. Olsson
Bruce P. Palka
Charles L. Radin
Alan W. Reid
F. Rodriguez-Villegas
Lorenzo A. Sadun
David J. Saltman
Martha K. Smith
Panagiotis E. Souganidis
Michael Starbird
John T. Tate
P. Uri Treisman
Yen-Hsi Tsai
Karen K. Uhlenbeck
Jeffrey D. Vaaler
Alexis F. Vasseur
James W. Vick

477 Natural Sciences  •  Mathematics
DEGREE REQUIREMENTS

Master of Arts. Most students take thirty semester hours of coursework (ten courses) and the report course. The ten courses are divided into major and minor areas. The major consists of mathematics courses, and the minor area consists of courses that are related to mathematics. Students should consult the graduate adviser about the courses that are allowable for the minor. There must be six to eight courses in the major area and two to four courses in the minor area. A special concentration in actuarial mathematics is available.

Master of Science in Statistics. Administered by the Department of Mathematics, the Master of Science in Statistics is under the supervision of the Graduate Studies Committee in statistics. A description of the degree program begins on page 491.

Doctor of Philosophy. A detailed description of the procedure for admission to candidacy is available from the graduate adviser. Each student is first required to pass preliminary examinations. A small advisory committee is then set up to approve the student’s choice of coursework and to specify the foreign language requirement. This committee administers an advanced examination in the chosen area of specialization. The preliminary examinations are given once each semester. The advanced examination may be given by mutual agreement of the student and the advisory committee at any time within a year after the student has passed the preliminary examinations; the student must pass the advanced examination before admission to candidacy will be approved.

FOR MORE INFORMATION

Campus address: Robert Lee Moore Hall (RLM) 8.100, phone (512) 471-7711, fax (512) 471-9038; campus mail code: C1200

Mailing address: The University of Texas at Austin, Graduate Program in Mathematics, Department of Mathematics, 1 University Station C1200, Austin TX 78712

E-mail: gradadv@math.utexas.edu

URL: http://www.ma.utexas.edu/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Mathematics: M

380C. Algebra. A survey of algebraic structures, including groups, fields, rings, and modules. Prerequisite: Graduate standing and consent of instructor or the graduate adviser.

380D. Algebra. Continuation of Mathematics 380C. Prerequisite: Graduate standing, consent of instructor or the graduate adviser, and Mathematics 380C.
381C. **Real Analysis.** Same as Computational and Applied Mathematics 381R. Measure and integration over abstract spaces; Lebesgue's theory of integration and differentiation on the real line. **Prerequisite:** Graduate standing and consent of instructor or the graduate adviser.

381D. **Complex Analysis.** Same as Computational and Applied Mathematics 381D. Introduction to complex analysis. **Prerequisite:** Graduate standing and consent of instructor or the graduate adviser.

381E. **Functional Analysis.** Same as Computational and Applied Mathematics 381C. Measure and integration over abstract spaces; Lebesgue's theory of integration and differentiation on the real line. **Prerequisite:** Graduate standing and consent of instructor or the graduate adviser.

381F. **Algebraic Topology.** Surfaces, covering spaces, fundamental group, and homology. **Prerequisite:** Graduate standing, an undergraduate course in topology, and consent of instructor or the graduate adviser.

382C. **Differential Topology.** Continuation of Mathematics 382C. Manifolds and maps, differential forms, transversality, and intersection theory. **Prerequisite:** Graduate standing, consent of instructor or the graduate adviser, and Mathematics 382C.

382D. **Algebraic Topology.** Continuation of Mathematics 382C. **Prerequisite:** Graduate standing and consent of instructor or the graduate adviser.

382E. **Algebraic Topology.** Continuation of Mathematics 382E. **Prerequisite:** Graduate standing, consent of instructor or the graduate adviser, and Mathematics 382E.

385C. **Methods of Applied Mathematics.** Same as Computational and Applied Mathematics 385C. Topics include basic normed linear space theory; fixed-point theorems and applications to differential and integral equations; Hilbert spaces and the spectral theorem; applications to Sturm-Liouville problems; approximation and computational methods such as the Galerkin, Rayleigh-Ritz, and Newton procedures. **Prerequisite:** Graduate standing.

385D. **Methods of Applied Mathematics.** Same as Computational and Applied Mathematics 385D. Topics include distributions, fundamental solutions of partial differential equations, the Schwartz space and tempered distributions, Fourier transform, Plancherel theorem, Green's functions, Sobolev spaces, weak solutions, differential calculus in normed spaces, implicit function theorems, applications to nonlinear equations, smooth variational problems, applications to classical mechanics, constrained variational problems. **Prerequisite:** Graduate standing and Mathematics 383C.

383C. **Numerical Analysis: Linear Algebra.** Same as Computational and Applied Mathematics 383C and Computer Sciences 383C. Survey of numerical methods in linear algebra: floating-point computation, solution of linear equations, least squares problems, algebraic eigenvalue problems. **Prerequisite:** Graduate standing, either consent of instructor or Mathematics 341 (or 311) or 340L, and either Mathematics 368K or Computer Sciences 367.

383D. **Numerical Analysis: Interpolation, Approximation, Quadrature, and Differential Equations.** Same as Computational and Applied Mathematics 383D and Computer Sciences 383D. Survey of numerical methods for interpolation, functional approximation, integration, and solution of differential equations. **Prerequisite:** Graduate standing; either consent of instructor or Mathematics 427K and 365C; and Computational and Applied Mathematics 383C, Computer Sciences 383C, or Mathematics 383E.

383E. **Numerical Treatment of Differential Equations.** Same as Computational and Applied Mathematics 386K and Computer Sciences 386K. The analysis of numerical methods for solving ordinary and partial differential equations. **Prerequisite:** Graduate standing; and Computational and Applied Mathematics 383D, Computer Sciences 383D, Mathematics 368K, 383F, or consent of instructor.
Mathematics and Applied Mathematics 384C. Continuation of Actuarial Foundations 309, 329, Mathematics Society. Only one of the following may be counted:

384D. Mathematical Statistics. Same as Computational and Applied Mathematics 384S. Continuation of Mathematics 384C. Prerequisite: Graduate standing, consent of instructor, and Computational and Applied Mathematics 384R or Mathematics 384C.

384E. Analysis of Variance. Analysis of variance, including one- and two-way layouts; components of variance; fixed, random, and mixed models; and various types of experimental designs and their analysis. Prerequisite: Graduate standing, and Mathematics 378K or the equivalent or consent of instructor.

384F. Design of Experiments. Design of experiments, including 2^a and 3^n factorial experiments, confounding, fractional factorials, sequential experimentation, orthogonal arrays, D-optimal experiments, and response surface methodology. Prerequisite: Graduate standing, and Mathematics 378K or the equivalent or consent of instructor.

384G. Regression Analysis. Fitting linear models to data by the method of least squares, choosing best subsets of predictors, and related materials. Prerequisite: Graduate standing and consent of instructor.

384H. Multivariate Statistical Analysis. Introduction to the general multivariate linear model; a selection of techniques, such as principle component, factor, and discriminant analysis. Prerequisite: Graduate standing and consent of instructor.

385C. Theory of Probability. Same as Computational and Applied Mathematics 384K. Prerequisite: Graduate standing and consent of instructor.

385D. Theory of Probability. Same as Computational and Applied Mathematics 384L. Continuation of Mathematics 385C. Prerequisite: Graduate standing, consent of instructor, and Computational and Applied Mathematics 384K or Mathematics 385C.

389F. Theory of Interest. Measurement of interest, present value, accumulated value, amortization of loans, sinking funds, and bonds. Covers the syllabus for the exam on interest theory of the Society of Actuaries and the Casualty Actuarial Society. Only one of the following may be counted: Actuarial Foundations 309, 329, Mathematics 389F. Prerequisite: Graduate standing and Mathematics 408D or 408L.

389J. Probability Models with Actuarial Applications. Introductory actuarial models for life insurance, property insurance, and annuities. With Mathematics 389U and 389V, covers the syllabus for the professional actuarial exam on models. Prerequisite: Graduate standing, Mathematics 362K with a grade of at least C, and credit with a grade of at least C or registration for Mathematics 341 or 340L.

389P. Actuarial Statistical Estimates. Statistical estimation procedures for random variables and related quantities in actuarial models. Covers the syllabus for the professional actuarial exam on model construction. Four lecture hours a week for one semester. Prerequisite: Mathematics 341 or 340L, 358K or 378K, and 389J with a grade of at least C in each.

389T. Seminar on Actuarial Practice. Presentations by working actuaries on current issues in actuarial practice. One lecture hour a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Actuarial Foundations 329 and Mathematics 389J with a grade of at least C in each.

389U. Actuarial Contingent Payments I. Intermediate actuarial models for life insurance, property insurance, and annuities. With Mathematics 389J and 389V, covers the syllabus for the professional actuarial exam on models. Prerequisite: Mathematics 341 or 340L, and 389J with a grade of at least C in each; and credit with a grade of at least C or registration for Actuarial Foundations 329 (or credit for 309 with a grade of at least C).

389V. Actuarial Contingent Payments II. Advanced actuarial models for life insurance, property insurance, and annuities. With Mathematics 389J and 389U, covers the syllabus for the professional actuarial exam on models. Prerequisite: Mathematics 389U with a grade of at least C.

390C. Topics in Algebra. Recent topics have included algebraic geometry, number theory, algebraic curves, algebraic number theory, algebraic functions, rational curves on varieties, homological algebra. May be repeated for credit when the topics vary. Some sections are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing and consent of instructor.
Recent topics have included quantum mechanics, statistical physics, ergodic theory, group representations, statistical mechanics, quantum field theory, introductory partial differential equations, monotone operators and partial differential equations, Hilbert space methods for partial differential equations, Hamiltonian dynamics, nonlinear functional analysis, Euler and Navier-Stokes equations, microlocal calculus and spectral asymptotics, calculus of variations. May be repeated for credit when the topics vary. Some sections are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing and consent of instructor.

Recent topics have included algebraic topology, differential topology, geometric topology, Lie groups. May be repeated for credit when the topics vary. Some sections are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing and consent of instructor.

Recent topics have included numerical methods in ordinary differential equations, numerical methods in partial differential equations, computational problems in linear algebra, numerical solution of systems of equations, numerical methods in functional approximation, numerical integration. May be repeated for credit when the topics vary. Some sections are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing and consent of instructor.

Recent topics have included measure and integration, real analysis. May be repeated for credit when the topics vary. Some topics are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing and consent of instructor.

Topics have included set theory, history of mathematics. May be repeated for credit when the topics vary. Some sections are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing and consent of instructor.

One or three lecture hours a week for one semester. May be repeated for credit when the topics vary. Some sections are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing and consent of instructor.

The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in mathematics and consent of the graduate adviser; for 698B, Mathematics 698A.

Preparation of a report to fulfill the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in mathematics and consent of the supervising professor and the graduate adviser.

Offered on the credit/no credit basis only. Prerequisite: Graduate standing and appointment as a teaching assistant.

Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

Offered on the credit/no credit basis only. Prerequisite: Mathematics 399R, 699R, or 999R.
NUTRITIONAL SCIENCES

Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

Facilities for research and graduate instruction in nutritional sciences include modern laboratories for biochemical, immunological, and cellular/molecular biological techniques such as cell and tissue culture, immunological assays, cytokine bioassays, radioisotope analyses, stable isotope analyses, and protein structure and function determination. Facilities are also available for analysis of vitamins, amino acids, minerals, lipids, carbohydrates, and other substances of nutritional and physiological importance. Local, state, and federal health, child-care, and geriatrics programs provide research and clinical settings. Other resources are the Life Science Library, the Mallet Chemistry Library, the Perry-Castañeda Library, the Animal Resources Center, and Information Technology Services. Graduate students have access to the Student Microcomputer Facility and to statistical applications maintained by the nutritional sciences program.

PROGRAMS OF STUDY

The graduate program has biochemical, molecular-biological, and clinical components and includes study in the following areas: molecular and cellular aspects of nutrient function; molecular and cellular approaches to the study of nutrition and disease; nutritional biochemistry; behavioral and child nutrition; nutrient requirements and intakes and health assessment; nutrition and cancer, obesity, aging, and immunity; and nutrition education.

The master's degree program is designed to prepare individuals for teaching in community colleges; administration in public health programs; technical positions at food, pharmaceutical, and chemical laboratories; and, for those who are registered dietitians, advanced practitioner and teaching positions in clinical dietetics. Students may also apply to the Coordinated Program in Dietetics, which provides courses and experience that will meet the requirements for registration eligibility of the Commission on Dietetic Registration of the American Dietetic Association.

The doctoral degree program is designed to prepare students for research, teaching, and administrative positions in colleges, universities, government, and industry. Competence in related fields is emphasized, and supporting work is selected from areas such as biochemistry, biology, molecular biology, computer sciences, genetics, communication, geriatrics, immunology, physiology, kinesiology, psychology, or health promotion.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Margaret E. Briley  
Jeanne Freeland-Graves  
M. Beth Gillham  
Aletha C. Huston  
Christopher Jolly  
Kimberly Kline  
Michelle A. Lane  
RoseAnn Loop  
Bob G. Sanders  
Richard A. Willis  
Bugao Xu
ADMISSION AND DEGREE REQUIREMENTS

The preliminary training of students seeking a graduate degree should include courses in the following fields: inorganic chemistry with laboratory, organic chemistry with laboratory, biochemistry with laboratory, vertebrate or human physiology, cellular and molecular biology, statistics, and nutrition. The Graduate Studies Committee may recommend that some or all of these courses be completed as a prerequisite for admission to the program or in addition to the courses required for the graduate degree. For students who wish to combine the advanced degree with courses and experiences meeting the requirements for registration eligibility with the American Dietetic Association, additional courses may be required.

A handbook available from the graduate coordinator gives details of policies, procedures, and requirements.

Master of Arts

The Graduate Studies Committee must approve the program of work before the student is admitted to candidacy for the master’s degree. Thirty semester hours are required, distributed as follows: (1) eighteen hours in specified nutrition courses; (2) six hours in a minor or supporting field such as biology, anthropology, biochemistry, immunology, educational psychology, curriculum and instruction, health education, public health, pharmacology, or kinesiology; and (3) six hours in the thesis course, involving an original research project. The eighteen hours in nutrition must include at least three hours in research methods, at least three in research problems, at least three in seminar, and at least six in recent advances; the remaining three hours may be in either research methods or recent advances.

A degree program with report is also available, for students seeking a terminal master’s degree. In this program, Nutrition 398R and three additional hours in either research methods or recent advances replace the thesis course.

Doctor of Philosophy

The doctoral program typically requires four to five years of full-time study. Students are expected to meet the following requirements for admission to candidacy by the end of the second year: (1) completion of courses conditional to admission; (2) fifteen semester hours in nutrition, including the following courses with a grade of at least B in each: Nutrition 390 (Topic 1: Advances in Nutritional Sciences I), 390 (Topic 7: Advances in Nutritional Sciences II), and 394 (Topic 1: General Nutrition); (3) six hours of graduate coursework outside nutrition in fields germane to the dissertation research, such as biology, biochemistry, molecular biology, educational psychology, curriculum and instruction, health education, and kinesiology; (4) presentation and defense of a dissertation research proposal and satisfactory response to questions on nutrition and related sciences; and (5) approval by the Graduate Studies Committee of the proposed course plan and proposed dissertation research program. Further supporting work in nutrition or related sciences is usually needed to augment the program. All doctoral candidates must write a dissertation based on the results of their original research and must make a formal oral defense of the dissertation. The Graduate Studies Committee must certify that all of the degree requirements have been completed.
FOR MORE INFORMATION

Campus address: T.S. Painter Hall (PAI), phone (512) 471-0337, fax (512) 471-5844; campus mail code: A2703
Mailing address: The University of Texas at Austin, Graduate Program in Nutritional Sciences, Division of Nutrition, 1 University Station A2703, Austin TX 78712
E-mail: hegrad@uts.cc.utexas.edu
URL: http://www.utexas.edu/depts/he/ntr/ntrgradpage1.htm

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Nutrition: NTR

One lecture hour and six laboratory hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in nutrition, or graduate standing and consent of instructor.

Topic 1: Experimental Nutrition.
Topic 2: Nutritional Immunology.
Topic 4: Advanced Experimental Design and Statistics. Additional prerequisite: Nutrition 380K (Topic 3) or consent of instructor.
Topic 5: Carcinogenesis.
Topic 6: Nutritional Biochemistry.

390. Recent Advances in Nutritional Sciences. May be repeated for credit when the topics vary. Prerequisite: Graduate standing; and one of the following: Chemistry 339K and 339L, Chemistry 369, equivalent coursework, or consent of instructor.

Topic 1: Advances in Nutritional Sciences I. Required of all graduate students in nutrition.
Topic 2: Carbohydrates and Fiber.
Topic 3: Lipids.
Topic 4: Vitamins and Minerals.
Topic 5: Minerals.
Topic 6: Molecular Nutritional Sciences.
Topic 7: Advances in Nutritional Sciences II. Required of all graduate students in nutrition.
Topic 8: Clinical Nutrition. Additional prerequisite: Nutrition 668 or 370 or the equivalent or consent of instructor.
Topic 9: Nutrition, Immunology, and Cancer.

One lecture hour and six laboratory hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Biochemical Nutrition.
Topic 2: Nutrient Requirements.
Topic 4: Nutrition and Immunology.
Topic 5: Food Sciences.
Topic 7: Nutrition Education.
Topic 8: Developmental Nutrition.
Topic 10: Nutrition and Metabolism.
Topic 11: Obesity.

194, 294, 394. Graduate Seminar in Nutritional Sciences. One, two, or three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: General Nutrition. Required of all students.
Topic 2: Clinical Nutrition.
Topic 3: Molecular and Cellular Nutrition.
Topic 4: Nutrition, Immunology, and Disease.
Topic 5: Nutrition through the Life Cycle.

397C, 697C. Conference Course in Nutritional Sciences. For 397C, one lecture hour and six laboratory hours a week for one semester; for 697C, two lecture hours and twelve laboratory hours a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in nutrition and consent of instructor.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in nutrition and consent of the graduate adviser; for 698B, Nutrition 698A.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in nutrition and consent of the supervising professor.

398T. Supervised Teaching in Nutrition. Teaching under close supervision; group meetings, individual conferences, and reports. Prerequisite: Graduate standing and appointment as a teaching assistant.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Nutrition 399R, 699R, or 999R.

PHYSICS
Master of Arts
Master of Science in Applied Physics
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK
Modern facilities for graduate study and research include a large-scale cryogenic laboratory; synthesis and strong magnetic field equipment; nuclear magnetic and electron paramagnetic resonance laboratories; extensive facilities for tunneling and force microscopy and nanostructure characterization, SQUID magnetometry, and electron spectroscopy; well-equipped laboratories in optical spectroscopy, quantum optics, femtosecond spectroscopy and diagnostics, and electron-atom and surface scattering; and facilities for turbulent flow and nonlinear dynamics experiments. Plasma physics experiments are conducted at the major national tokamaks in Boston and San Diego. Experiments in high-energy heavy ion nuclear and particle physics are conducted at large accelerator facilities such as Brookhaven National Laboratory (New York), Fermi National Laboratory (Illinois), and Stanford Linear Accelerator Center. Theoretical work in plasma physics, condensed matter physics, acoustics, nonlinear dynamics, relativity, astrophysics, statistical mechanics, and particle theory is conducted within the Department of Physics. Students have access to excellent computer and library facilities. The department maintains and staffs a machine shop, student workshop, low-temperature and high-vacuum shop, and electronics design and fabrication shop.

AREAS OF STUDY
The Department of Physics has active research groups in nine main areas of current physics research: atomic, molecular, and optical physics; classical physics; nuclear physics; statistical mechanics and thermodynamics; plasma physics; condensed matter physics; nonlinear dynamics; relativity and cosmology; and elementary particle physics. In most of these fields both experimental and theoretical work is in progress.
GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Peter R. Antoniewicz  
Roger D. Bengtson  
Herbert L. Berk  
Arno Böhm  
Boris Breizman  
James C. Browne  
Charles B. Chiu  
W. Rory Coker  
Rafael de la Llave  
Alex de Lozanne  
Alexander A. Demkov  
Cecile DeWitt-Morette  
Duane A. Dicus  
Jacques Distler  
Todd Ditmire  
Michael Downer  
William E. Drummond  
James L. Erskine  
Manfred Fink  
Willy Fischler  
Richard Fitzpatrick  
Ernst-Ludwig Florin  
Daniel Freed  
Lothar W. Frommhold  
Kenneth W. Gentle  
Austin M. Gleeson  
John B. Goodenough  
Thomas A. Griffy  
Mark F. Hamilton  
Gary C. Hamrick  
Richard D. Hazeltine  
Daniel J. Heinzen  
Paul S. Ho  
Gerald W. Hoffmann  
C. Wendell Horton Jr.  
Vadim Kaplunovsky  
John W. Keto  
Joshua Klein  
Leonard Kleinman  
Hans Koch  
Denis A. Kohl  
Eiichiro Komatsu  
Sacha E. Kopp  
Sheldon Landsberger  
Karol Lang  
Allan MacDonald  
Michael P. Marder  
Hans Mark  
John T. Markert  
Richard A. Matzner  
William D. McCormick  
Tessie J. Moon  
C. Fred Moore  
Philip J. Morrison  
Yuval Ne’eman  
Qian Niu  
Melvin E. L. Oakes  
Sonia Paban  
Charles L. Radin  
Mark G. Raizen  
Linda E. Reichl  
Peter J. Riley  
Jack L. Ritchie  
William C. Schieve  
Roy F. Schwitters  
Paul R. Shapiro  
Lawrence C. Shepley  
Chih-Kang Ken Shih  
Gennady Shvets  
Greg O. Sitz  
Ben G. Streetman  
E. C. G. Sudarshan  
Jack B. Swift  
Harry L. Swinney  
Maxim Tsoi  
Jack S. Turner  
Takeshi Udagawa  
James W. Vick  
Steven Weinberg  
J. Craig Wheeler  
Robert E. Wyatt  
Zhen Yao

DEGREE REQUIREMENTS

It is assumed that the student has an undergraduate background that includes mechanics, electricity and magnetism, thermodynamics, atomic physics, and quantum mechanics.
Master of Arts

The Master of Arts is not a part of the qualifying process for the doctoral degree. First-year students plan the first semester registration with the graduate adviser in physics. Students are encouraged to investigate all research groups in the department before selecting a professor to supervise a thesis project. The degree plan is then designed by the student, the supervising professor, and the graduate adviser. The time involved for completing a master's degree is related to the quality of the student's undergraduate background: the average time for completion by students with a good undergraduate background is one calendar year and one semester.

Master of Science in Applied Physics

This degree program is designed to provide students with a broad background in physics and related fields, with an emphasis on those aspects of the science most used in an industrial setting. The required physics courses include Physics 380N, 386K, 386N, 387K, and 389K. A thesis is also required. The supporting work must be in engineering, chemistry, or geological sciences. Physics 385K, Classical Mechanics, may be taken as an optional course.

Doctor of Philosophy

To be admitted to candidacy for the doctoral degree, the student must (1) fulfill the core course requirement described below; (2) show evidence of exposure to modern methods of experimental physics; this exposure may be gained in a senior-level laboratory course taken by the student as an undergraduate and approved by the graduate adviser and the chair of the Graduate Studies Committee, by previous participation in an experimental program, or in Physics 380N; and (3) fulfill the oral examination requirement described below.

Core courses. During the first two years of graduate study, the student must take four core courses: Physics 385K, 385L, 387K or 387L, and 389K or 389L. The student must earn an official grade of at least B- in each course and a grade point average of at least 3.33 in the four courses. The student may ask for the grade he or she earns in Physics 380N to be substituted for the grade in one of the core courses when the average is computed. A well-prepared student may seek to fulfill the core course requirement by earning satisfactory grades on the final examinations for some of these courses rather than by registering for them; in this case, the student does not receive graduate credit for these courses and the grade is not counted toward the required average.

The oral qualifying examination. After satisfying the first two requirements above, and within twenty-seven months of entering the program, the student must take an oral qualifying examination. The examination consists of a presentation before a committee of four physics faculty members, one of whom is a member of the Graduate Studies Subcommittee. The presentation is open to all interested parties. It is followed by a question period restricted to the student and the committee. The questions during this session are directed toward clarifying the presentation and helping the committee determine whether the student has a solid grasp of the basic material needed for research in his or her specialization. The student passes the examination by obtaining a positive vote from at least three of the four faculty members on the oral qualifying committee.

Each Program of Work for the doctoral degree must include at least four advanced courses in physics; a list of acceptable courses is maintained by the Graduate Studies Subcommittee. The program must also include three courses outside the student's area of specialization. One of these must be an advanced physics course; another
must be outside the Department of Physics; the third may be either an advanced physics course or a course outside the Department of Physics. A dissertation is required of every candidate, followed by a final oral examination covering the dissertation and the general field of the dissertation.

**FOR MORE INFORMATION**

*Campus address:* Robert Lee Moore Hall (RLM) 5.224, phone (512) 471-1664, fax (512) 471-9637; campus mail code: C1600

*Mailing address:* The University of Texas at Austin, Graduate Program, Department of Physics, 1 University Station C1600, Austin TX 78712

*URL:* http://www.ph.utexas.edu/

**GRADUATE COURSES**

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the *Course Schedule* to determine which courses and topics will be offered during a particular semester or summer session. The *Course Schedule* may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

**Physics: PHY**

380L. *Plasma Physics I.* Particle drifts, equations for plasmas, magnetohydrodynamics, waves and instabilities in the two-fluid model, Vlasov equation, Landau damping, controlled thermonuclear research, plasma diagnostics. *Prerequisite:* Graduate standing.

380M. *Plasma Physics II.* Plasma containment, stability theory in fluid models, derivation of Vlasov and Fokker-Planck equations, the dielectric tensor, velocity space and gradient instabilities, Nyquist diagrams. *Prerequisite:* Graduate standing and Physics 380L or consent of instructor.

380N. *Experimental Physics.* Experimental work to provide exposure to physics research techniques. Eighteen laboratory hours a week for one semester. *Prerequisite:* Graduate standing and concurrent enrollment in Physics 390.

380T. *Advanced Study in Physics.* Not open to physics majors. Special topics for physics teachers. May be repeated for credit when the topics vary. *Prerequisite:* Graduate standing, a bachelor's degree in science or mathematics, and consent of the graduate adviser.

381C. *Computational Physics.* Same as Computational and Applied Mathematics 381C. Dynamical and stational descriptions and solutions of many-body, nonlinear physical systems by computation. Theory of computation and applications to various branches of physics. *Prerequisite:* Graduate standing; and Physics 385K and 387K, or consent of instructor.

381M. *Methods of Mathematical Physics.* Same as Computational and Applied Mathematics 381M. Theory of analytic functions; linear algebra and vector spaces; orthogonal functions; ordinary differential equations; partial differential equations; Green's functions; complex variables. *Prerequisite:* Graduate standing.

381N. *Methods of Mathematical Physics.* Same as Computational and Applied Mathematics 381N. Continuation of Physics 381M. Topology, functional analysis, approximation methods, group theory, differential manifolds. *Prerequisite:* Graduate standing, and Computational and Applied Mathematics 381M or Physics 381M.

382M. *Fluid Mechanics.* Flow of ideal and viscous fluids; introduction to turbulence; boundary layers; sound and shock waves. *Prerequisite:* Graduate standing and Physics 381M, 385K, and 387K.

382N. *Nonlinear Dynamics.* Basic concepts of evolution and stability, examples of instabilities, low dimensional dynamical systems, chaos, characterization of temporal chaos, pattern formation, Hamiltonian systems. *Prerequisite:* Graduate standing and consent of instructor.

382S. *Seminar in Nonlinear Dynamics.* May be repeated for credit. Offered on the credit/no credit basis only. *Prerequisite:* Graduate standing and consent of instructor.

385K. *Classical Mechanics.* Classical and relativistic Hamiltonian mechanics; Hamilton-Jacobi theory; Lagrangian mechanics for continuous media; symmetry principles and conservation laws. *Prerequisite:* Graduate standing.
385L. Statistical Mechanics. Equilibrium statistical mechanics; introduction to nonequilibrium concepts; ensembles; classical and quantum gases; statistical physics of solids. Prerequisite: Graduate standing, and Physics 385K or consent of instructor.

385S. Seminar in Statistical Physics. Topics to be announced. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

385T. Special Topics in Statistical Physics. Topics to be announced. With consent of the graduate adviser, may be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

386K. Physics of Sensors. Physical principles of acoustic, optical, electromagnetic, radiation, and motion sensors. Prerequisite: Graduate standing and consent of instructor.

386N. Technical Seminar. Physics for applied and industrial purposes. May be repeated for credit. Prerequisite: Graduate standing and consent of the graduate adviser.

386S. Seminar in Applied Physics. Topics to be announced. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

387K. Electromagnetic Theory. Electrostatics and magnetostatics; boundary value problems; Maxwell’s equations; plane waves; wave guides; diffraction; multipole radiation. Prerequisite: Graduate standing.

387L. Electromagnetic Theory. Magnetohydrodynamics and plasmas; relativity; collisions of charged particles; radiation from moving charges; radiation damping. Prerequisite: Graduate standing and Physics 387K.

387M. Relativity Theory I. Tensor calculus; Riemannian geometry; geometry of Minkowski spacetime; special relativity theory. Offered in the fall semester only. Prerequisite: Graduate standing and Physics 387K.

387N. Relativity Theory II. General relativity theory; gravitational field equations; weak field approximations; Schwarzschild solution, observable consequences; other topics. Offered in the spring semester only. Prerequisite: Graduate standing and Physics 387M.

388M. Graduate Colloquy. Reviews of current topics in physics research. Offered on the credit/no credit basis only. Prerequisite: Graduate standing.

388S. Seminar in Teaching Physics. Topics to be announced. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

389K. Quantum Mechanics. Hilbert space and operators; Schrödinger and Heisenberg equations; solutions for systems in one and three dimensions; theory of spin and orbital angular momentum; the effect of symmetries; approximation techniques; elementary scattering theory. Prerequisite: Graduate standing.

389L. Quantum Mechanics. Perturbation techniques; systems of identical particles; quantum theory of radiation; emission and absorption of photons; selection rules; life times; scattering theory for light and particles, S-matrix; relativistic corrections to electron motion. Prerequisite: Graduate standing and Physics 389K.

190, 290, 390, 690. Graduate Research. For each semester hour of credit earned, the equivalent of one lecture hour a week for one semester. May not be counted toward the master's degree in physics. Prerequisite: Graduate standing, and written consent of instructor filed with the graduate adviser.

391M. Nonlinear Plasma Theory. Quasi-linear theory, weak turbulence, large amplitude waves, plasma radiation, shock waves, shock structure, computer techniques. Prerequisite: Graduate standing and Physics 380L.

391S. Seminar in Plasma Physics. Topics to be announced. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

391T. Special Topics in Plasma Physics. Topics to be announced. Some sections are offered on the credit/no credit basis only; these are identified in the Course Schedule. With consent of instructor, may be repeated for credit. Prerequisite: Graduate standing, Physics 380L, and consent of instructor.

391U. Seminar in Plasma Theory. Current topics in plasma theory. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

392K. Solid-State Physics. Lattice vibrations and thermal properties of solids; band theory of solids; transport properties of metals and semiconductors; optical properties; magnetic properties; magnetic relaxation; superconductivity. Prerequisite: Graduate standing, Physics 389K, and Physics 375S or the equivalent.

392L. Solid-State Physics. Elementary excitations: phonons, electrons, spin waves; interactions: phonon-phonon, electron-electron, electron-phonon; theory of metals and semiconductors; transport theory; optical properties. Prerequisite: Graduate standing and Physics 392K.
392S. Seminar in Solid-State Physics. Topics to be announced. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

392T. Special Topics in Solid-State Physics. Topics to be announced. With consent of instructor, may be repeated for credit. Prerequisite: Graduate standing, Physics 392K, and consent of instructor.

393S. Seminar in Relativity. Topics to be announced. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

393T. Special Topics in Relativity. Topics to be announced. With consent of instructor, may be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

394T. Special Topics in Theoretical Physics. Topics to be announced. With consent of instructor, may be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

395. Survey of Atomic and Molecular Physics. Spectra of atoms and diatomic molecules; quantum electronics; experimental techniques. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

395K. Nonlinear Optics and Lasers. Gaussian beam optics, interaction of electromagnetic radiation with matter, semiclassical laser theory, experimental laser systems, nonlinear optical susceptibilities, harmonic generation, wave mixing, electro-optic and acousto-optic effects, coherent transient effects, optical breakdown, laser-plasma interactions. Prerequisite: Graduate standing and consent of instructor.

395S. Seminar in Atomic and Molecular Physics. Topics to be announced. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

395T. Special Topics in Atomic and Molecular Physics. Topics to be announced. With consent of instructor, may be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

396J. Introduction to Elementary Particle Physics. Historical introduction to elementary particles, elementary particle dynamics, relativistic kinematics, symmetries, bound states, the Feynman calculus, quantum electrodynamics, electrodynamics of quarks and hadrons, quantum chromodynamics, weak interactions, gauge theories. Prerequisite: Graduate standing, Physics 389K, and knowledge of special relativity and scattering.

396K. Quantum Field Theory I. Quantization of the Klein-Gordon, Dirac, and electromagnetic field theories; theory of interacting fields, perturbation theory, and renormalization. Prerequisite: Graduate standing and Physics 389K.

396L. Quantum Field Theory II. Path-integral formalism, massless particles, electrodynamics, nonperturbative methods, one-loop calculations in quantum electrodynamics, general renormalization theory, soft photons, bound statics in quantum electrodynamics. Prerequisite: Graduate standing and Physics 396K.

396P. String Theory I. Introduction to string theory and conformal field theory. The free string, conformal invariance and conformal field theory, supersymmetry and string interactions. Prerequisite: Graduate standing, and Physics 396K or the equivalent or consent of instructor.

396Q. String Theory II. Advanced conformal field theory, perturbative string theory and compactification. Introduction to nonperturbative aspects of string theory. Prerequisite: Graduate standing and Physics 396P.

396S. Seminar in Particle Physics. Topics to be announced. May be repeated for credit when the topics vary. With consent of instructor, any topic may be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

396T. Special Topics in Particle Physics. Topics to be announced. With consent of instructor, may be repeated for credit. Some sections are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing and consent of instructor.

396U. Theory Group Seminar. Seminars in theoretical physics. May be repeated for credit when the topics vary. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

397K. Nuclear Physics. Systematics of stable nuclei; nuclear structure; decay of the nucleus; cross sections and reaction mechanisms; the elementary particles. Prerequisite: Graduate standing, and Physics 389K or consent of instructor.
397S. Seminar in Nuclear Physics. Topics to be announced. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

397T. Special Topics in Nuclear Physics. Topics to be announced. With consent of instructor, may be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in physics and written consent of the supervising professor filed with the graduate adviser; for 698B, Physics 698A.

398T. Supervised Teaching in Physics. A review of physics teaching strategies, administrative procedures, and classroom responsibilities. Includes a review and critique of each participant's classroom teaching. Prerequisite: Graduate standing and appointment as a teaching assistant.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree and written consent of instructor filed with the graduate adviser.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Physics 399R, 699R, or 999R; and written consent of instructor filed with the graduate adviser.

**STATISTICS**

Master of Science in Statistics

**FACILITIES FOR GRADUATE WORK**

Facilities are available through the Department of Mathematics.

**AREAS OF STUDY**

Graduate study in statistics is offered in the areas of mathematical statistics, statistical methodology, and statistical computation and probability. Further information is available from the graduate adviser.

**GRADUATE STUDIES COMMITTEE**

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

S. Natasha Beretvas
Patrick L. Brockett
Hua-Hua Chang
Melba M. Crawford
Paul Damien
Betsy S. Greenberg
John J. Hasenbein
William R. Koch
Jonathan Jay Koehler
Lauren A. Meyers

Douglas J. Morrice
Elmira Popova
Daniel A. Powers
Thomas W. Pullum
Thomas W. Sager
Thomas S. Shively
Martha K. Smith
Laura M. Stapleton
Chandler Stolp

**DEGREE REQUIREMENTS**

A total of thirty-three semester hours is required, including at least twenty-one semester hours of graduate-level coursework, of which three hours must be earned in the report course, Mathematical Statistics 398R. A minor of at least six semester hours is required, which may be in another area of mathematics, such as applied mathematics, or in a related discipline, such as actuarial science, operations research and industrial engineering, or educational psychology. No more than nine semester hours of upper-division coursework may be counted toward the degree; these must be divided between the major and the minor field, with no more than six hours in either.
Upon admission to the program, the student should demonstrate substantial background in mathematics and statistical knowledge equivalent to that acquired in a first upper-division course in probability and statistics. Deficiencies may be made up by taking courses suggested by the graduate adviser. Courses required for the major in statistics are Mathematics 384C, 384D, 384E, and 384G.

A qualifying examination in statistics, designed to test the student's knowledge of the basic principles of statistical theory and methodology, must be completed. This examination is normally taken at the end of one year of study. In general, one and one-half to two years are necessary to complete the Master of Science in Statistics degree program.

FOR MORE INFORMATION

Campus address: Robert Lee Moore Hall (RLM) 8.100, phone (512) 471-7711, fax (512) 471-9038; campus mail code: C1200

Mailing address: The University of Texas at Austin, Graduate Program in Statistics, Department of Mathematics, 1 University Station C1200, Austin TX 78712

URL: http://www.ma.utexas.edu/users/mks/statgrad/statgradindex.html

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Mathematics: M

384C. Mathematical Statistics. Same as Computational and Applied Mathematics 384R. General theory of mathematical statistics. Hypothesis testing, estimation, decision theory. Prerequisite: Graduate standing, and Mathematics 378K or consent of instructor or the graduate adviser in mathematical statistics.

384D. Mathematical Statistics. Same as Computational and Applied Mathematics 384S. Continuation of Mathematics 384C. Prerequisite: Graduate standing, consent of instructor, and Computational and Applied Mathematics 384R or Mathematics 384C.

384E. Analysis of Variance. Analysis of variance, including one- and two-way layouts; components of variance; fixed, random, and mixed models; and various types of experimental designs and their analysis. Prerequisite: Graduate standing, and Mathematics 378K or the equivalent or consent of instructor.

384F. Design of Experiments. Design of experiments, including $2^n$ and $3^n$ factorial experiments, confounding, fractional factorials, sequential experimentation, orthogonal arrays, D-optimal experiments, and response surface methodology. Prerequisite: Graduate standing, and Mathematics 378K or the equivalent or consent of instructor.

384G. Regression Analysis. Fitting linear models to data by the method of least squares, choosing best subsets of predictors, and related materials. Prerequisite: Graduate standing and consent of instructor.

384H. Multivariate Statistical Analysis. Introduction to the general multivariate linear model; a selection of techniques, such as principle component, factor, and discriminant analysis. Prerequisite: Graduate standing and consent of instructor.

385C. Theory of Probability. Same as Computational and Applied Mathematics 384K. Prerequisite: Graduate standing and consent of instructor.

385D. Theory of Probability. Same as Computational and Applied Mathematics 384L. Continuation of Mathematics 385C. Prerequisite: Graduate standing, consent of instructor, and Computational and Applied Mathematics 384K or Mathematics 385C.
394C. **Topics in Probability and Statistics.** Same as Computational and Applied Mathematics 394C. Recent topics have included nonparametric statistics, advanced probability. May be repeated for credit when the topics vary. Some topics are offered on the credit/no credit basis only; these are identified in the Course Schedule. **Prerequisite:** Graduate standing and consent of instructor.

**Mathematical Statistics: MST**

384J. **Frequency Data.** Analysis of data from discrete probability models. Topics include logit and probit regression models and the analysis of complex contingency tables. **Prerequisite:** Graduate standing, and Mathematics 378K or the equivalent or consent of instructor.

384L. **Applied Statistics.** Data analysis and statistical inference. Topics include contingency tables, logistic regression, and generalized linear models. **Prerequisite:** Graduate standing, and Mathematics 378K or the equivalent or consent of instructor.

384P. **Quality Assurance.** Shewhart and cumulative sum control charts, acceptance sampling, off-line quality control; Taguchi methods. **Prerequisite:** Graduate standing, and Mathematics 378K or the equivalent or consent of instructor.

398R. **Master’s Report.** Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. **Prerequisite:** Graduate standing in statistics and consent of the supervising professor and the graduate adviser.

**TEXTILE AND APPAREL TECHNOLOGY**

**Master of Science in Textile and Apparel Technology**

**FACILITIES FOR GRADUATE WORK**

The program in textile and apparel technology is housed in Mary E. Gearing Hall, which provides excellent resources for teaching and research, such as modern laboratories for material synthesis and characterization, textile evaluation, computer-aided design, and textile conservation, and a state-of-the-art environmentally controlled room. Other resources include the McKinney Engineering Library, the Mallet Chemistry Library, the Life Science Library, the Perry-Castañeda Library, the Fine Arts Library, and Information Technology Services.

**PROGRAM OF STUDY**

The international textile and apparel industry operates as a total system that integrates environment, strategy, structure, and performance. Innovative research, effective product management and design, and optimal product management rely on the creative use of advanced technology. The master’s program is designed to prepare students to meet the challenges of design-driven industries through innovative problem solving, product development, and managerial strategies that incorporate the application of new technologies.

**GRADUATE STUDIES COMMITTEE**

The following faculty members are expected to serve on the Graduate Studies Committee in the fall semester 2005–2006:

- Richard L. Corsi
- Julia Ann Reed
- Ardis M. Rewerts
- Yuyu Sun
- Bugao Xu

**ADMISSION AND DEGREE REQUIREMENTS**

Students seeking a graduate degree in textile and apparel technology should have a strong academic background in textiles, apparel, or a related field.

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6. Final approval of this degree is pending.
Master of Science in Textile and Apparel Technology

Thirty-one to thirty-two semester hours of coursework are required for the degree and should be distributed as follows: (1) thirteen to fourteen hours in specified textiles and apparel core courses; (2) twelve hours in supporting fields, nine hours of which are specified; and (3) six hours in the thesis completing an original research project. The Graduate Studies Committee must approve the student’s program of work.

FOR MORE INFORMATION

Campus address: Mary E. Gearing Hall (GEA) 223, phone (512) 471-0941, fax (512) 471-5630; campus mail code: A2700

Mailing address: The University of Texas at Austin, Graduate Program in Textile and Apparel Technology, 1 University Station A2700, Austin TX 78712

E-mail: txa@mail.utexas.edu

URL: http://www.utexas.edu/depts/he/txa/index.htm

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Textiles and Apparel: TXA

392. Research Problems in Textile and Apparel Technology. Directed research in various topics in the area of textiles and apparel. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in textile and apparel technology, or graduate standing and consent of instructor.

394. Recent Advances in Textile and Apparel Technology. An in-depth study of textile and apparel topics. Students may read original research papers and carry out fieldwork assignments. Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in textile and apparel technology, or graduate standing and consent of instructor.


Topic 2: International Sourcing and the Global Economy. Economic, social, and public issues related to international production and sourcing of textiles and apparel.

Topic 3: E-Commerce and Direct Marketing. Recent developments and evaluation of nontraditional retailing of apparel.


Topic 5: Digital Design and Printing. Principles and elements of digital design and printing. Recent developments in digital knits, weaves, prints, and nonwoven textiles. Two lecture hours and three laboratory hours a week for one semester.

Topic 6: Textile Functional Finishes. Study of the application and adaptation of functional finishes to textiles.

Topic 7: Textile Microscopy and Image Analysis. Basic techniques for characterizing fiber properties visually with a microscope and using technology and computer analysis.


Topic 9: Production Mechanics and Properties of Woven Fabrics. The relationship between the mechanics of production and mechanical properties of woven fabric; the unit operations required to prepare yarns for weaving and the mechanisms employed in weaving; fabric structure, geometry, and mechanical properties; designing for specific fabric properties.
Topic 10: Global Textile and Apparel Business Dynamics. Elements of competitive strategy and planning methods within the textile complex, with an emphasis on the concepts of strategy in a mature industry, defining business in a global industry, allocating resources through strategic planning methods, and implementing strategy in single-business and multi-business firms.

Topic 11: Market Research in Textiles. Study and analysis of quantitative methods employed in market research in the textile industry, including the function of market research and its proper orientation to management and decision making.

Topic 12: Color Science. The basis of modern techniques for color specification, measurement, control, and communication. Applications of color science to textiles, plastics, color reproduction, computer-based imaging, and display systems. Basic concepts are taught using computer color graphics.

395. Seminar in Textiles and Apparel. Lectures and discussions on current topics in textiles and apparel. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in textile and apparel technology, or graduate standing and consent of instructor.

Topic 1: Mass Customization of Apparel. The principles and implementation of newly developed three-dimensional technology for apparel mass customization.


698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in textile and apparel technology and consent of the graduate adviser; for 698B, Textiles and Apparel 698A.
School of Nursing

Master of Science in Nursing
Doctor of Philosophy

The Master of Science in Nursing degree program is fully accredited by the Commission on Collegiate Nursing Education (CCNE).

FACILITIES FOR GRADUATE WORK

In addition to the extensive library and computer resources of the University, certain special resources within the School of Nursing provide support for graduate work.

The Cain Center for Nursing Research. The focus of this office is the promotion of funded research by nursing faculty members. The staff provides support and consultation services and compiles information about opportunities for research funding and presentations, including some for which graduate students are eligible. The computer laboratory is used for graduate courses and is available for graduate student research projects. The Research Office also provides employment opportunities for graduate students interested in experience as research assistants.

The Learning Center. The Learning Center includes an audiovisual and reference library, a graphic and audiovisual production studio, clinical simulation laboratories for teaching psychomotor nursing skills, and a computer classroom and user facility equipped with Macintosh and Windows-based computers. Group study rooms and individual study carrels are available.

Clinical research and practice sites. The School of Nursing has access to a wide variety of private practice and community and state facilities for field research and clinical placement. These include all major health care facilities in Austin and in several surrounding communities.

AREAS OF STUDY

Graduate work in the School of Nursing may lead to either the Master of Science in Nursing or the Doctor of Philosophy degree. The master's degree program is designed to give students the theoretical, analytical, and clinical knowledge needed for advanced nursing practice, administration, or public health nursing. Those preparing for advanced practice should choose either the clinical nurse specialist track, with a concentration in holistic adult health nursing; or the nurse practitioner track, with a concentration in family or pediatric care. Students preparing for careers in maternal and/or child nursing should choose the parent-child nurse clinician concentration. Students preparing for careers in midlevel management of health care facilities should choose the concentration in nursing systems. Students preparing for careers in public health and care of populations in the community should choose the concentration in public health nursing.

The doctoral degree program emphasizes the acquisition of a sound foundation in nursing science and research methods as a basis for developing nursing knowledge and scholarship in one of the five nursing concentrations—holistic adult health, public health nursing, parent-child nursing, women's health, and nursing systems.
Graduates of the doctoral program typically enter positions in nursing education, research, or executive management of health care agencies. Some prepare to make contributions to the development of nursing theory or health policy.

**GRADUATE STUDIES COMMITTEE**

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

- P. Elizabeth Abel
- Gayle J. Acton
- Kay Avant
- Heather A. Becker
- Sharon A. Brown
- Linda J. Carpenter
- Patricia A. Carter
- Angela P. Clark
- Doris D. Coward
- Sharon Dormire
- Alexandra A. Garcia
- Susan Grobe
- Tracie Harrison
- Sharon D. Horner
- Linda S. Houston
- Eun-Ok Im
- Regina Johnson
- Shirley C. Laffrey
- Kathleen M. May
- Graham J. McDougall Jr.
- Joy H. Penticuff
- Donna Lynn Rew
- Bonnie L. Rickelman
- Dolores Sands
- Alexa K. Stuifbergen
- Margaret A. Taylor
- Gayle M. Timmerman
- Deborah Volker
- Lorraine O. Walker

**ADMISSION AND DEGREE REQUIREMENTS**

**Master of Science in Nursing**

The entering student normally holds a bachelor's degree from a program accredited by the National League for Nursing or the Commission on Collegiate Nursing Education. Registered nurses with nonnursing baccalaureate degrees may also apply; if admitted, these students must complete three bridge courses in public health nursing and nursing management before beginning work for the master's degree.

Factors considered in the admission decision include satisfactory scores on the Graduate Record Examinations General Test, with attention to the relative balance between verbal and quantitative scores; a grade point average of at least 3.00 in upper-division and graduate coursework; information derived from academic and professional references; professional background and goals; and proficiency in the English language. The composite picture presented by these factors is an important part of the admission review and decision.

The student is expected to complete an upper-division statistics course before admission or during the first semester of enrollment. Since all courses are not offered each semester, the student who waits to complete the statistics requirement after enrolling may find that his or her course sequence is altered. As a result, the student may need more time to complete the degree program. Before or at the time of enrollment, the student must meet the school's health requirements and must show evidence of physical assessment knowledge and skills, current licensure as a registered nurse in Texas, and certification in cardiopulmonary resuscitation. The student must purchase professional liability insurance through the School of Nursing.

The clinical nurse specialist and nurse practitioner tracks both require at least forty-eight semester hours of coursework, as does the parent-child nurse clinician concentration. The concentrations in nursing systems and public health nursing require at least thirty-nine semester hours. Preparation of a thesis is optional; when this option is chosen, an additional three to six semester hours are required.
The program is organized into four components: (1) core courses that provide advanced theoretical and research knowledge and a deeper understanding of professional issues; (2) courses in the student's concentration; (3) support courses from outside nursing; and (4) electives.

Completion of the concentration in nursing systems, the concentration in public health nursing, or the clinical nurse specialist track with a concentration in holistic adult health provides the academic basis for national certification exams in the respective specializations. Completion of the nurse practitioner track with a concentration in family or pediatric care makes these graduates eligible for the national certification exams in their areas.

**Master of Science in Nursing: Alternate Entry**

The alternate entry program is designed for people who are interested in providing health services and who hold at least a bachelor's degree in a discipline other than nursing. It is fully approved by the Texas Board of Nurse Examiners and is nationally accredited. Alternate-entry students may choose from concentrations in nursing systems, public health nursing, holistic adult health, and parent-child nursing. Depending on the concentration they choose, students must complete a minimum of either seventy-seven or eighty-six semester hours of coursework.

Admission requirements include at least a bachelor's degree in a discipline other than nursing; satisfactory and relatively balanced verbal and quantitative scores on the Graduate Record Examinations General Test; a grade point average of at least 3.00 in upper-division and graduate coursework; satisfactory references; personal and professional goals compatible with the purpose of the program; and proficiency in the English language.

Prerequisite courses in the natural and behavioral sciences must be completed prior to enrollment. Before or at the time of enrollment, students must meet the school's health requirements and must provide evidence of certification in cardiopulmonary resuscitation. Students must purchase professional liability insurance through the School of Nursing.

Program components are (1) accelerated foundation courses in all major clinical areas of nursing; (2) core courses that provide advanced theoretical and research knowledge and a deeper understanding of professional issues; (3) courses in one of the four nursing concentrations available to the alternate-entry student; (4) support courses from outside nursing; and (5) electives.

The alternate-entry student is eligible to take the licensure examination to become a registered nurse (NCLEX-RN) in the state of Texas after completing the foundation courses. The student must be a registered nurse to enroll in concentration courses. The graduate who completes the concentration in nursing systems, the concentration in public health nursing, or the clinical nurse specialist track with a concentration in holistic adult health nursing has the academic basis for the national certification examination in the area of specialization.

**Doctor of Philosophy**

The entering student must be a registered nurse who holds either a bachelor’s or a master’s degree in nursing from a program accredited by the National League for Nursing or the Commission on Collegiate Nursing Education. The occasional student who holds no master’s degree or a master’s degree in another discipline will be required to complete prescribed graduate bridge courses in nursing as a condition of admission.
Factors considered in the admission decision include satisfactory scores on the Graduate Record Examinations General Test, with attention to the relative balance between verbal and quantitative scores; a grade point average of at least 3.00 in upper-division and graduate coursework; information derived from academic and professional references; professional background; congruence of the student’s goals with the expertise of the nursing faculty; and proficiency in the English language. The composite picture presented by these factors is an important part of the admission review and decision.

The student is expected to complete an upper-division statistics course before admission or during the first semester of enrollment. In addition, the entering student takes a research placement examination to determine the appropriate sequence of nursing research courses. The student must pass a qualifying examination at about the end of the second year of study before entering candidacy for the degree.

The degree program requires completion of at least sixty-four semester hours of coursework beyond the master’s degree. The coursework consists of (1) twenty-two hours in core courses focused on advanced theoretical, analytical, and research method skills; (2) thirty hours in the concentration the student has chosen, seminars, and related support courses; and (3) twelve hours in the dissertation courses.

**Doctor of Philosophy: Alternate Entry**

The alternate entry program is designed for people who have no previous degrees in nursing, who are interested in careers as nurse scientists, and who hold at least a bachelor’s degree in a discipline other than nursing. The program is fully approved by the Texas Board of Nurse Examiners. Alternate-entry students may choose from concentrations in holistic adult health nursing, public health nursing, parent-child nursing, women’s health, and nursing systems. Students must complete at least 111 semester hours of coursework.

Factors considered in the admission decision include at least a bachelor’s degree in a discipline other than nursing; satisfactory and relatively balanced verbal and quantitative scores on the Graduate Record Examinations General Test; a grade point average of at least 3.00 in upper-division and graduate coursework; information derived from academic and professional references; professional background; congruence of the student’s goals with the expertise of the nursing faculty; a satisfactory personal interview; and proficiency in the English language. The composite picture presented by these factors is an important part of the admission review and decision.

The student is expected to complete an upper-division statistics course before admission. Prerequisite courses in the natural and behavioral sciences must also be completed prior to enrollment. In addition, the entering student takes a research placement examination to determine the appropriate sequence of nursing research courses. Before or at the time of enrollment, students must meet the school’s health requirements and must provide evidence of certification in cardiopulmonary resuscitation. Students must purchase professional liability insurance through the School of Nursing.

The alternate-entry student is eligible to take the licensure examination to become a registered nurse (NCLEX-RN) after completing the foundation courses. The student must be a registered nurse to enroll in the nine hours of concentration bridge courses at the master’s level. The student must also pass a qualifying examination at about the end of the second year of doctoral-level coursework before entering candidacy for the doctoral degree.
Program components are (1) thirty-eight semester hours of accelerated coursework in all major clinical areas of nursing, which serve as the foundation for seeking licensure to become a registered nurse; (2) nine semester hours of bridge coursework at the master’s level, which provide advanced theoretical and research knowledge and a deeper understanding of professional issues; (3) twenty-two semester hours in core courses focused on advanced theoretical, analytical, and research method skills; (4) thirty semester hours in the student’s concentration, in seminars, and in related support courses; and (5) twelve semester hours in the dissertation courses.

**DUAL DEGREE PROGRAM**

**Master of Science in Nursing/Master of Business Administration**

The objective of this dual degree program is to prepare nurses with bachelor’s degrees for leadership positions in the health care industry, particularly in hospital and community-based administration. Admission is open to students with undergraduate degrees in nursing. Applicants must take both the Graduate Record Examinations General Test and the Graduate Management Admissions Test. Prerequisite courses in college algebra, business calculus, and upper-division–level statistics are required.

A student seeking admission to the dual degree program must apply through the Graduate and International Admissions Center and the McCombs School of Business. He or she must be accepted by both programs to be admitted to the dual program. Like all other graduate applicants, the student is responsible for submitting any additional information required by the Graduate Studies Committee for each program.

Upon admission to the dual degree program, the student must pay the nonrefundable enrollment deposit required by the McCombs School of Business. The deposit serves to confirm the student’s intention of enrolling in the dual program and is applied to the payment of fees when the student enrolls. Students who demonstrate financial need may qualify for assistance to cover the deposit.

The student must complete a total of at least seventy-two hours of coursework in the School of Nursing and the McCombs School of Business. This coursework consists of fifteen hours in nursing core courses, fifteen hours in the concentration in nursing systems, twenty-seven hours of required coursework in business, nine hours in business electives, and six hours in free electives.

**LEGAL REQUIREMENTS**

In the interest of public safety, there are legal restrictions on enrollment in some nursing courses and on eligibility for RN licensure. Clearance for criminal conviction is required before enrollment in psychiatric–mental health nursing courses. Licensure as a registered nurse is required to proceed beyond the foundation courses or to be employed as a professional nurse. Factors that may make an individual ineligible for licensure in Texas include prior denial of a license by a licensing authority; disciplinary action by a licensing/certifying authority; conviction for a crime other than a minor traffic violation; diagnosis/treatment/hospitalization in the past five years for schizophrenia or other psychotic disorders, bipolar disorder, paranoid personality disorder, antisocial personality disorder, or borderline personality disorder; addiction or treatment for addiction to alcohol or any other drug during the past five years; having been issued an order concerning eligibility for examination or licensure or having received a proposal of ineligibility.
The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Students must consult the graduate adviser to determine which of the following courses may be counted toward the master’s or doctoral degree.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

**Nursing: N**

380L. Theory Development in Nursing. Introduction to the nature of scientific explanation and inquiry. Critique of theoretical conceptualization in nursing. Examination of strategies for theory development. Analysis of the role of theory in nursing as a practice discipline. Required of all doctoral students. **Prerequisite:** Graduate standing.

380M. Historical and Philosophical Study of Nursing. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor.

Topic 1: Philosophical Aspects of Nursing. Introduction to the analysis of nursing language: defining terms, detecting logical fallacies, analyzing meanings, and recognizing descriptive and normative aspects of judgments.

Topic 2: Historical Development of Nursing. In-depth study of the history of nursing, with emphasis on influences on the profession and changes that have occurred within it. Review of the association of nursing with related disciplines, its emergence into institutions of higher learning, organizational structure and hierarchy, changes in educational focus resulting from the preparation of educational leaders, and related topics.

Topic 3: Philosophy of Nursing Theory. Advanced seminar in the application of philosophical aspects of nursing theory. Additional prerequisite: Nursing 380L.
381M. Adult Health Nursing. The equivalent of three class hours a week for one semester. May be repeated for credit when the topics vary. 
Prerequisite: Graduate standing and consent of instructor.

Topic 1: Theoretical Foundations in Adult Health (Adult Health I). Theoretical underpinnings for research in adult health nursing. Analysis of theories related to person, health, and environment for their applicability to adult health nursing.

Topic 2: Substantive Areas in Adult Health (Adult Health II). Overview of nursing issues, psychosocial and physiological concepts, and research findings related to health promotion and health care needs of adults. Designed to help students develop the conceptual component of the dissertation research.

Topic 3: Research in Adult Health (Adult Health III). Application of methodology and theory development to research studies in adult health, with emphasis on analysis and development of methods for research in adult health nursing. Additional prerequisite: Nursing 381M (Topic 1 or Topic 2) and 397L.


381R. Theoretical Foundations of Aging. Theories in gerontology as applied to nursing practice. Two and one-half lecture hours and one and one-half laboratory hours a week for one semester. Prerequisite: Graduate standing.

381S. Gerontological Nursing. Physiological changes in the elderly, and their implications for nursing practice. Two lecture hours and four and one-half laboratory hours a week for one semester. Prerequisite: Graduate standing and Nursing 381R.

382H. Health Care Delivery. Overview of the health care delivery system in the United States—its definition, characteristics, and components. Prerequisite: Graduate standing.

383K. Roles and Functions of the Teacher in Nursing. Investigation of roles and functions of the teacher in contemporary nursing programs. Builds on the theory developed in the preceding courses and includes an investigation of the teaching-learning situation of a group of students in a professional or technical nursing program. One and one-half class hours and four and one-half laboratory hours a week for one semester. Prerequisite: Graduate standing.

484C. Professional Nursing Foundations. Major premises of professional nursing concepts, with introduction to health promotion and assessment skills for individuals and groups across the life span. Two and one-half lecture hours, three hours of skills laboratory, and three hours of clinical work a week for one semester. Prerequisite: Graduate standing and admission to the alternate entry MSN program.

484D. Conceptual Foundations of Nursing. Lifespan, health-related phenomena and concepts essential to effective nursing practice with multiple levels of clients. Prerequisite: Graduate standing, admission to the alternate entry MSN program, and Nursing 484C.

484E. Nursing Responses to Physiological Alterations in Health. Discussion of physiological alterations across the life span and of the nursing measures indicated to restore and maintain health. Four lecture hours a week for one semester. Prerequisite: Graduate standing, admission to the alternate entry MSN program, and Nursing 484C.

484F. Adult Health Nursing I. Discussion and application of concepts and theories necessary to promote and restore the health of adults with biological problems and related physiological and psychological responses. One and one-half lecture hours, two hours of skills laboratory, and eight hours of clinical work a week for one semester. Prerequisite: Graduate standing, admission to the alternate entry MSN program, and Nursing 484C.

484G. Conceptual Bases of Mental Health Nursing. Current perspectives on the etiology, prevention, and treatment of mental disorders in individuals, families, and groups; clinical application of pertinent nursing care. Two and one-half lecture hours and six laboratory hours a week for one semester. Prerequisite: Graduate standing, admission to the alternate entry MSN program, and Nursing 484C.
484H. Nursing Care of Childbearing and Childrearing Families. Concepts, theories, and processes essential to understanding the health concepts and nursing care of families during the childbearing and childrearing years. Four lecture hours a week for one semester. Prerequisite: Graduate standing, admission to the alternate entry MSN program, and Nursing 384D, 484E, 484F, and 484G.

384J. Nursing Care of Childbearing and Childrearing Families Practicum. Clinical application of concepts, theories, processes, and skills pertinent to the care of families during the childbearing and childrearing years. Twelve laboratory hours a week for one semester. Prerequisite: Graduate standing; admission to the alternate entry MSN program, and Nursing 384D, 484E, 484F, and 484G; and credit or registration for Nursing 484H.

484Q. Community Health Nursing. Community health nursing models are used in conjunction with the nursing process in the case management of families and in public health practices with the community as client. Two lecture hours and eight laboratory hours a week for one semester. Prerequisite: Graduate standing; admission to the alternate entry MSN program, and Nursing 384D, 484E, 484F, and 484G.

484R. Adult Health Nursing II. Discussion and application of advanced concepts and theories to promote and restore health of adults with biological problems and related physiological responses. Two lecture hours and eight laboratory hours a week for one semester. Prerequisite: Graduate standing; admission to the alternate entry MSN program, and Nursing 384D, 484E, 484F, and 484G.

484S. Integration of Clinical Nursing Knowledge. Integration of nursing knowledge derived from didactic and clinical courses with application in the care of clients across the life span and in a variety of settings. One lecture hour and twelve laboratory hours a week for one semester. Prerequisite: Graduate standing; admission to the alternate entry MSN program, and Nursing 484H, 384J, 484Q, and 484R.

385R. Community Mental Health and Wellness. Concepts, theories, and research on the mental health and wellness of individuals, groups, and families living and working in communities. Principles of preventive health care form a philosophical framework within which students analyze, evaluate, and synthesize the concepts and theories used to promote the health and welfare of people in the community. Prerequisite: Graduate standing.

385S. Advanced Theory and Research in Mental Health. Analysis, development, and testing of theories and conceptual models of mental health and illness; examination of relationships among stress, response to traumatic events, and mental health of the individual, family, and groups. Prerequisite: Graduate standing.

386C. Computers in Nursing. Development of competence in computer use and in the application of computer-based techniques to nursing problems. Prerequisite: Graduate standing.

386K. Management of Complex Systems in Nursing. Introduction to major concepts and theories of individual, group, and organizational behavior, and their application to the management of complex social systems in health care organizations. Three class hours a week for one semester. Students in the dual MSN/MBA program may substitute this course for the required business core course Business Administration 389T. Prerequisite: Graduate standing.

386M. Administrative Decision Making in Nursing Systems. Theories of nursing, economics, management science, and decision analysis are used to examine strategic and operational decision activities in the administration of nursing systems. Prerequisite: Graduate standing.

386P. Practicum in Administrative Decision Making. Guided field experience to examine information management and complex decision problems in the administration of nursing systems. Twelve laboratory hours a week for one semester. Prerequisite: Graduate standing and credit or registration for Nursing 386M.

386R. Nursing Systems: Theory and Research. Advanced study of theories and research related to nursing systems of care and patient aggregates within organized settings. Prerequisite: Graduate standing.

386S. Health Care Systems Outcomes. Theoretical and methodological issues related to the study of outcomes of nursing systems of care, including patient, staff, organization, and community health outcomes. Prerequisite: Graduate standing.

686V. Internship in Administration of Nursing Systems. Analysis and implementation of advanced nursing administrative roles. Synthesis of knowledge and skill in designing, implementing, and evaluating nursing system programs. One lecture hour a week for one semester, and twenty hours of fieldwork a week in a health care agency. Prerequisite: Graduate standing and Nursing 386K, 386M, and 386P.
387. **Clinical Teaching in Nursing.** Analysis of theories, methods, and experiences in clinical teaching; practice in clinical teaching and evaluation. One and one-half class hours and four and one-half laboratory hours a week for one semester. **Prerequisite:** Graduate standing and consent of instructor.

388. **Strategies of Teaching.** Survey and practice of a variety of methods and techniques utilized in teaching content related to strategies; varies depending on student needs. **Prerequisite:** Graduate standing, and a course in curriculum and instruction or consent of instructor.

389C. **Dimensions of Advanced Practice of Adult Health Nursing.** Survey of dimensions and domains of advanced practice of adult health nursing. Concepts of advanced practice nursing, health, illness, the individual, family, community, and collaboration. **Prerequisite:** Graduate standing, and a course in curriculum and instruction or consent of instructor.

389D. **Advanced Practice of Adult Health Nursing: Health without Illness.** Analysis of physiological, psychosocial, and environmental concepts and testing of assessment and interventions for selected adult health nursing clients. Focus on dynamics of health without illness and related nursing roles. Two lecture hours and four laboratory hours a week for one semester. **Prerequisite:** Graduate standing, and credit or registration for Nursing 392 or 392Q or consent of instructor.

389E. **Advanced Practice of Adult Health Nursing: Health within Illness.** Analysis of physiological, psychosocial, and environmental concepts and testing of assessment and interventions for selected adult health nursing clients. Focus on dynamics of health within illness and related nursing roles. Three lecture hours and eight laboratory hours a week for one semester. **Prerequisite:** Graduate standing; Nursing 390C, 390D, 395C, and 396J; and credit or registration for Nursing 392 or 392Q or consent of instructor.

389F. **Advanced Practice of Adult Health Nursing: Illness within Health.** Analysis of physiological, psychosocial, and environmental concepts and testing of assessment and interventions for selected adult health nursing clients. Focus on dynamics of illness within health and related nursing roles. Two lecture hours and four laboratory hours a week for one semester. **Prerequisite:** Graduate standing; Nursing 389C, 389D, 395C, and 396J; and credit or registration for Nursing 396C.

689G. **Practicum: Adult Health Advanced Nursing Practice.** Guided field experience to apply an individual advanced nursing practice model in the student’s area of emphasis. Extensive clinical practice to acquire skills in the roles of the advanced nurse practitioner. Two lecture hours and sixteen laboratory hours a week for one semester. **Prerequisite:** Graduate standing; Nursing 389C, 389D, 389E, 392, 392P, 392Q, 396C, 396J, and 196K; credit or registration for Nursing 395F; and completion of all core courses in the adult health concentration.

389H. **Diagnosis and Management of Adult Health Problems.** Theoretical and clinical aspects of the diagnosis and management of health and health problems of adults. The focus is on the integration and application in acute and chronic care of skills and knowledge gained in advanced assessment, pathophysiology, pharmacotherapeutics, and clinical specialty courses. Students are expected to refine their skills in pattern recognition; critical thinking; and analysis, diagnosis, and treatment of common health problems. Two lecture hours and four laboratory hours a week for one semester. **Prerequisite:** Graduate standing; Nursing 389C, 389D, 389E, 389F, 689G, 396C, 396J, and 196K; credit or registration for Nursing 395C or the equivalent; and consent of instructor.

390C. **Health Promotion of High-Risk Populations.** Advanced study of health promotion/illness prevention theories and research, with a focus on selected high-risk populations in the community. Emphasis on analyzing community risk factors, research and theory related to health promotion and illness prevention as applied to individuals, families, aggregates, and organizations, and research related to health outcomes for selected population groups, nationally and internationally. **Prerequisite:** Graduate standing.

390D. **Community-Based Primary Health Care.** Advanced study of theories and research related to community-based primary health care. Relationships among community health needs, health services, resources, community health policy, and community health indices are examined. Emphasis is on developing the body of knowledge fundamental to community health nursing leadership for optimizing health through effective community action, nationally and internationally. **Prerequisite:** Graduate standing.

391D. **Public Health Nursing Theory and Population-Based Assessment.** Major concepts and theories related to public health nursing. Analysis of the conceptual basis for current and future public health nursing practice, nationally and internationally. One and one-half lecture hours and six laboratory hours a week for one semester. **Prerequisite:** Graduate standing.
391E. **Public Health Assurance and Policy.** Processes involved in the implementation and evaluation of a population-focused health promotion program based on community data sets and previously collected data; and policy recommendations related to the program. One and one-half lecture hours and six laboratory hours a week for one semester. **Prerequisite:** Graduate standing and Nursing 391D.

391F. **Epidemiology in Public Health.** A theoretical framework for applied public health epidemiology, including the importance of high-quality data, measures of morbidity and mortality in a population, epidemiological investigations, and the use of epidemiological study designs. Two and one-half lecture hours and two laboratory hours a week for one semester. **Prerequisite:** Graduate standing.

391G. **Public Health Program Development.** Focus on analyzing and critiquing health promotion and disease prevention initiatives, and obtaining and using relevant community and population-level health data for developing a multilevel health promotion and disease prevention initiative. Two lecture hours and four laboratory hours a week for one semester. **Prerequisite:** Graduate standing, and Nursing 391D or consent of instructor.

691P. **Advanced Public Health Nursing Practice.** Synthesis of public health nursing knowledge and skills in advanced practice. The multifaceted roles involved in advanced public health nursing practice, with emphasis on the ability to articulate one's professional roles based on theory and practice. One lecture hour and twenty laboratory hours a week for one semester. **Prerequisite:** Graduate standing and Nursing 391D and 391E.

392. **Nursing Phenomena of Concern.** The major phenomena underlying research and advanced practice in nursing. Concepts derived from these phenomena address the wide range of health, health concerns, and populations that nurses treat. **Prerequisite:** Graduate standing.

392E. **Research Methods.** Designed to prepare the student to use and implement nursing research in clinical practice settings. Students develop basic research skills needed to critique, plan, and conduct nursing research. Several types of research are introduced and their methodologies examined. **Prerequisite:** Graduate standing.

392F. **The Art and Science of Family Health.** Open to all graduate students with consent of instructor. Theoretical foundations for advanced practice in nursing and other disciplines concerned with family health: family, parent, and child health and development theories; conceptual basis for understanding the context in which parent and child health and illness exist; interdisciplinary concepts and theoretical perspectives. **Prerequisite:** Graduate standing in nursing, or graduate standing and consent of instructor.

592K. **Parent-Child Nursing I: Childbearing Families.** Salient concepts and clinical basis for advanced nursing practice with childbearing families, considered from biophysical, psychological, developmental, family, and sociocultural perspectives. Introduction to concepts related to role development as an advanced practice nurse, with emphasis on the promotion of wellness and prevention of illness in pregnant women and their newborns within the context of their families. Students apply these concepts in providing nursing care to childbearing families in a variety of clinical settings under supervision of faculty members and preceptors. Three class hours and eight laboratory hours a week for one semester. **Prerequisite:** Graduate standing, Nursing 396C and 396J, and credit or registration for Nursing 395C (or credit for Pharmacy 395C).

592L. **Parent-Child Nursing II: Childrearing Families.** Salient concepts and clinical basis for advanced nursing practice with childbearing families, considered from biophysical, psychological, developmental, family, and sociocultural perspectives. Legal, ethical, and practice issues affecting the advanced practice nurse. Emphasis on promotion of wellness and prevention of illness in children within the context of their families. Students apply concepts in providing nursing care to childrearing families in a variety of clinical settings under supervision of faculty members and preceptors. Three lecture hours and eight laboratory hours a week for one semester. **Prerequisite:** Graduate standing and Nursing 592K.

392M. **Clinical Project in Parent-Child Nursing.** Supervised, individual clinical project. One lecture hour and eight laboratory hours a week for one semester. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing.
392P. Health Systems: Policy, Planning, and Evaluation. Open to all University graduate students. Exploration of multilevel health care policy implementation, program development, and outcome evaluation. Focus on the application of policies from macro-level to micro-level systems. 

Prerequisite: Graduate standing, and Nursing 392E or the equivalent.

392Q. Advanced Psychosocial Nursing: Culture, Ethics, and Therapeutic Communication. Current theoretical, research, ethical, and cultural perspectives pertinent to the application of selected advanced psychosocial nursing strategies with diverse populations of individuals, groups, and families. Two and one-half lecture hours and two laboratory hours a week for one semester. 

Prerequisite: Graduate standing.

492S. Advanced Practicum in Parent-Child Nursing. Culminating preceptorship experience: each student identifies his or her objectives for refining the role of the advanced practice nurse and selects the clinical setting and target population(s) that best support those objectives. One lecture hour and twelve laboratory hours a week for one semester. Prerequisite: Graduate standing and credit or registration for Nursing 592U.

392T. Advanced Assessment in Parent-Child Nursing. Advanced nursing assessment strategies for childbearing and childrearing families. One and one-half lecture hours and six laboratory hours a week for one semester. 

Prerequisite: Graduate standing.

592U. Parent-Child Nursing III: At-Risk Families. Salient concepts and clinical basis for advanced nursing practice with at-risk families during the childbearing years. Legal, ethical, and practice issues affecting the advanced practice nurse. Emphasis is on assessment and intervention with pregnant women and children with health problems that have a social and biophysical etiology. Students apply concepts in providing nursing care to at-risk families in a variety of clinical settings under supervision of faculty members and preceptors. Three lecture hours and eight laboratory hours a week for one semester. 

Prerequisite: Graduate standing and Nursing 592L.

192V. Advanced Pediatric Pathophysiology. Pathophysiology unique to the growth and development of newborns, infants, children, and adolescents. Embryology, genetics, adaptation to extrauterine life, congenital anomalies, immunology, and the physiology and pathophysiology of puberty are considered from a developmental perspective, so that students are able to gain an understanding in depth of functional and dysfunctional integration of organ systems in the developing human. Clinical illustrations are presented. One lecture hour a week for one semester. 

Prerequisite: Graduate standing and credit or registration for Nursing 396C.

393. Parents, Children, and Family Life. Study of theories on parents, children, and family life; critical review of major research findings, with emphasis on implications for further research. 

Prerequisite: Graduate standing and consent of instructor.

393M. Maternal/Parent-Child Nursing. Class and/or laboratory hours to be arranged. May be repeated for credit when the topics vary. 

Prerequisite: Graduate standing and consent of instructor. 

Topic 1: Seminar in Parenthood and Family Life. Advanced seminar on theory and research related to parenthood and family life. 


Topic 4: Predictive and Interventive Research with Families. Advanced seminar reviewing, critiquing, and applying predictive and interventive research studies.

194, 294, 394, 494. Independent Study in Nursing. Detailed or in-depth study in a specific topic area. Topic and mode of study are agreed upon by student and instructor. Hours to be arranged. May be repeated for credit when the topics vary. Some topics are offered on the credit/no credit basis only; these are identified in the Course Schedule. 

Prerequisite: Graduate standing and consent of instructor.

394C. Advanced Pediatric Health and Developmental Assessment. Advanced developmental and health assessment of children (newborn through adolescent). Emphasis is on theories and skills applicable to the assessment of children. Two lecture hours and four laboratory hours a week for one semester. 

Prerequisite: Graduate standing, admission to the pediatric nurse practitioner specialization, credit or registration for Nursing 192V and 396C, and consent of instructor.
294D. *Primary Health Care of the Adolescent.* Study of health promotion, anticipatory guidance, prevention of illness, and the assessment and management of illnesses commonly affecting adolescents. Adolescent health is discussed in a developmental context. Two lecture hours a week for one semester. *Prerequisite:* Graduate standing, admission to the pediatric nurse practitioner specialization, credit or registration for Nursing 394C or 396J, and consent of instructor.


394F. *Pediatric Primary Health Care Concepts I Clinic.* Clinical experience in primary care settings, focusing on health promotion and management of well-child care and acute illnesses commonly encountered in children. Twelve laboratory hours a week for one semester. *Prerequisite:* Graduate standing, admission to the pediatric nurse practitioner specialization, Nursing 395D, concurrent enrollment in Nursing 394E, and consent of instructor.

294J. *Pediatric Primary Health Care Concepts III.* Primary care management of complex conditions in children. Additional emphasis on advanced role development of the pediatric nurse practitioner. Two lecture hours a week for one semester. *Prerequisite:* Graduate standing, admission to the pediatric nurse practitioner specialization, Nursing 394E and 394F, and consent of instructor.

494K. *Pediatric Primary Health Care Concepts III Clinic.* Pediatric primary health care practicum in the advanced nursing management of the health of infants, children, and adolescents. Sixteen laboratory hours a week for one semester. *Prerequisite:* Graduate standing, admission to the pediatric nurse practitioner specialization, Nursing 396U and 396V, and consent of instructor.

195, 295, 395, 495, 595, 695. *Topics in Nursing.* Areas of special interest. For each semester hour of credit earned, one lecture hour a week for one semester. May be repeated for credit when the topics vary. *Prerequisite:* Graduate standing. Some topics also require consent of instructor; these are identified in the *Course Schedule.*

Topic 2: *Community Programs Evaluation.* Nursing 392G and 395 (Topic 2) may not both be counted.

395C. *Clinical Pharmacology and Therapeutics.* Application of pharmacologic and pharmacokinetic principles to drug therapy management in family primary care nursing. Nursing 395C and Pharmacy 395C may not both be counted. *Prerequisite:* Graduate standing.

395D. *Pediatric Clinical Pharmacology and Therapeutics.* The study of pediatric pharmacotherapeutics, with emphasis on pharmacokinetics, pharmacodynamics, administration, and education. *Prerequisite:* Graduate standing and consent of instructor.

396C. *Advanced Pathophysiology.* Pathophysiologic concepts from the cellular level through major body systems and across the life span. Etiological, pathogenic, and presenting patterns. Fundamental concepts of anatomy and physiology. Students are expected to develop an understanding of nursing and medical interventions for common health problems and the ability to apply and design interventions based on pathophysiologic changes. Nursing 396C and Pharmacy 395D may not both be counted. *Prerequisite:* Graduate standing and consent of instructor.

396J. *Advanced Health Assessment.* Advanced knowledge and skills involved in the assessment of individuals throughout the life span, within the context of the family, to determine their health status. Two lecture hours, three laboratory hours, and one hour of skills laboratory a week for one semester. *Prerequisite:* Graduate standing, admission to the advanced practice specialization, credit or registration for Nursing 396C, and consent of instructor.

196K, 296K. *Advanced Health Assessment Clinic.* Application of health assessment concepts and skills under the supervision of faculty and clinical preceptors in the clinical area. Performance of systematic health assessments of adults leading to the identification of normal and abnormal findings and the development of an initial health status list. Four or eight laboratory hours a week for one semester. *Prerequisite:* Graduate standing, admission to the advanced practice specialization, credit or registration for Nursing 396C and 396J, and consent of instructor.


396L. Primary Health Care Concepts I. Theoretical and clinical knowledge needed for advanced nursing management within the context of the family and the community of individuals who are essentially well or who have minor health problems. Prerequisite: Graduate standing; admission to the family nurse practitioner or the pediatric nurse practitioner specialization; Nursing 396J and 296K; concurrent enrollment in Nursing 196M, 296M, or 396M; and consent of instructor.

196M, 296M, 396M. Primary Health Care Concepts I Clinic. Supervised experience in the nursing management of infants, children, and/or advanced adults and families who are well or who have common acute health problems. For each semester hour of credit earned, four laboratory hours a week for one semester. Prerequisite: Graduate standing; admission to the family nurse practitioner or the pediatric nurse practitioner specialization; Nursing 396C, 396L, and 296K; concurrent enrollment in Nursing 196L; and consent of instructor.

396N. Primary Health Care Concepts II. Theoretical and clinical knowledge needed for the management of complex and chronic health problems of individuals and families. Prerequisite: Graduate standing; admission to the family nurse practitioner specialization; Nursing 396L and 396M; concurrent enrollment in Nursing 196P, 296P, or 396P; and consent of instructor.

196P, 296P, 396P. Primary Health Care Concepts II Clinic. Supervised experience in the nursing management of infants, children, adults, and families who have complex or chronic health problems. For each semester hour of credit earned, four laboratory hours a week for one semester. Prerequisite: Graduate standing; admission to the family nurse practitioner specialization; Nursing 391D, 396L, and 396M; concurrent enrollment in Nursing 396N; and consent of instructor.

396Q. Primary Health Care Concepts III. Synthesis of concepts and theories from nursing, social sciences, and biological sciences that are related to primary health care management of members of families and communities. Prerequisite: Graduate standing; admission to the family nurse practitioner or the pediatric nurse practitioner specialization; Nursing 391E; either Nursing 396N and 396P or 396U and 396V; concurrent enrollment in Nursing 196R, 296R, 396R, or 496R; and consent of instructor.

196R, 296R, 396R, 496R. Primary Health Care Concepts III Clinic. Advanced supervised experience as a direct primary health care giver in family practice clinical settings. For each semester hour of credit earned, four laboratory hours a week for one semester. Prerequisite: Graduate standing; admission to the family nurse practitioner or the pediatric nurse practitioner specialization; Nursing 391E; either Nursing 396N and 396P or 396U and 396V; concurrent enrollment in Nursing 396Q (or credit for 296Q); and consent of instructor.

196S. Special Project in Advanced Practice. Development of a special project in an area of research, policy, or clinical issues relevant to advanced practice. Four laboratory hours a week for one semester. Prerequisite: Graduate standing, admission to the family nurse practitioner or the pediatric nurse practitioner specialization, Nursing 396L and 396M, and consent of instructor.

396T. Ecological Approaches to Child Health. Ecological theory and epidemiological principles needed for an understanding of societal and family issues affecting the health of children. Prerequisite: Graduate standing.

396U. Pediatric Primary Health Care Concepts II. Theoretical knowledge relevant to the management of complex and chronic primary health care problems from infancy through adolescence. Prerequisite: Graduate standing; admission to the pediatric nurse practitioner or the parent/child nursing specialization; Nursing 396C, 396L, and 396M; concurrent enrollment in Nursing 196V, 296V, or 396V; and consent of instructor.

196V, 296V, 396V. Pediatric Primary Health Care Concepts II Clinic. Clinical practice in the management of complex or chronic health problems of infants, children, and adolescents. For each semester hour of credit earned, four laboratory hours a week for one semester. Prerequisite: Graduate standing; admission to the pediatric nurse practitioner or the parent/child nursing specialization; Nursing 396C, 396L, and 396M; and concurrent enrollment in Nursing 396U.

397K. Advanced Research in Nursing. Nursing science methods for developing and testing theoretical formulations: experimental, descriptive, qualitative, and historical designs. Three lecture hours a week for one semester, with additional computer laboratory hours to be arranged. Required of all doctoral students. Prerequisite: Graduate standing, Nursing 392E, and consent of instructor.
397L. Nursing Research Methods. Three lecture hours a week for one semester, with additional computer laboratory hours to be arranged. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, Nursing 397K, and consent of instructor.

Topic 1: Analysis and Interpretation of Data. Critiquing, interpreting, disseminating, and using research findings.

Topic 2: Instrumentation and Measurement. Theoretical, methodological, and procedural aspects of measurement: norm-referenced and criterion-referenced measurement; data management and instrumentation.

397M. Qualitative Research. Introduction to the theoretical and methodological aspects of qualitative research methods. Qualitative research approaches from a variety of disciplines and philosophical traditions, with emphasis on the application of research designs and data collection and analysis techniques to nursing studies. Prerequisite: Graduate standing, and completion of two doctoral-level research courses or consent of instructor.

197P, 297P. Nursing Research Practicum. Guided experience in conceptual and methodological aspects of research: data management and analysis; critique and interpretation; instrumentation; and measurement. Four or eight laboratory hours a week for one semester. May be repeated twice for credit. Prerequisite: Graduate standing and Nursing 397K.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in nursing and consent of the graduate adviser; for 698B, Nursing 698A.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Completion of core doctoral courses and admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Nursing 399R, 699R, or 999R.
College of Pharmacy

Master of Science in Pharmacy
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

State-of-the-art research facilities are available for graduate education. Laboratories are equipped with the latest instrumentation for research in all of the areas of study mentioned on page 511. Research space is located primarily in the Pharmacy Building, but additional space is available in nearby buildings such as the Louise and James Robert Moffett Molecular Biology Building and the Animal Resources Center. Laboratories and offices are outfitted with hardwire and wireless connections for Internet and library access. Additional facilities for collaborative research are available in the College of Natural Sciences, the College of Engineering, and the Institute for Cellular and Molecular Biology. Basic laboratory and clinical research facilities are available to pharmacy faculty members in San Antonio on the University of Texas Health Science Center campus and at affiliated institutions. Additional research facilities in Austin include the Life Science Library, which contains about 210,000 volumes of books and journals. Students in both Austin and San Antonio have access to extensive electronic journal holdings through the University Libraries Web site, http://www.lib.utexas.edu/.

Drug Dynamics Institute. The Drug Dynamics Institute is a graduate and postdoctoral research training center where educators, students, scientists, business people, and government officials come together to share common interests in a wide range of biomedical, pharmaceutical, and public health problems. The mission of the institute is the discovery and communication of scientific and technological knowledge in drug development, manufacturing, marketing, and therapy. Projects in pharmacokinetics and drug metabolism, industrial pharmacy and technology, pharmacology and toxicology, and clinical pharmacy are currently under way. Additional information is available at http://www.utexas.edu/pharmacy/research/interdis/ddi.html.

Center for Pharmacoeconomic Studies. The center combines the skills of experts in clinical pharmacy, pharmacoeconomics, management, and marketing to examine the impact of pharmaceutical products and pharmacy services on patients’ quality of life and health care outcomes. The center’s researchers and graduate students provide research design, data collection, and data analysis expertise to health care providers, the pharmaceutical industry, health care payers, insurers, and health care institutions and organizations. Center personnel also develop, present, and support educational programs to further public understanding of pharmacoeconomics. Additional information is available at http://www.utexas.edu/pharmacy/research/institutes/pharmacoeconomics/.

Center for Molecular and Cellular Toxicology. The University of Texas at Austin has established an interdisciplinary Center for Molecular and Cellular Toxicology (CMCT). The mission of the CMCT is to provide leadership for the expansion of programs in environmental health sciences education and research. The CMCT is supported by the College of Pharmacy and also involves faculty in the College of Natural Sciences and the University of Texas M.D. Anderson Cancer Center, Department of Carcinogenesis, located in Smithville, Texas, about forty miles east of Austin.
The CMCT fosters interdisciplinary graduate training programs by providing the mechanism by which students can work with a range of faculty interested in toxicology. This includes facilitating interdisciplinary research collaborations and providing ancillary student and research infrastructure support. The center’s faculty represent a wide variety of scientific disciplines, including pharmacology, toxicology, medicinal chemistry, pharmaceutics, neuroscience, nutrition, biochemistry, chemistry, marine biology, and civil and mechanical engineering. Information about CMCT training programs is available at http://www.utexas.edu/pharmacy/cmct/.

Addiction Science Research and Education Center (ASREC). The mission of this center is to communicate the latest findings in addiction science to the public in terms that make the message easy to understand. University researchers in this dynamic area have been trained to communicate the latest findings in the field to a diverse audience, including addiction treatment professionals, medical personnel, social workers, psychologists, law enforcement personnel, teachers, students, and the general public. Additional information about the ASREC is available at http://www.utexas.edu/research/asrec/.

Additional collaborative research is conducted between pharmacy faculty members and members of research institutes and centers across campus, including the Institute for Cellular and Molecular Biology, the Institute for Neuroscience, and the Waggoner Center for Alcohol and Addiction Research.

AREAS OF STUDY

The College of Pharmacy offers graduate study leading to the Master of Science in Pharmacy and the Doctor of Philosophy with a major in pharmacy. Areas of specialization are medicinal chemistry, including synthetic or bioorganic chemistry and structural molecular biology subspecializations; pharmacology and toxicology; pharmaceutics, including physical pharmacy, biopharmaceutics, and industrial pharmacy; pharmacy administration, including pharmacy practice and pharmacoconomics; and pharmacotherapy. Students pursuing either the Master of Science or the Doctor of Philosophy who hold a PharmD degree from a pharmacy program accredited by the Accreditation Council for Pharmacy Education (ACPE) have opportunities for advanced practice training. They may complete a specialty practice residency while pursuing the graduate degree. More information is available from the graduate adviser.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Creed W. Abell
Jamie C. Barner
Tawny L. Bettinger
Shawn B. Bratton
Carolyn M. Brown
David S. Burgess
Henry I. Bussey
Alan Brooks Combs
Miles Lynn Crismon
Maria Croyde
Kevin N. Dalby
Patrick J. Davis
Christine Duvauchelle
Carlton K. Erickson

Walter Fast
Jerry Fineg
Rueben A. Gonzales
Andrea Gore
Adron Harris
James P. Kehr
Sean M. Kerwin
Jim M. Koeller
John G. Kuhn
Yui-Wing F. Lam
Kenneth A. Lawson
Steven W. Leslie
Louis C. Littlefield
Hung-Wen (Ben) Liu

511 Pharmacy
ADMISSION REQUIREMENTS
The applicant should have a bachelor's degree or a professional pharmacy degree from an accredited institution in the United States or another country. Students are admitted to the program upon recommendation of the Graduate Studies Committee, provided that their undergraduate training includes appropriate work in fields related to the pharmaceutical and health sciences. Applicants without the appropriate background may be required to complete additional coursework after admission. Preference is usually given to students who have a Bachelor of Science in Pharmacy or a Doctor of Pharmacy degree from a college accredited by the Accreditation Council for Pharmaceutical Education. Preference is also given to applicants for the doctoral degree.

DEGREE REQUIREMENTS
Pharmacy 196S (Seminar in Pharmacy) is required of all graduate students in pharmacy and is taught every semester in each division. This requirement may be waived for a specific semester by the Graduate Studies Committee for sufficient reason upon petition by the student's major professor. No more than two semester hours of credit earned in this course are counted toward the number of hours required in master's degree programs.

Master of Science in Pharmacy. Students apply for candidacy for the degree the semester in which they expect to graduate. Two semesters in the thesis course, Pharmacy 698, are required; students must be enrolled in Pharmacy 698B the semester they graduate.

The Master of Science in Pharmacy with a specialization in pharmacy administration also is offered by a course scheduling option called the Option II Schedule. Pharmacists who are employed full-time may choose to pursue this option. Classes are scheduled on selected Fridays and Saturdays throughout the year; at least two calendar years of study are needed to complete the program. Students must prepare a master's report as part of their course requirements.

Doctor of Philosophy. The student selects a major professor who will supervise the qualifying examinations, act as chair of the dissertation committee, and assist with selection of suitable dissertation committee members. Upon completion of the qualifying examinations, the student meets with the Administrative Subcommittee of the Graduate Studies Committee and the graduate adviser, who then recommends to the graduate dean whether the student should be admitted to doctoral candidacy. After admission to doctoral candidacy, the student must enroll in the dissertation course each fall and spring semester.

A doctoral candidate must designate one area of specialization as a major and must select at least one supporting area outside the College of Pharmacy.
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Pharmacy: PHR

380D. Structure-Activity Relationships and Mechanisms of Action. Study of structure-activity relationships as the basis for investigation of mechanisms of drug-receptor interactions. Model compounds are selected from enkephalins, morphine-like analogues, cholinergics, and adrenergics. Pharmacy 340D and 380D may not both be counted. Prerequisite: Graduate standing.

280E. Oral Communication Skills for Scientists. Designed to enhance oral communication skills. Two lecture hours a week for one semester. Offered on the letter-grade basis only. Pharmacy 280E and 380V may not both be counted. Prerequisite: Graduate standing in pharmacy, neuroscience, or a biological science. Additional prerequisite for international students: Completion of the University's English Certification Program or consent of instructor.

380F. Biomedical Pharmacology I. Drug classifications, mechanisms of drug action, drug side effects/adverse reactions in humans, the use of drugs in research. Neuroscience 380F and Pharmacy 380F may not both be counted. Prerequisite: Graduate standing in pharmacy, neuroscience, or a biological science. Additional prerequisite for international students: Completion of the University's English Certification Program or consent of instructor.

380J, 280J, 380J. Advanced Pharmaceutics: Laboratory Problems. Three, six, or nine laboratory hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing.

180M, 280M, 380M. Advanced Pharmaceutics. The equivalent of one, two, or three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

380N. Biomedical Pharmacology II. Fundamental concepts of pharmacology, including molecular mechanisms of drug action, absorption, distribution and elimination, tolerance, dependence, mutagenesis, teratogenesis, and carcinogenesis. Pharmacy students must take this course on the letter-grade basis. Neuroscience 380N and Pharmacy 380N may not both be counted. Prerequisite: Graduate standing, and Pharmacy 380F or consent of instructor.

380Q. Advanced Pharmaceutical Processing. Didactic and laboratory exposure to pharmaceutical processes used in the design, development, and optimization of drug delivery systems. Emphasis on equipment and machinery used in pharmaceutical manufacturing of these dosage forms, with discussion of other issues, such as technology transfer and scale-up. Six lecture hours and three laboratory hours a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing in pharmacy.

381C. Microbial Transformations in Pharmaceutical Chemistry. Application of microorganisms for conducting specific type-reactions of general application; emphasis on methodology, transformations by structural classes, and specific reactions. Prerequisite: Graduate standing and consent of instructor.

381D. Product Development. Applications of physical-chemical principles to the formulation and development of stable and bioavailable drug delivery systems. Prerequisite: Graduate standing in the College of Pharmacy.
381E. Advanced Hospital Pharmacy. An in-depth analysis of the operation and administration of the institutional pharmacy and its relationship to the total functioning of the hospital. Prerequisite: Graduate standing.


381J, 281J, 381J. Advanced Pharmacy Administration: Laboratory Problems. Three, six, or nine laboratory hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

181J, 281J, 381J. Advanced Pharmacy Administration. One, two, or three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

381N. Managed Health Care Systems. Examination of the classic and contemporary literature on managed health care systems, with emphasis on pharmacy-related issues. Attention to the advantages, disadvantages, and effects of these systems on patients, providers, and payers. Prerequisite: Graduate standing.

381P. Health Care Administration. Introduction to the United States health care system and its relationship to pharmacy; comparison with health care in other countries. Prerequisite: Graduate standing.

381V. Communication Skills for Translational Scientists. Oral and written communication skills for scientists conducting translational research at the interface of basic and clinical science. Subjects include effective interaction on multidisciplinary research teams and the preparation of translational research proposals. Prerequisite: Graduate standing in pharmacy, and completion of a PharmD degree or consent of instructor.

381W. Molecular Biology in Translational Research. Molecular biology methods at the interface of clinical and basic pharmaceutical sciences, especially those used in translational research in drug discovery and development, including clinical trials. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in pharmacy, and completion of a PharmD degree or consent of instructor.

382C. Chemistry of Natural Products. Chemical and biosynthetic relationships among steroids, terpenoids, and alkaloids. Pharmacy 332C and 382C may not both be counted. Prerequisite: Graduate standing and consent of instructor.

282J. Advanced Pharmacotherapy Seminar. Discussion of advanced pharmacotherapeutics topics, case presentations, and journal clubs at the advanced practitioner level. Two lecture hours a week for two semesters. Prerequisite: Graduate standing in pharmacy and completion of a PharmD degree.

382L. Drug Literature Evaluation. Prepares the student for efficient utilization, critical evaluation, and clinical application of the current drug literature. Two lecture hours and three laboratory hours a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

382N. Computer-Assisted Kinetics. Quantitative and simulation treatment of kinetics through computer technology. Topics include protein binding and utilization of program packages such as NONLIN, RSSL, CSMP, SAAM 23, and AUTOAN. Prerequisite: Graduate standing, and Pharmacy 352C (or 452C) or the equivalent.

382R. Recent Advances in Pharmaceutics. Presentation of topics of current research interest in physical pharmacy, biopharmaceutics, and pharmacokinetics. Prerequisite: Graduate standing.

382S. Advanced Biopharmaceutics. Provides the student with a more comprehensive background in biopharmaceutics and mathematical techniques used in pharmacokinetics. Prerequisite: Graduate standing, and Pharmacy 352C (or 452C) or the equivalent.

382T. Principles of Neuroscience: Cellular and Molecular Neuroscience. A proseminar covering the core material on essential topics in neuroscience from the molecular to the systems level. Only one of the following may be counted: Biology 381C, Kinesiology 382T, Neuroscience 382T, Pharmacy 382T, Psychology 382T, Zoology 382T. Prerequisite: Graduate standing, consent of instructor, and concurrent enrollment in Neuroscience 185.

382V. Pharmaceutical Biotechnology. Applications of protein, oligonucleotide, and related molecules as therapeutic agents: stability, formulation, kinetics, dynamics. Prerequisite: Graduate standing; and the following coursework: Chemistry 339K, and Pharmacy 342C (or 442C), 142P, 352C (or 452C), and 152P; or the equivalent; or consent of instructor.
182W. Ethics in Science and Clinical Practice. Ethical considerations in the conduct of clinical research, including institutional review boards, adherence to protocol, Food and Drug Administration and related site reviews, protection of human subjects through informed consent and confidentiality, and the use of genetic banks in research. One lecture hour a week for one semester. Prerequisite: Graduate standing in pharmacy, completion of a PharmD degree, and consent of instructor.

183C. Basic Pharmacology Concepts. A systematic presentation of pharmacologic agents based on drug-group classification; emphasis on pharmacological mechanisms of action and toxicity. Covers basic pharmacological principles. One lecture hour a week for one semester. Prerequisite: Graduate standing.

383D. Neuropharmacology. An advanced survey of neurotransmitters and systems in the brain. Emphasis is on pharmacological analysis at the molecular level to determine mechanisms of action of drugs that act on the brain. Neuroscience 383D and Pharmacy 383D may not both be counted. Prerequisite: Graduate standing and consent of instructor.

283L. Clinical Skills Laboratory. Introduction to patient assessment techniques and to the skills needed to provide innovative patient care services. One lecture hour and three laboratory hours a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

383M. Pharmacogenetics. The study of those combined genetic and pharmacological factors that give rise to many unexpected, untoward, and idiosyncratic drug reactions. Prerequisite: Graduate standing and consent of instructor.

383N. Solution Theory and Disperse Systems. The theory and technology of solutions and heterogeneous systems; applications of scientific principles to the design of pharmaceutical products; a study of factors influencing physical chemical characteristics, stability, and biopharmaceutical activity of solutions and coarse dispersions; review of recent literature. Prerequisite: Graduate standing and consent of instructor.

383P. Advanced Pharmacokinetics. Study of the kinetics of absorption, distribution, metabolism, and excretion of drugs in the intact organism. Prerequisite: Graduate standing, and Pharmacy 352C (or 452C) or the equivalent.

383R. Rate Processes in Pharmaceutical Systems. A study of decomposition and stabilization of drug molecules in solutions and in solid dosage forms; principles of kinetics and diffusion as applied to pharmaceutical systems. Prerequisite: Graduate standing and consent of instructor.
384S. Introduction to Epidemiology and Pharmacoepidemiology. Principles of epidemiology; descriptive, analytic, and clinical epidemiology; epidemiologic perspective for health care management; epidemiology and the public policy process; pharmacoepidemiology. Prerequisite: Graduate standing; with consent of instructor, may be taken by students in the professional pharmacy curriculum.

184U. Biopharmaceutical Analysis Laboratory. Analytical methods for the isolation and identification of drugs and their metabolites, specific genes, and proteins in biological fluids. One hour of prelaboratory lecture and three laboratory hours a week for one semester. Prerequisite: Graduate standing in pharmacy, completion of a PharmD degree, and concurrent enrollment in Pharmacy 383W.

284V. Experimental Design and Data Analysis. Designed to provide an understanding of applied statistics through use of statistical tests for experimental design and interpretation of results related to drug development, including clinical trials. Two lecture hours a week for one semester. Prerequisite: Graduate standing in pharmacy and completion of a PharmD degree.

184W. Behavioral and Neurochemical Analyses of Drug Self-Administration. Behavioral and neurochemical changes associated with the intake of alcohol, cocaine, and other abused substances. Uses classic studies and recent published articles. One lecture hour a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

185D. Responsible Conduct of Science. Ethical considerations in the conduct of science, including issues of animal welfare, data analysis, fraud, publications, misconduct, intellectual property, grants, peer review, and mentor responsibility. One lecture hour a week for one semester. Offered on the credit/no credit basis only. Neuroscience 185D and Pharmacy 185D may not both be counted. Prerequisite: Graduate standing.

185J, 285J, 385J. Advanced Pharmacotherapy Laboratory Problems. Three, six, or nine laboratory hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing.

385L. Clinical Pharmacokinetics. In-depth analysis of pharmacotherapeutic regimens, using complex mathematical models. Offered on the letter-grade basis only. Prerequisite: Graduate standing in pharmacy, and completion of a PharmD degree.

385M. Advanced Pharmacokinetics and Pharmacodynamics. Continuation of Pharmacy 385L. Advanced pharmacokinetic and pharmacodynamic concepts and their application. Offered on the letter-grade basis only. Prerequisite: Graduate standing in pharmacy and completion of a PharmD degree.

185W, 285W, 385W. Advanced Pharmacotherapy Research. The equivalent of one, two, or three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

386E. Enzymes and DNA as Chemical Targets for Drug Action. Chemical and biochemical approaches for studying the interaction of small molecules with enzymes and DNA. Emphasis on chemical aspects of these problems, with some discussion of techniques in molecular biology useful in studies of drug-receptor interactions. Prerequisite: Graduate standing and consent of instructor.

386F. The Organic Chemistry of Drug Design and Drug Action. The chemical aspects of drug design, development, and action, with emphasis on the molecular mechanisms involved. Pharmacy 366F and 386F may not both be counted. Prerequisite: Graduate standing in pharmacy, chemistry, or biochemistry, or graduate standing and consent of instructor.

386H. Advanced Macromolecular/Pharmaceutical Chemistry. The analysis of macromolecular structures that serve as targets for drug design and therapeutic intervention. Prerequisite: Graduate standing in pharmacy, or graduate standing and consent of instructor.

186J, 286J, 386J. Advanced Medicinal Chemistry: Laboratory Techniques. Modern laboratory techniques used in medicinal and natural products chemistry. Three, six, or nine laboratory hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing.

186K, 286K, 386K. Advanced Medicinal Chemistry. The equivalent of one, two, or three lecture hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing.

386M. Pharmaceutical Distribution. An introduction to the discipline of marketing as it applies to the practice of pharmacy and the pharmaceutical industry. Designed to help students develop analytical skills, strategic thinking, and creativity that can be used to accomplish marketing objectives. Prerequisite: Graduate standing and consent of instructor.
386S. Molecular Biology of the Nervous System. Study of the structure and function of macromolecules in the brain. Neuroscience 386S and Pharmacy 386S may not both be counted. Prerequisite: Graduate standing, and a course in biochemistry or consent of instructor.

286T. Advanced Nuclear Magnetic Resonance Spectroscopy in Bioorganic Chemistry: Theory and Applications. Problem-based applications of nuclear magnetic resonance to biological chemistry. Advanced study of NMR spectroscopy, including physical principles, pulse methods, and experimental design. Two lecture hours a week for one semester. Prerequisite: Graduate standing, two semesters of organic chemistry, one semester of physics, and consent of instructor.

186U. Advanced Nuclear Magnetic Resonance Spectroscopy Laboratory. Students use high-field nuclear magnetic resonance instrumentation and computer routines to learn techniques and problems in state-of-the-art three-dimensional macromolecular structure determination. Three laboratory hours a week for one semester. Prerequisite: Graduate standing; and credit or registration for Pharmacy 286T, advanced nuclear magnetic resonance training, or consent of instructor.

286V. Advanced Nuclear Magnetic Resonance Spectroscopy in Bioorganic Chemistry: Macromolecular Applications. Expansion of nuclear magnetic resonance concepts discussed in Pharmacy 286T, with emphasis on problems in three-dimensional structure determination in biological macromolecules (carbohydrates, proteins, nucleic acids). Two lecture hours a week for one semester. Prerequisite: Graduate standing, and Pharmacy 286T or consent of instructor.

386W. Stereochemical Aspects of Synthetic Medicinal Chemistry. Methods for preparing stereochemically defined compounds for drug development; emphasis on regioselective and stereoselective reactions, use of stereochemically defined compounds from nature, and preparative separation technology. Pharmacy 368P and 386W may not both be counted. Prerequisite: Graduate standing and Pharmacy 385E, 285E, and 185P.

387C. Advanced Institutional Pharmacy Management. Management principles, practices, and problems as they apply to the provision of pharmacy products and services within a health care organization. Prerequisite: Graduate standing and consent of instructor.

387E. Advanced Drug Metabolism. Biotransformation mechanisms in biological systems, including oxidative, conjugative, and other reactions. Covers physiological systems prominent in the metabolism of therapeutic agents and other xenobiotics. Prerequisite: Graduate standing and consent of instructor.

287F. Advanced Pharmaceutical Literature Review and Interpretation. Evaluation and critical review of current literature in the pharmaceutical sciences and other relevant fields. Students give presentations and participate in discussions. Two lecture hours a week for one semester. Prerequisite: Graduate standing and consent of instructor.

287G. Written Communication Skills for Scientists. Designed to enhance written communication skills. Includes training in the composition of research grant applications. Two lecture hours a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing and Pharmacy 280E.

487P. Pathophysiology I. Provides the student with a sound knowledge and comprehension of functional changes that accompany disease states. Four lecture hours a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

487Q. Communication Skills for Scientists. Designed to enhance written and oral communication skills through lectures and practice. Covers grant writing, journal paper writing, poster presentation writing, and delivery. Four lecture hours a week for one semester. May not be counted by students with credit for Pharmacy 280E and 287G. Offered on the letter-grade basis only. Prerequisite: Graduate standing in pharmacy, neuroscience, or a biological science. Additional prerequisite for international students: Completion of the University’s English Certification Program or consent of instructor.

387R. Pathophysiology II. Provides the student with a sound knowledge and comprehension of functional changes that accompany disease states. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

587S. Pathophysiology III. Provides the student with a sound knowledge and comprehension of functional changes that accompany disease states. Five lecture hours a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

387T. Pathophysiology IV. Provides the student with a sound knowledge and comprehension of functional changes that accompany disease states. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

387U. Pathophysiology V. Provides the student with a sound knowledge and comprehension of functional changes that accompany disease states. Offered on the letter-grade basis only. Prerequisite: Graduate standing.
387V. Pathophysiology VI. Provides the student with a sound knowledge and comprehension of functional changes that accompany disease states. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

287W. Pathophysiology VII. Provides the student with a sound knowledge and comprehension of functional changes that accompany disease states. Two lecture hours a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

388C. Introductory Bioorganic Chemistry. Survey of high-field NMR techniques and their applications in bioorganic chemistry. Applications include biosynthesis of natural products, enzyme mechanisms, and drug-DNA interactions. Prerequisite: Graduate standing and Chemistry 391.

388D. Advanced Bioorganic Chemistry. Topics include biosynthesis of natural products, mechanisms of enzymes, and drug-DNA interactions. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

188J, 288J, 388J. Advanced Pharmacology: Laboratory Problems. Three, six, or nine laboratory hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing.

188K, 288K. Advanced Pharmacology. The equivalent of one, two, or three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

488U. Pathophysiology and Pharmacotherapeutics of Psychiatric Disorders. Provides the student with a sound knowledge and comprehension of diagnostic criteria, altered physiologic states, and therapeutic principles of psychiatric illnesses. Four lecture hours a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

389C. Pharmacy Association Management. An introduction to the principles involved in managing pharmacy associations. Pharmacy 329C and 389C may not both be counted. Prerequisite: Graduate standing and consent of instructor.

689D. Pharmacy Association Management Residency. Experience working in a pharmacy association, including active involvement in some managerial aspect of the association. Twenty laboratory hours a week for one semester. Pharmacy 629D and 689D may not both be counted. Prerequisite: Graduate standing and consent of instructor.

189E. Advanced Pharmacotherapeutics of Musculoskeletal Disorders. Provides the student with a sound knowledge and comprehension of contemporary therapeutic regimens used in the treatment of diseases involving the musculoskeletal system. One lecture hour a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

289F. Advanced Pharmacotherapeutics of Neurological Disorders. Provides the student with a sound knowledge and comprehension of contemporary therapeutic principles used in treating neurological diseases. Two lecture hours a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

189G. Advanced Pharmacotherapeutics of Endocrine Disorders. Provides the student with a sound knowledge and comprehension of contemporary therapeutic regimens used in treating endocrine disorders. One lecture hour a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

189H. Advanced Pharmacotherapeutics of Gastrointestinal Disorders. Provides the student with a sound knowledge and comprehension of contemporary therapeutic regimens used in treating gastrointestinal disorders. One lecture hour a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

289J. Advanced Pharmacotherapeutics of Cardiovascular Disorders. Provides the student with a sound knowledge and comprehension of contemporary pharmacotherapeutic regimens used in treating cardiovascular diseases. Two lecture hours a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

189L. Advanced Pharmacotherapeutics of Renal Disorders. Provides the student with a sound knowledge and comprehension of contemporary therapeutic regimens used in treating renal diseases and associated disorders. One lecture hour a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

189M. Advanced Pharmacotherapeutics of Pulmonary Disorders. Provides the student with a sound knowledge and comprehension of contemporary therapeutic regimens used in treating pulmonary diseases. One lecture hour a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

289P. Advanced Pharmacotherapeutics of Infectious Diseases I. Provides the student with a sound knowledge and comprehension of contemporary therapeutic principles used in treating infectious diseases. Two lecture hours a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing.
189Q. Seminar in Alcohol Studies. Presentations and discussion of current research topics in alcohol studies. One lecture hour a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

389S. Advanced Pharmacotherapeutics of Hematology/Oncology. Provides the student with a sound knowledge and comprehension of contemporary therapeutic principles used in treating hematologic and malignant diseases. Offered on the letter-grade basis only. Prerequisite: Graduate standing.

390D. Methods in Pharmacology. Laboratory experience in basic methods used in pharmacology and toxicology research. At least nine laboratory hours a week for one semester. Pharmacy 687KA and 390D may not both be counted. Prerequisite: Graduate standing.

390E. Methods in Neuropharmacology. Laboratory experience in state-of-the-art methodology in pharmacology research. Experiences include behavioral, neurochemical, cellular, anatomical, and molecular biological analysis of CNS drugs. At least nine laboratory hours a week for one semester. Pharmacy 687KB and 390E may not both be counted. Prerequisite: Graduate standing and Pharmacy 390D (or 687KA).

390F. Methods in Toxicology. Laboratory experience in state-of-the-art methodology in toxicology research. At least nine laboratory hours a week for one semester. Pharmacy 687KB and 390F may not both be counted. Prerequisite: Graduate standing and Pharmacy 390D (or 687KA).

190G, 290G, 390G, 490G. Advanced Pharmacotherapeutics of Human Diseases and Illnesses. A comprehensive analysis of disease processes and a determination of appropriate therapeutic interventions for the treatment of those diseases. For each semester hour of credit earned, one lecture hour a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

390J. Pharmacy Administration Data Analysis. Statistical analysis of research data using the computer and various statistical software programs. Nine laboratory hours a week for one semester. Prerequisite: Graduate standing and Pharmacy 390K.

390K. Experimental Design and Research Methodology in Pharmacy Administration. Principles and procedures of experimental design and research methodology; preexperimental, true, and quasi-experimental designs, reliability, validity, data collection, methods and simulation techniques. Prerequisite: Graduate standing.

390N. Biochemical and Molecular Toxicology. Discussion of the mechanisms of selected drugs and toxicants. Prerequisite: Graduate standing and Pharmacy 384K (or 284K).

390P. Experimental Design and Statistics in Pharmacology. Classical and experimental design and analysis of variance as it relates to pharmacology and neuroscience research. Practical aspects of design and analysis. Nonlinear regression and its use in model fitting and hypothesis testing. Nine laboratory hours a week for one semester. Neuroscience 390P and Pharmacy 390P may not both be counted. Prerequisite: Graduate standing.

290R, 390R. Special Problems in Pharmacotherapy. Individual supervision of research problems in the clinical pharmacy sciences, including pharmacokinetics, pharmacodynamics, efficacy, safety, and pharmaceutical care. For 290R, five laboratory hours a week for one semester; for 390R, nine laboratory hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

693. Research in Pharmacy. The equivalent of three lecture hours a week for two semesters. May be repeated for credit when the topics vary. May not be counted toward the master's degree. Prerequisite: For 693A, graduate standing; for 693B, Pharmacy 693A. Topics: 1. Research in Medicinal Chemistry. 2. Research in Pharmaceutics. 3. Research in Pharmacology. 4. Research in Pharmacy. 5. Research in Pharmacy Administration. 6. Research in Toxicology.

493D. Computer-Assisted Drug Design. Overview of theory and application of methods useful for computer-assisted drug design, such as molecular orbital calculations, molecular mechanics and dynamics, conformational search, CoMFA, and three-dimensional searching. Hands-on experience with professional-level software and hardware. Two lecture hours and three laboratory hours a week for one semester. Prerequisite: Graduate standing, consent of instructor, and an undergraduate course in physical chemistry.

393Q. Health-Related Quality of Life Measurement. Terms, concepts, procedures, methods, problems, and strengths associated with health-related quality of life (HRQOL) research. Prerequisite: Graduate standing.
693R, 993R. Postdoctoral Residency Internship. Pharmacy practice, research, and/or administration. At least forty hours a week for one semester. May be repeated for credit. **Prerequisite:** Graduate standing, admission to the College of Pharmacy Residency Training Program, and completion of a PharmD degree.

393T. Pharmacoeconomics. Terms, concepts, procedures, methods, problems, and strengths associated with pharmacoeconomics. Offered on the letter-grade basis only. Pharmacy 393T and 394F may not both be counted. **Prerequisite:** Graduate standing and consent of instructor.

293U, 393U, 693U, 993U. Pharmacotherapy Master’s Mentorship. Experience in pharmacy practice, research, and/or administration. For each semester hour of credit earned, three hours of fieldwork a week for one semester. May be repeated for credit. Offered on the letter-grade basis only. **Prerequisite:** Graduate standing.

394D. Interfacial Phenomena in Pharmaceutics. Phase interfaces, monolayers, bilayers, and nonlamellar surfactant assemblies in terms of thermodynamics, dynamic properties, stability, permeability, and measurement methods. **Prerequisite:** Graduate standing and a course in physical chemistry.

395D. Pathophysiology. Structure, function, and mechanisms of disease production in human organ systems. Nursing 396C and Pharmacy 395D may not both be counted. **Prerequisite:** Graduate standing.

396C. Synthetic Medicinal Chemistry. An organic chemistry approach to drug synthesis based on chemical structures desired or needed for biological intervention. Focus on synthetic methodology useful in carbocyclic and heterocyclic chemistry. **Prerequisite:** Graduate standing and one of the following: Chemistry 386J, Pharmacy 396M, an upper-division course in organic chemistry, or consent of instructor.

396M. Medicinal Chemistry: General Principles, Pharmacological Classification, and Mechanism of Action. Introduction to medicinal chemistry, covering drug classes according to their pharmacological classification, structural class, and mechanism of action. **Prerequisite:** Graduate standing and undergraduate coursework in organic chemistry and biochemistry.

196S. Seminar in Pharmacy. The equivalent of one lecture hour a week for one semester. Offered on the credit/no credit basis only. **Prerequisite:** Graduate standing in pharmacy.

196T. Seminar in Toxicology. Presentations and discussion of current research topics in toxicology. One lecture hour a week for one semester. Offered on the credit/no credit basis only. **Prerequisite:** Graduate standing, and admission to the Toxicology Training Program or consent of instructor.

697. Hospital Pharmacy Residency. Not less than 1,920 hours of satisfactorily supervised work in an approved hospital pharmacy. A report of the activities of the internship must meet the approval of the student’s supervisory committee. **Prerequisite:** For 697A, graduate standing in pharmacy and a Bachelor of Science in Pharmacy; for 697B, Pharmacy 697A.

397C. Pharmacy and Health Care Economics. The economist’s approach to pharmacy and health care issues, its insights and disadvantages. **Prerequisite:** Graduate standing.

397D. Human Resource Management. The elements of supervising pharmacists and technicians in pharmacy environments. **Prerequisite:** Graduate standing.

397E. Financial Management for Pharmacy Managers. Concepts, principles, and theoretical foundations of financial statements, with emphasis on the pharmacy manager's understanding of accounting procedures and the use of financial statements. **Prerequisite:** Graduate standing.

397F. Analytical Methods in Pharmacy Management. How computers are used to establish a database, analyze the data, and develop managerial projections based on the data analyses. Emphasis on developing budgets, managing inventory, monitoring productivity and workload, and managing the development of projects and systems. Three lecture hours and three laboratory hours a week for one semester. **Prerequisite:** Graduate standing and consent of instructor.

397G. Advanced Community Pharmacy Management. Management principles, practices, and problems as they apply to the provision of pharmacy products and services in the community pharmacy setting. **Prerequisite:** Graduate standing and consent of instructor.

397J. Advanced Problems in Pharmacy Management. The application of problem-solving techniques to a current problem in community or institutional pharmacy management. Students develop a proposal and a report addressing an identified problem. Twelve laboratory hours a week for one semester. **Prerequisite:** Graduate standing and consent of instructor.

397K. Communication Skills for Pharmacy Managers. Written and oral communication skills and techniques for pharmacists at the managerial level. **Prerequisite:** Graduate standing.
397M. Drug Design and Synthetic Strategy. A multiperspective approach to modern concepts in drug design and synthetic strategy, including the use of computers and artificial intelligence, with appropriate examples. Prerequisite: Graduate standing; and Chemistry 386J, Pharmacy 396M, or consent of instructor.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in pharmacy and consent of the graduate adviser; for 698B, Pharmacy 698A.

398R. Master’s Report. Preparation of a report to fulfill the requirement for the master’s degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in pharmacy, admission to the Option II program for the Master of Science in Pharmacy degree, and consent of the graduate adviser.

398T. Supervised Teaching in Pharmacy. Teaching under close supervision of the faculty; weekly group meetings with the appropriate instructor; individual consultations; semester reports. Prerequisite: Graduate standing and consent of instructor.

399R, 699R, 799R, 899R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

Lyndon B. Johnson
School of Public Affairs

Master of Public Affairs
Doctor of Philosophy (in Public Policy)

FACILITIES FOR GRADUATE WORK

The Lyndon B. Johnson School of Public Affairs is housed in Sid Richardson Hall, adjacent to the Lyndon Baines Johnson Library and Museum. The Edie and Lew Wasserman Public Affairs Library is an interdisciplinary legal and social science collection housed in the Lyndon B. Johnson School of Public Affairs. A unit of the University Libraries, its focus is on material concerning the formulation, administration, and evaluation of public policies and services. The library collection includes United States and Texas government depository documents; city and county budget and financial reports; publications of the school; students’ professional reports; and videotapes of speakers and events.

The school’s computation center maintains a Microcomputer Laboratory and provides access to the Internet and to the University’s computer infrastructure. The laboratory is reserved for public affairs students and is available twenty-four hours a day.

AREAS OF STUDY

Graduate study in public affairs is interdisciplinary, research oriented, and built around public policy problems. While there is no specific requirement to do so, students may elect to organize their studies around certain areas of specialization. Depending on his or her qualifications, a student can pursue the Master of Public Affairs degree through the regular program, a dual degree program, or the midcareer option. The master’s degree program aims to provide students with the skills and understanding required for effective professional leadership in developing and implementing public policies. The doctoral degree program in public policy is a research-oriented program designed to give the student substantial knowledge of one or more disciplines, an understanding of the policy process, and technical mastery of advanced research skills. It is intended to develop research scholars and university teachers who can make substantive contributions to our understanding of complex public policy problems and who can conduct research in multidisciplinary settings.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Jacqueline L. Angel
Kenneth S. Apfel
Robert D. Auerbach
William K. Black
Leigh Bruce Boske
Edwin Dorn
David J. Eaton
Kenneth S. Flamm
James K. Galbraith
Shama Gamkhar
Francis J. Gavin
Aditi Gowri
Dagmar S. Hamilton
Pamela Herd
Bobby R. Inman
Lodis Rhodes
ADMISSION REQUIREMENTS

Admission decisions are made by the Admissions Committee. The committee considers an applicant’s academic and employment records, his or her scores on the Graduate Record Examinations General Test, three letters of recommendation from professors or employers, and three essay questions addressing the applicant’s background and interest in public policy. A résumé is also required.

While there are no prescribed course prerequisites, students entering the master’s degree program are expected to have completed coursework in three areas: mathematics and statistics, economics, and American government. Many students find it useful to take a review course in college algebra, calculus, or statistics the summer before entering the program. Applicants to the doctoral degree program must have a graduate degree from a policy-related academic or professional program.

Additional information on degree requirements and the application process is available from the Office of Student and Alumni Programs.

DEGREE REQUIREMENTS

Master of Public Affairs

The curriculum for the Master of Public Affairs normally consists of forty-eight semester hours of coursework. Up to nine hours in core courses may be waived if a student demonstrates prior training and proficiency substantially equivalent to core courses in introductory quantitative methods, microeconomics, and public financial management. The curriculum combines courses in politics and the policy process, economic analysis, empirical methods, and management with a practical applications sequence that includes client-oriented policy research projects; it also allows the student to develop an area of specialization and serve in a public service internship. A typical forty-eight-semester-hour program of study includes seven one-semester core courses, at least one policy research project, a twelve-week internship completed between the first and second years, electives, and an optional professional report. The student must fulfill all academic requirements within six years of his or her entrance into the Master of Public Affairs degree program. Dual degree programs may require additional coursework.

Regular Program

Most students are admitted to the regular program, which they are generally expected to complete in two years of full-time study. A student who cannot attend full-time may choose to complete the regular program on a part-time basis; the applicant must submit a written request for admission on a part-time basis when he or she applies for admission to the regular program. A student enrolled in the regular program full-time may be allowed, for good reason, to change to part-time status.
Midcareer Program

Each year a small number of applicants with substantial work experience are admitted to the midcareer program. In general, an applicant should have ten years of experience, including at least five years in substantive policy-level or administrative positions related to the public sector. The applicant must submit a written request for admission to the midcareer program when he or she applies for admission to the school; the request must be accompanied by supporting material detailing the applicant’s public service and policy-level work experience. The midcareer student must earn at least thirty-six semester hours of credit in public affairs and related coursework.

Dual Degree Programs

In cooperation with the following divisions of the University, the Lyndon B. Johnson School of Public Affairs offers programs leading to both the Master of Public Affairs and another degree. Each dual degree program allows the student to earn two degrees simultaneously in less time than it would take to earn them separately.

- Department of Advertising: Master of Arts with a major in advertising
- Department of Asian Studies: Master of Arts with a major in Asian studies
- McCombs School of Business: Master of Business Administration
- Department of Communication Studies: Master of Arts with a major in communication studies
- College of Engineering: Master of Science in Engineering
- School of Journalism: Master of Arts with a major in journalism
- Teresa Lozano Long Institute of Latin American Studies: Master of Arts with a major in Latin American studies
- School of Law: Doctor of Jurisprudence
- Center for Middle Eastern Studies: Master of Arts with a major in Middle Eastern studies
- Department of Radio-Television-Film: Master of Arts with a major in radio-telephone-film
- Center for Russian, East European, and Eurasian Studies: Master of Arts with a major in Russian, East European, and Eurasian studies

Students seeking admission to a dual program must apply through the Graduate and International Admissions Center; those seeking admission to the MPAff/JD program must also apply separately to the School of Law. The student must be accepted by each individual program in order to be admitted to the dual program.

Upon admission to the dual degree program with the McCombs School of Business, the student must pay a nonrefundable enrollment deposit to indicate that he or she accepts the offer of admission. The deposit serves to confirm the student’s intention of enrolling in both programs and is applied to the payment of fees when the student enrolls. Students who demonstrate financial need may qualify for assistance to cover the deposit.
Doctor of Philosophy

Each doctoral degree student pursues an individual program of study approved by his or her advisory committee. A typical program consists of at least thirty semester hours of coursework beyond the master’s degree (in addition to the dissertation course) and includes supporting work in courses outside public affairs. The supporting work is intended to deepen the student’s understanding of a discipline and its application to public policy.

In addition to the dissertation courses, required courses include Public Affairs 390C, 391C, and 392C. This sequence is designed to move the student from a disciplinary to a multidisciplinary approach to public policy by developing his or her understanding of the theoretical and methodological contributions of individual disciplines and professions to public policy. A student without a graduate degree from a policy-related academic or professional program may be required to complete supplementary coursework in addition to the number of hours required for the doctoral degree. This coursework is intended to ensure that the student has adequate skills and knowledge before beginning doctoral degree work.

FOR MORE INFORMATION

Campus address: Sid Richardson Hall (SRH) 3.107, phone (512) 471-4962, fax (512) 471-8455; campus mail code: E2700
Mailing address: The University of Texas at Austin, Lyndon B. Johnson School of Public Affairs, PO Box Y, Austin TX 78713-8925
E-mail: lbjadmit@uts.cc.utexas.edu
URL: http://www.utexas.edu/lbj/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Public Affairs: PA

682. Policy Research Project. Interdisciplinary research on a contemporary policy problem involving interaction with an agency of government. Three lecture hours a week for two semesters. May be repeated for credit when the topics vary. Prerequisite: For 682A, graduate standing and consent of instructor; for 682B, Public Affairs 682A.

882D. Policy Research Project. Interdisciplinary research on a contemporary policy problem involving interaction with an agency of government. Four lecture hours a week for two semesters. May be repeated for credit when the topics vary. Prerequisite: For 882DA, graduate standing and consent of instructor; for 882DB, Public Affairs 882DA.

383C. Politics and Process. Introduction to how public policy develops and is adopted in government systems. Covers the role of politics and institutions in implementing and managing policy. Normally taken during the first year. Prerequisite: Graduate standing.

383D. Policy Development. Introduction to how public policy develops and is adopted in the American government system. Normally taken during the first year. Prerequisite: Graduate standing.
384C. Advanced Management. Development and implementation of policy within an organizational environment, including the role of political and institutional factors, organization and management concepts, and human and information resource issues. Normally taken during the first year. Prerequisite: Graduate standing.

384D. Public Administration and Management. A substantive introduction to administrative policy making and implementation. Normally taken during the first year. Prerequisite: Graduate standing.

388D. Advanced Topics in Public Policy. Typical topics include issues in political values and ethics and issues in transportation, health, environmental, international, regulatory, urban, and labor and human resources policy. Taught with a videoconference component. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Perspectives on Public Policy. Covers the art and science of policy formulation in the areas of economics, national security, monetary policy, science, technology, and trade. Examines the relationships among policy development processes at the federal, state, and local levels of government.


Topic 3: Texas Health Policy.

388K. Advanced Topics in Public Policy. Typical topics include issues in political values and ethics and in natural resources, transportation, health, environmental, international, regulatory, urban, and labor and human resources policy. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

388L. Advanced Topics in Management. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

389. Conference Course in Policy Analysis. Individual instruction related to selected aspects of professional theory and practice. The equivalent of three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

390C. Advanced Research Methods. Designed to develop the skills students need to use policy research techniques, the understanding of empirical requirements they need to support those techniques, and the ability to manage software and databases they need to conduct policy research. Prerequisite: Graduate standing and consent of the graduate adviser.

390D, 690D, 990D. Dissertation Proposal Preparation. Development and preparation of the dissertation proposal. Individual instruction. Offered on the credit/no credit basis only. Prerequisite: Graduate standing, completion of all coursework, and consent of instructor.

391. Public Financial Management. The budget process, budgetary methods, governmental accounting analysis of financial statements, government revenues, debt management, and other financial management techniques for public and nonprofit programs. Prerequisite: Graduate standing.

391C. Policy Research Paradigms. The philosophy, historical development, special methods, and research strategies of the major policy-related social sciences, including economics, political science, sociology, demography, cognitive and social psychology, and management and information sciences. Prerequisite: Graduate standing and consent of the graduate adviser.

391V. Public Financial Management. The budget process, budgetary methods, fund accounting, debt management, and other financial management techniques for public and nonprofit programs. Prerequisite: Graduate standing.

392C. Theories of Public Policy. Theories of public policy, emphasizing both the historical intellectual development of the discipline and the role that theory may be expected to play in public policy making. Prerequisite: Graduate standing and consent of the graduate adviser.

693D. Political Economy. The use of economic reasoning in the development and implementation of public policy. Three lecture hours a week for two semesters. Prerequisite: Graduate standing.

393K. Applied Microeconomics for Policy Analysis. The use of economic reasoning in the development and implementation of public policy. Prerequisite: Graduate standing.

393L. Advanced Policy Economics. Advanced topics in the application of economic reasoning to the development and implementation of policy. Prerequisite: Graduate standing and Public Affairs 393K.

095. Public Affairs Colloquium. Guest lectures on topics to be announced. One lecture hour a week for one semester. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

195C. Supervised Policy Research. Supervised, individual policy research experience on a topic chosen by the supervising faculty member. Conference course. May not be counted toward the Master of Public Affairs degree. Prerequisite: Graduate standing in public affairs and approval of the research proposal by the supervising faculty member and the graduate adviser.
527 Public Affairs

196C. Supervised Public Service. Supervised, individual practical public service experience in an area chosen by the supervising faculty member. Conference course. May not be counted toward the Master of Public Affairs degree. Prerequisite: Graduate standing in public affairs and approval of proposal by the supervising faculty member and the graduate adviser.

396K. Internship: Public Service Experience. Supervised participation and observation as a working member of the staff in an agency of government, a nonprofit organization, or a public policy-related unit in the private sector. Students work full-time for one summer session or long-session semester. Offered on the credit/no credit basis only. Prerequisite: Completion of one year in the Lyndon B. Johnson School of Public Affairs and consent of the associate dean.

397. Introduction to Quantitative Analysis. Survey of the application of a broad range of quantitative models to policy analysis and managerial decision-making: optimization techniques based on calculus and linear programming, probability theory and decision analysis, sampling theory and hypothesis testing, regression analysis, and forecasting. Prerequisite: Graduate standing; and either one semester each of college algebra, calculus, and statistics or a passing score on the validation exam offered before the beginning of the semester.

397C. Advanced Empirical Methods for Policy Analysis. Research methods, specialized empirical techniques, and data analysis as used in policy analysis and management. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and Public Affairs 397.

397D. Applied Quantitative Analysis I. Survey of the application of a broad range of quantitative models to policy analysis and managerial decision-making: optimization techniques based on calculus and linear programming, probability and theory and decision analysis, sampling theory and hypothesis testing, regression analysis, and forecasting. Prerequisite: Graduate standing; and either one semester each of college algebra, calculus, and statistics or a passing score on the validation exam offered before the beginning of the semester.

398R. Master's Report. Preparation of a report to fulfill the requirement for the master's degree under the report option. The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in public affairs and consent of the graduate adviser.

398T. Supervised Teaching in Public Affairs. Group meetings with the instructor, individual consultations, and reports. Prerequisite: Graduate standing and consent of the graduate adviser.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree and consent of the graduate adviser in public affairs.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Public Affairs 399R, 699R, or 999R.
FACILITIES FOR GRADUATE WORK

The School of Social Work Building houses classrooms, faculty and administrative offices, a computer classroom, and a student lounge. The building also houses the school’s Learning Resource Center, which contains computer and video laboratories and reading rooms; the center provides an extensive reference library of social work–related journals and other materials.

The school offers students several other services and resources, including the Office of Academic Affairs, which coordinates advising, registration, and other academic matters. Career planning is available through the DiNitto Center for Career Services. The Center for Social Work Research administers faculty-conducted research in such areas as substance abuse and mental health; child welfare; cultural diversity; domestic and community violence; gerontology; families, children, and youth; social work education; and organizational structures.

AREAS OF STUDY

The School of Social Work offers graduate study leading to the Master of Science in Social Work and the Doctor of Philosophy with a major in social work.

The Master of Science in Social Work (MSSW) program prepares students for advanced social work practice with individuals, families, groups, organizations, and communities and for policy-related and administrative positions. Two areas of concentration are available: clinical social work and community and administrative leadership.

Students pursuing the Doctor of Philosophy degree design their own areas of study based on their academic and research interests.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Marilyn P. Armour  Jane A. Kretzschmar
Noel B. Busch    Michael L. Lauderdale
Namkee G. Choi   Laura Lein
King E. Davis    Ruth G. McRoy
Diana M. DiNitto Yolanda C. Padilla
Michael J. Ferguson Elizabeth Pomeroy
Rowena Fong      Dennis L. Poole
Dawnovise N. Fowler Allen Rubin
Cynthia Franklin A. James Schwab Jr.
Dorie J. Gilbert  Clayton T. Shorkey
Darlene Grant    David W. Springer
Roberta Greene   Calvin L. Streeter
Lori Kay Holleran Barbara W. White
Barbara L. Jones
ADMISSION REQUIREMENTS
Approval of the graduate adviser is required for admission to all social work courses.

Master of Science in Social Work
Applicants for admission to this degree program should have a background in general liberal arts education with a broad range of studies in the behavioral sciences. All applicants must have completed at least one college-level statistics course that includes inferential applications.

Applicants with a Bachelor of Social Work degree from a school accredited by the Council on Social Work Education may be admitted into a modified program of study.

Doctor of Philosophy
Applicants to the doctoral degree program must have a master’s degree from an accredited school of social work. Exceptions to this requirement are sometimes made for applicants from countries without an accreditation system or for applicants with exceptionally strong credentials and with experience working in social work settings. Preference is given to individuals with at least two years of professional experience beyond the master's degree.

DEGREE REQUIREMENTS
Master of Science in Social Work
Developed in accordance with Council on Social Work Education curriculum standards and policies, the full-time MSSW program requires sixty semester hours of coursework. Experiential learning is provided through internships in selected government, nonprofit, and for-profit agencies. Course content and field experiences are organized and integrated using a systems/developmental framework and a biopsychosocial perspective.

Of the sixty semester hours required for graduation, a maximum of twenty-four may be accepted by waiver from an accredited Bachelor of Social Work or Master of Social Work program. Waivers are awarded only after careful evaluation by the faculty of a student’s training and experience in the areas in which waivers are sought.

Most students enroll in the regular full-time program, which can be completed in two academic years. Extended and part-time programs of work can be completed in three years. Students accepted into a modified program of study complete a forty-two to forty-eight-semester-hour program in twelve to sixteen months. Each option provides students with opportunities to study independently with individual faculty members, to take elective courses in other University departments, and to waive some required coursework by examination. The school offers required courses during evening hours but cannot guarantee that the degree program can be completed by taking courses only at night.
Doctor of Philosophy

Students seeking the doctoral degree must meet the following requirements:

1. Completion of a program of courses prescribed by the Graduate Studies Committee.
2. Completion of a written qualifying examination that tests the student's knowledge of research design and methodology in social work and of selected aspects of social work practice.
3. Completion of an acceptable program of original research, including the submission of a dissertation that extends the knowledge base of social work.

In addition to the full-time doctoral program, a part-time summer program is available. Students should consult the graduate adviser for additional requirements.

FOR MORE INFORMATION

Campus address: School of Social Work Building (SSW) 2.222, phone (512) 471-5457, fax (512) 471-9600; campus mail code: D3500
Mailing address: The University of Texas at Austin, School of Social Work, 1 University Station D3500, Austin TX 78712
E-mail: utssw@lists.cc.utexas.edu
URL: http://www.utexas.edu/ssw/

GRADUATE COURSES

Professional liability insurance is required of all students enrolled in field placement or internship courses. The insurance policy must cover the duration of the course, beginning on or before the first regular class period.

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Social Work: S W

381R. Development Across the Life Span: Individuals and Families. Ecological, systems, and developmental frameworks used to examine the influence of context in shaping individual, family, and community dynamics across the life span. Prerequisite: Graduate standing in social work, or graduate standing and consent of instructor or the graduate adviser.

381S. Foundations of Social Justice: Values, Diversity, Power, and Oppression. History, demographics, and cultures of various populations at risk with an emphasis on self-awareness and understanding the impact of discrimination and oppression by individuals and society on people of diverse backgrounds, abilities, and orientations. Prerequisite: Graduate standing in social work, or graduate standing and consent of instructor or the graduate adviser.
381T. Dynamics of Organizations and Communities. The organizational and community context within which social services are delivered and the influence of funding, mandate, and organizational arrangements on service delivery, with attention given to populations at risk. Prerequisite: Graduate standing in social work, or graduate standing and consent of instructor or the graduate adviser.

382R. Social Policy Analysis and Social Problems. Historical perspective on the development of social welfare institutions, programs, and policies. Students will learn methods of current policy analysis and evaluation of social problems. May not be counted by students with credit for Social Work 382P and 392P (Topic 1: General Social Welfare Policy Analysis). Prerequisite: Graduate standing in social work, or graduate standing and consent of instructor or the graduate adviser.

383R. Social Work Practice I. Introduction to social work practice methodology and the professional use of self in generalist practice with individuals, families, groups, organizations, and communities. Three lecture hours and one discussion hour a week for one semester. Prerequisite: Graduate standing in social work and concurrent enrollment in Social Work 384R, or graduate standing and consent of instructor or the graduate adviser.

383T. Social Work Practice II. Examine, critique, select, and apply social work micro, mezzo, and macro theories and methods in advanced clinical and community practice. Three lecture hours and one discussion hour a week for one semester. Prerequisite: Graduate standing in social work and concurrent enrollment in Social Work 384R, or graduate standing and consent of instructor or the graduate adviser.

384R. Field Instruction I. Practice course based on supervised assignments designed to develop a social work perspective and skill in working with individuals, families, groups, organizations, and communities. Sixteen to twenty hours a week (a total of at least 240 hours) in field placement and a weekly one-hour integrative seminar in the application of theoretical material to practice problems and to special issues. Social Work 384R and 384S must be taken in consecutive semesters. Prerequisite: Graduate standing in social work and concurrent enrollment in Social Work 383T, or graduate standing and consent of the field director or the graduate adviser.

384S. Field Instruction II. Continuation of Social Work 384R. Sixteen to twenty hours a week (a total of at least 240 hours) in field placement and a weekly one-hour integrative seminar that emphasizes advanced application of theory to practice and to consideration of special issues. Social Work 384R and 384S must be taken in consecutive semesters. Prerequisite: Graduate standing in social work and concurrent enrollment in Social Work 383T, or graduate standing and consent of the field director or the graduate adviser.

385R. Social Work Research Methods. Study of the scientific method and the use of research as a tool for professional practice. Prerequisite: Graduate standing in social work, or graduate standing and consent of instructor or the graduate adviser.

385S. Topics in Applied Social Work Research and Evaluation. Integrates and applies knowledge on service delivery, research design, and evaluation to inform practice and policy. May be repeated for credit when the topics vary. Social Work 385S and 395R may not both be counted unless the topics vary. Prerequisite: Graduate standing in social work, or graduate standing and consent of instructor or the graduate adviser.

387C. Direct Practice Field Immersion. Students work in a professional agency assisting clients. One weekly seminar hour and at least eight hours of fieldwork a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in social work and consent of instructor or the graduate adviser.

387R. Topics in Special Issues. Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in social work, or graduate standing and consent of instructor or the graduate adviser.

Topic 12: Contemporary Issues in Foster Care and Adoption. Social Work 387R and 393U (Topic 14: Contemporary Issues in Foster Care and Adoptions) may not both be counted.

Topic 13: Aging and Disability. Web-based instruction; no class meetings.

Topic 14: Family Support, Self-Determination, and Disability. Web-based instruction; no class meetings.

Topic 15: Introduction to Gerontology. Social Work 387R (Topic 15) and 393U (Topic 7: Introduction to Gerontology) may not both be counted.

Topic 16: Developmental Disabilities and Self-Advocacy. Web-based instruction; no class meetings.

Topic 17: Making Systems Work for People with Disabilities. Web-based instruction; no class meetings.


Topic 20: Dynamics of Chemical Dependence. Social Work 387R (Topic 20) and 393U (Topic 9: Dynamics of Chemical Dependence) may not both be counted.

Topic 21: Social Work in Health Care. Social Work 387R (Topic 21) and 393V (Topic 2: Social Work in Medical Settings) may not both be counted.


Topic 23: Social Work Practice with Older Adults. Social Work 387R (Topic 23) and 393U (Topic 8: Social Work Practice with Older Adults) may not both be counted.


Topic 27: Women with Disabilities. Web-based instruction; no class meetings.

Topic 28: Health and Psychosocial Factors.


Topics 1 through 7 are required of doctoral students in social work. Prerequisite: Graduate standing in social work and consent of instructor and the graduate adviser.

Topic 1: Research Methods I. Introduction to the basic elements of research design in the social sciences, with particular attention to social work research.

Topic 2: Research Methods II. Quantitative research methods as they are applied in the social and behavioral sciences. Designed to provide students with the knowledge and competence in quantitative research methods required to conduct independent research that will expand the knowledge base of the profession. Focuses on the application of concepts studied in topic 1 and includes research design, measurement in social science, statistical power analysis, effect size, multivariate data analysis, computer applications for data analysis, proposal writing, and research ethics.

Topic 3: Research Methods III. Introduction to qualitative research methodologies, paradigms, epistemologies, and theories. Qualitative methods of inquiry, including research designs, specific data collection methods, and analytic and interpretive procedures. Discussion of several approaches to qualitative data collection and analysis.

Topic 4: Research Practicum.

Topic 6: Data Analysis and Computers I. Introduction to fundamental concepts and statistical procedures used in social work research and to computer applications used for data analysis. Designed to help students develop basic skills in data file construction and manipulation, data definition, and statistical analysis and the conceptual and mathematical understanding of statistics needed for advanced work in research design, model development, model fitting and estimation, hypothesis testing, multivariate techniques, and interpretation of data. Basic statistical concepts through specific parametric and nonparametric statistics.

Topic 7: Data Analysis and Computers II. Builds on the concepts and procedures introduced in topic 6. Designed to enable students to do data analysis using multivariate statistical procedures. Primary focus on using the SPSS statistical software package for calculating multivariate statistics and on using the statistical output in research findings.
390N. Seminar: Strategies of Intervention. A critical evaluation of social work intervention strategies in human services, using alternative theoretical perspectives. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in social work, or graduate standing and consent of instructor and the graduate adviser.
Topic 1: Historical Perspectives on Social Work Practice.
Topic 2: Theories of Social Work Practice.
Topic 3: Theories of Social Work Practice in Administration, Planning, and Program Policy. Major theories of organization and management as they are applied in human service organizations. Historical development of the major schools of organizational and management theory and the dynamic evolution and contemporary applications of those theories in human service management.
Topic 4: Theories of Clinical Social Work Practice.
Topic 5: Issues in Social Work and Social Work Education. Development of social work and social work education in American society. Particular emphasis on the events of the Progressive Era, the 1930s, and the 1960s; current issues in social work education; and changes in the role of women in organized professions.
Topic 6: Theories of Direct Practice in Social Work. Philosophical, theoretical, and empirical underpinnings of various practice theories. Emphasis on the philosophical assumptions and scientific basis of various theories. Research methodologies such as process/outcome paradigms, experimental designs, and meta-analysis, which are used to develop and investigate the effectiveness of direct practice theories.
Topic 7: Direct Practice Theories.
Topic 8: Policy Theory.

392R. Topics in Social Welfare Policy Analysis. May be repeated for credit when the topics vary. Social Work 392P and 392R may not both be counted unless the topics vary. Prerequisite: Graduate standing in social work, or graduate standing and consent of instructor or the graduate adviser.
Topic 1: Health, Mental Health, and Chemical Dependence.
Topic 2: Children and Families.
Topic 3: Poverty and Public Policy.

393R. Topics in Advanced Clinical Practice. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in social work, or graduate standing and consent of instructor or the graduate adviser.
Topic 1: Clinical Assessment and Differential Diagnosis.
Topic 3: Theories and Methods of Family Intervention.
Topic 6: Advanced Family Intervention.
Topic 7: Anxiety Disorders. Social Work 393R (Topic 7) and 393T (Topic 4: Anxiety Disorders) may not both be counted.
Topic 8: Assessment and Treatment of Personality Disorders.
Topic 9: Assessment and Treatment of Traumatized Populations.
Topic 10: Brief Solution-Focused Intervention.
Topic 11: Clinical Intervention with Intergenerational Families Giving Care.
Topic 12: Clinical Supervision in Mental Health and Chemical Dependence. Social Work 387R (Topic 11: Clinical Supervision: Mental Health and Chemical Dependence) and 393R (Topic 12) may not both be counted.
Topic 14: Counseling African American Individuals, Couples, and Families.
Topic 15: Couples Counseling.
Topic 16: Dual Diagnosis: Mental Disorders and Chemical Dependence. Social Work 393R (Topic 16) and 393T (Topic 6: Dual Diagnosis: Mental Disorders and Chemical Dependence) may not both be counted.
Topic 17: The Feminist Perspective in Clinical Practice. Social Work 387R (Topic 5: The Feminist Perspective in Direct Practice) and 393R (Topic 17) may not both be counted.
Topic 18: Grief Counseling. Social Work 393R (Topic 18) and 393T (Topic 7: Grief Counseling) may not both be counted.
Topic 19: Major Mental Disorders. Social Work 393R (Topic 19) and 393T (Topic 3: Major Mental Disorders) may not both be counted.
Topic 20: Methods of Play Intervention. Social Work 393R (Topic 20) and 393U (Topic 11: Play Therapy) may not both be counted.
Topic 21: Motivational Interviewing.
Topic 23: Treatment of Chemical Dependence. Social Work 393R (Topic 23) and 393T (Topic 5: Treatment of Chemical Dependence) may not both be counted.
Topic 24: Treatment of Children and Adolescents. Social Work 393R (Topic 24) and 393T (Topic 1: Treatment of Children and Adolescents) may not both be counted.
Topic 26: Theories and Methods of Group Intervention. May not be counted by students with credit for Social Work 393R (Topic 4) and 393R (Topic 5).

Topic 27: Infant and Early Childhood Mental Health.

393T. Topics in Advanced Macro Practice. The equivalent of three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in social work, or graduate standing and consent of instructor or the graduate adviser.

Topic 8: Community Engagement and Management of Volunteers.

Topic 9: Community Organizing and Social Change.

Topic 10: Grant Development and Fund-Raising in Human Services.


Topic 12: The Legislative Process.

Topic 13: Managed Care. Social Work 387R (Topic 10: Social Work in Managed Care) and 393T (Topic 13) may not both be counted.


Topic 15: Social Work Practice in Mexican Culture. Study of Mexican social work through cultural immersion, seminars, field visits, and language instruction. Designed to prepare students for effective social work practice with Mexican Americans. Social Work 393T (Topic 15) and 393U (Topic 15: Social Work Practice in Mexican Culture) may not both be counted. Pretravel orientation sessions are required.

Topic 16: Social Work Leadership in Human Service Organizations. Social Work 393S (Topic 1: Introduction to Community Practice) and 393T (Topic 16) may not both be counted.


Topic 18: Nonprofit Management in Human Services. Social Work 393S (Topic 3: Nonprofit Management in Human Services) and 393T (Topic 18) may not both be counted.

Topic 19: Strategic Partnerships through Collaborative Leadership. Social Work 393S (Topic 4: Community Building through Strategic Partnerships) and 393T (Topic 19) may not both be counted.

Topic 20: Application of Information Technology in Human Services. Social Work 393S (Topic 5: Application of Information Technology in Human Services) and 393T (Topic 20) may not both be counted.


Topic 22: Leadership in Community Building. Social Work 393S (Topic 7: Community Building in a Caring Society) and 393T (Topic 22) may not both be counted.


393U. Topics in Social Justice and Populations at Risk. Three lecture hours a week for one semester, or as required by the topic. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in social work, or graduate standing and consent of instructor or the graduate adviser.

Topic 1: Social Work Practice with Abused and Neglected Children and Their Families.


Topic 16: Assessment and Treatment of Juvenile Offenders.

Topic 17: Gays and Lesbians in American Society: Policy and Practice.

Topic 18: Restorative Justice.


Topic 20: Cultural Factors in Substance Abuse Treatment for Underserved Populations.


Topic 22: Contemporary Issues in Domestic Violence. Social Work 387R (Topic 9: Contemporary Issues in Domestic Violence) and 393U (Topic 22) may not both be counted.

Topic 23: Contemporary Issues and Practice in Sexual Assault.

393V. Topics in Social Work in Specific Settings. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor or the graduate adviser.
694R. **Advanced Field Instruction.** Supervised practicum, building on Social Work 384R and 384S, in the continued application of theory to practice at an advanced level within the student's chosen concentration. Social Work 694R and 394S can be taken concurrently in one semester to provide 36 hours of work a week (a total of at least 540 hours in one semester) in a social work agency or organization, or they can be taken over two semesters to provide 16–20 hours of work a week (a total of at least 540 hours in two semesters) in the same agency. Offered on the credit/no credit basis only. **Prerequisite:** Graduate standing in social work, and consent of the field director and the graduate adviser.

394S. **Advanced Field Instruction.** Supervised practicum, building on Social Work 384R and 384S, in the continued application of theory to practice at an advanced level within the student's chosen concentration. Social Work 694R and 394S can be taken concurrently in one semester to provide 36 hours of work a week (a total of at least 540 hours in one semester) in a social work agency or organization, or they can be taken over two semesters to provide 16–20 hours of work a week (a total of at least 540 hours in two semesters) in the same agency. Offered on the credit/no credit basis only. **Prerequisite:** Graduate standing in social work, and consent of the field director and the graduate adviser.

195K, 395K, 495K. **Conference Course in Social Work.** Individual study in selected aspects of professional theory and practice. May be repeated for credit when the topics vary. **Prerequisite:** Graduate standing and consent of instructor or the graduate adviser.

698. **Thesis.** The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. **Prerequisite:** For 698A, graduate standing in social work and written consent of the graduate adviser; for 698B, Social Work 698A.

398T. **Pedagogy in Social Work.** Social work curriculum policy and issues, course development and content, teaching techniques, and classroom management. Emphasis on teaching skills as well as conceptual content and theory. Required of all doctoral degree students in social work. Students must complete this course before they may be appointed as assistant instructors in the School of Social Work. **Prerequisite:** Graduate standing in social work and consent of instructor or the graduate adviser.

399R, 699R, 999R. **Dissertation.** Offered on the credit/no credit basis only. **Prerequisite:** Admission to candidacy for the doctoral degree.

399W, 699W, 999W. **Dissertation.** Offered on the credit/no credit basis only. **Prerequisite:** Social Work 399R, 699R, or 999R.
COMPUTATIONAL AND APPLIED MATHEMATICS

Master of Science in Computational and Applied Mathematics
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK

Support facilities for work in computational and applied mathematics include the Kuehn Physics Mathematics Astronomy Library, the McKinney Engineering Library, and the Mallet Chemistry Library. Extensive computing facilities are available, including a scientific visualization laboratory driven by a 24-processor SGI Onyx2 high-performance computer and switched 100/1,000 mbps Ethernet networks supporting more than 150 general-purpose Linux, SGI, IBM, and Macintosh workstations. Other computational resources include a 64-processor IBM Regatta system, a 40-processor IBM 1A-64 Itanium system, a 64-processor 1A-32 system, a 16-processor Cray SV1 Parallel Vector high-performance computer, 16- and 64-node Beowulf clusters, and a 4-processor SGI Origin 2000 terascale data archive server. Shared and distributed parallel computers maintained by the Department of Computer Sciences are also available, as are workstations in several academic departments in the College of Engineering and the College of Natural Sciences. Faculty members and graduate students also have access to the resources of Information Technology Services described in chapter 1.

AREAS OF STUDY

Graduate study in computational and applied mathematics comprises three areas: applicable mathematics, numerical analysis and scientific computations, and mathematical modeling and applications. Within these broad areas, the student may take courses and conduct research in numerical analysis and scientific computing, applicable mathematics, computational mechanics and physics, parallel computing and computer architecture, and mathematical modeling, and in supporting areas in engineering and science that involve mathematical modeling of physical phenomena and engineering systems.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Orly Alter
Aristotle Arapostathis
Todd Arbogast
Ivo M. Babuska
Chandrajit L. Bajaj
Ross Baldick
Kenneth S. Ball
Eric B. Becker
William Beckner
Roger T. Bonnecaze

Alan C. Bovik
James C. Browne
Michael D. Bryant
Steven L. Bryant
Luis A. Caffarelli
Graham F. Carey
E. Ward Cheney
Alan K. Cline
James W. Daniel
Clint Dawson
ADMISSION REQUIREMENTS

Students entering the program are expected to have undergraduate degrees in engineering, computer sciences, mathematics, or a natural science such as physics or chemistry.

DEGREE REQUIREMENTS

Each student develops a program of study that includes a substantial component in each of three areas of concentration: applicable mathematics, numerical analysis and scientific computation, and mathematical modeling for applications in a science or engineering discipline. The program must be reviewed and approved by the Graduate Studies Committee. Lists of courses in the three concentrations are available from the graduate adviser.

Master of Science in Computational and Applied Mathematics. This program requires completion of thirty semester hours of approved coursework, including a thesis; thirty-three semester hours of approved coursework, including a report; or thirty-six hours of approved coursework. At least twenty-four hours must be chosen from courses in the three concentration areas, with at least six hours from each area. These twenty-four hours of approved coursework must be taken on the letter-grade basis.

Doctor of Philosophy. Before admission to candidacy for the degree, each student develops a program of study that draws courses from each of the three areas of concentration; the program must be approved by the Graduate Studies Subcommittee. The student must also pass an examination in each area. In addition to meeting the area requirements, the student must prepare a written dissertation proposal. Oral presentation of the proposal and an oral examination are required.
A dissertation is required of every candidate, followed by a final oral examination covering the dissertation and the general field of the dissertation.

FOR MORE INFORMATION

Campus address: Applied Computational and Engineering Science Building (ACE) 4.102A, phone (512) 471-7386, fax (512) 471-8694; campus mail code: C0200

Mailing address: The University of Texas at Austin, Graduate Program in Computational and Applied Mathematics, 1 University Station C0200, Austin TX 78712

E-mail: camgrad@ices.utexas.edu

URL: http://www.ices.utexas.edu/cam/

GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Computational and Applied Mathematics: CAM

380N. Algorithms for Parallel and Distributed Computation. Same as Electrical Engineering 380N (Topic 8: Algorithms for Parallel and Distributed Computation). Prerequisite: Graduate standing, and Electrical Engineering 380K or consent of the graduate adviser.

381C. Computational Physics. Same as Physics 381C. Dynamical and statical descriptions and solutions of many-body, nonlinear physical systems by computation. Theory of computation and applications to various branches of physics. Prerequisite: Graduate standing; and Physics 385K and 387K, or consent of instructor.

381D. Complex Analysis. Same as Mathematics 381D. Introduction to complex analysis. Prerequisite: Graduate standing and consent of instructor or the graduate adviser.

381M. Methods of Mathematical Physics. Same as Physics 381M. Theory of analytic functions; linear algebra and vector spaces; orthogonal functions; ordinary differential equations; partial differential equations; Green’s functions; complex variables. Prerequisite: Graduate standing.

381N. Methods of Mathematical Physics. Same as Physics 381N. Continuation of Computational and Applied Mathematics 381M. Topology, functional analysis, approximation methods, group theory, differential manifolds. Prerequisite: Graduate standing, and Computational and Applied Mathematics 381M or Physics 381M.

381R. Real Analysis. Same as Mathematics 381C. Measure and integration over abstract spaces; Lebesgue’s theory of integration and differentiation on the real line. Prerequisite: Graduate standing and consent of instructor or the graduate adviser.

381S. Functional Analysis. Same as Mathematics 381E. Introduction to functional analysis. Prerequisite: Graduate standing, consent of instructor, and Computational and Applied Mathematics 381R or Mathematics 381C.

382L. Numerical Methods in Petroleum and Geosystems Engineering. Same as Petroleum and Geosystems Engineering 382L. The use of numerical methods and computers in the solution of petroleum and geosystems engineering problems. Prerequisite: Graduate standing.

383. Special Topics in Petroleum and Geosystems Engineering. Recent literature on petroleum production practice and petroleum and geosystems engineering problems. May be repeated for credit when the topics vary. Prerequisite: Graduate standing in computational and applied mathematics, engineering, or geological sciences. Students seeking to enroll in any seminar must present technical prerequisites satisfactory to the instructor.


383C. **Numerical Analysis: Linear Algebra.** Same as Computer Sciences 383C and Mathematics 383E. Survey of numerical methods in linear algebra: floating-point computation, solution of linear equations, least squares problems, algebraic eigenvalue problems. **Prerequisite:** Graduate standing, either consent of instructor or Mathematics 341 (or 311) or 340L, and either Mathematics 368K or Computer Sciences 367.


384G. **Computer Graphics.** Same as Computer Sciences 384G. Advanced material in computer graphics, including in-depth treatments of techniques for realistic image synthesis, advanced geometric modeling methods, animation and dynamic simulation, scientific visualization, and high-performance graphics architectures. **Prerequisite:** Graduate standing; Computer Sciences 354 or another introductory course in computer graphics, or equivalent background and consent of instructor.

384K. **Theory of Probability.** Same as Mathematics 385C. **Prerequisite:** Graduate standing and consent of instructor.

384L. **Theory of Probability.** Same as Mathematics 385D. **Prerequisite:** Graduate standing, consent of instructor, and Computational and Applied Mathematics 384K or Mathematics 385C.

384R. **Mathematical Statistics.** Same as Mathematics 384C. General theory of mathematical statistics. Hypothesis testing, estimation, decision theory. **Prerequisite:** Graduate standing, and Mathematics 378K or consent of instructor or the graduate adviser in mathematical statistics.

384S. **Mathematical Statistics.** Same as Mathematics 384D. Continuation of Computational and Applied Mathematics 384R. **Prerequisite:** Graduate standing, consent of instructor, and Computational and Applied Mathematics 384R or Mathematics 384C.

385C. **Methods of Applied Mathematics.** Same as Mathematics 383C. Topics include basic normed linear space theory; fixed-point theorems and applications to differential and integral equations; Hilbert spaces and the spectral theorem; applications to Sturm-Liouville problems; approximation and computational methods such as the Galerkin, Rayleigh-Ritz, and Newton procedures. **Prerequisite:** Graduate standing.

385D. **Methods of Applied Mathematics.** Same as Mathematics 383D. Topics include distributions, fundamental solutions of partial differential equations, the Schwartz space and tempered distributions, Fourier transform, Plancherel theorem, Green’s functions, Sobolev spaces, weak solutions, differential calculus in normed spaces, implicit function theorems, applications to nonlinear equations, smooth variational problems, applications to classical mechanics, constrained variational problems. **Prerequisite:** Graduate standing and Computational and Applied Mathematics 383C.

386K. **Numerical Treatment of Differential Equations.** Same as Computer Sciences 386K and Mathematics 383G. The analysis of numerical methods for solving ordinary and partial differential equations. **Prerequisite:** Graduate standing; and Computational and Applied Mathematics 383D, Computer Sciences 383D, Mathematics 368K, 383E, or consent of instructor.

386M. **Functional Analysis in Theoretical Mechanics.** An introduction to modern concepts in functional analysis and linear operator theory, with emphasis on their application to problems in theoretical mechanics; topological and metric spaces, norm linear spaces, theory of linear operators on Hilbert spaces, applications to boundary value problems in elasticity and dynamical systems. **Prerequisite:** Graduate standing, Engineering Mechanics 386L, and Mathematics 365C.

386N. **Qualitative Methods in Nonlinear Mechanics.** A study of methods for assessing the qualitative behavior of solutions to equations governing nonlinear continuum mechanics. **Prerequisite:** Graduate standing, and Computational and Applied Mathematics 386M or Engineering Mechanics 386M.

391. **Introductory Dynamical Systems.** **Prerequisite:** Graduate standing.

391C. **Topics in Analysis.** Same as Mathematics 391C. Recent topics have included measure and integration, real variables; complex analysis, functional analysis, ordinary differential equations, partial differential equations, integral transforms, operator theory, approximation theory, abstract harmonic analysis. May be repeated for credit when the topics vary. Some sections are offered on the credit/no credit basis only; these are identified in the Course Schedule. **Prerequisite:** Graduate standing and consent of instructor.
393C. Topics in Applied Mathematics. Same as Mathematics 393C. Recent topics have included quantum mechanics, statistical physics, ergodic theory, group representations, statistical mechanics, quantum field theory, introductory partial differential equations, monotone operators and partial differential equations, Hilbert space methods for partial differential equations, Hamiltonian dynamics, nonlinear functional analysis, Euler and Navier-Stokes equations, microlocal calculus and spectral asymptotics, calculus of variations. May be repeated for credit when the topics vary. Some sections are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing and consent of instructor.

393D. Topics in Numerical Analysis. Same as Mathematics 393D. Recent topics have included numerical methods in ordinary differential equations, numerical methods in partial differential equations, computational problems in linear algebra, numerical solution of systems of equations, numerical methods in functional approximation, numerical integration. May be repeated for credit when the topics vary. Some sections are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing and consent of instructor.

393M. Numerical Solution of Elliptic Partial Differential Equations. Same as Computer Sciences 393N and Mathematics 393N. The numerical solution of large systems of linear algebraic equations arising in the solution of elliptic partial differential equations by discretization methods. Prerequisite: Graduate standing; and Computational and Applied Mathematics 386K, Computer Sciences 386K, Mathematics 383G, or consent of instructor.


394C. Topics in Probability and Statistics. Same as Mathematics 394C. Recent topics have included nonparametric statistics and advanced probability. May be repeated for credit when the topics vary. Some topics are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing and consent of instructor.

394F. Finite Element Methods. Same as Aerospace Engineering 384P (Topic 4: Finite Element Methods) and Engineering Mechanics 394F. Derivation and implementation of the finite element method; basic coding techniques; application to problems of stress and diffusion. Prerequisite: Graduate standing and consent of instructor.

394G. Computational Techniques in Finite Elements. Organization and data management in finite element codes; element models and calculations; equation solving; preprocessing and postprocessing. Prerequisite: Graduate standing, and Aerospace Engineering 384P (Topic 4: Finite Element Methods), Computational and Applied Mathematics 394F, or Engineering Mechanics 394F.


395T. Topics in Computer Sciences. May be repeated for credit when the topics vary. Prerequisite: Graduate standing. Topic 1: Parallel Computations. Same as Computer Sciences 395T (Topic 1: Parallel Computations).

397. Topics in Computational and Applied Mathematics. Conference course. May be repeated for credit. Some sections are offered on the credit/no credit basis only; these are identified in the Course Schedule. Prerequisite: Graduate standing.

698. Thesis. The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in computational and applied mathematics and consent of the graduate adviser; for 698B, Computational and Applied Mathematics 698A.

398R. Master's Report. Preparation of a report to fulfill the requirement for the master's degree under the report option. Independent study. Offered on the credit/no credit basis only. Prerequisite: Graduate standing in computational and applied mathematics and consent of the graduate adviser.

399R, 699R, 999R. Dissertation. Independent study. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

399W, 699W, 999W. Dissertation. Independent study. Offered on the credit/no credit basis only. Prerequisite: Computational and Applied Mathematics 399R, 699R, or 999R.
GRADUATE SCHOOL

The following courses are offered as part of the Office of Graduate Studies Professional Development and Community Engagement (PDCE) program; they are taught by members of the Graduate School PDCE faculty and by faculty members from throughout the University. Graduate School courses are open to University graduate students in any academic program, including nondegree students, on a first-come-first-served basis. Information about the PDCE program is given in chapter 1; additional information is published by the Office of Graduate Studies at http://www.utexas.edu/ogs/development.html.

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Graduate School: GRS

180E, 280E, 380E. Conference Course in Graduate Studies. Professional development projects related to the student’s discipline or area of research. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

390C. Academic and Professional Consulting. Study of how to organize and apply academic knowledge and research in the public and private sectors. Focus on the opportunities for and principles of effective consulting. Prerequisite: Graduate standing.

390F. Professional Internship. Independent work in a professional environment. Students are supervised by a professional mentor as well as a faculty member. Internship is arranged by the student. The equivalent of three lecture hours a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor and the student's graduate adviser.

390G. Innovation and Design. Project-based course on using design methods and innovation to solve problems in a range of contexts such as research and scholarship, community development, and entrepreneurship. Prerequisite: Graduate standing.

190J, 290J, 390J. Topics in Professional Development. Study of special topics such as conflict resolution, media and public affairs, community engagement, and interdisciplinary collaboration. One, two, or three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing. Additional prerequisites vary with the topic and are given in the Course Schedule.

390K. K–12 Internship. Independent work in a K–12–related environment. Students are supervised by a professional mentor as well as a faculty member. Internship is arranged by the student. The equivalent of three lecture hours a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor and the student's graduate adviser.

390M. Academic and Professional Uses of Technology. The integration of technology into the classroom and other academic and nonacademic contexts. Focus on instructional and presentation uses of technology. Prerequisite: Graduate standing.

390N. Preparing Future Faculty Internship. Individual work with faculty members in institutions of higher education. Designed to prepare students for academic careers. Internship is arranged by the student. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor and the student's graduate adviser.

390P. Multicultural Issues in Academic and Professional Instruction. Study of how cultural and disciplinary perspectives influence teaching and scholarship. Emphasis on developing skills for effective collaboration across these different perspectives. Prerequisite: Graduate standing.

390R. Academic and Professional Ethics. How ethical systems and specific decisions in both academic and professional situations influence institutional and relational outcomes. Emphasis on developing skills for effectively anticipating and resolving ethical conflicts. Prerequisite: Graduate standing.
390S. Academic and Professional Communication. Theory and practice of speaking in academic settings. Emphasis is on the application of principles of effective speaking to discipline-specific examples. Prerequisite: Graduate standing.

390T. Advanced College Teaching Methods. Exploration of issues in higher education; research on new strategies for teaching and learning at the college level. This course provides training beyond the basic teaching skills covered in each graduate field’s supervised teaching course. Also covers learning in nonacademic settings. Prerequisite: Graduate standing.

390W. Publishing, Theses and Dissertations, and Grant Writing. In-depth, focused instruction on writing grants, theses, and dissertations, and publishing in academic and professional settings. Prerequisite: Graduate standing.

392W. Academic and Professional Writing. Theory and practice of writing in academic settings. Emphasis is on a systematic procedure for organizing and writing research papers, conference papers, and other documents as required in specific disciplines. Prerequisite: Graduate standing.

398T. Teaching and Learning. Study of the fundamental principles of human learning in relation to the design and implementation of effective instruction. Three lecture hours a week for eight weeks. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and concurrent enrollment in an approved departmental supervised teaching course.

MEDIEVAL STUDIES
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK
The collections of the University Libraries, including the Perry-Castañeda Library and the branch libraries in architecture, classics, and fine arts, provide strong support for medieval studies through their journals, series, monographs, facsimile editions of manuscripts, microforms, slides, recordings, and musical scores. Important digital resources, including the Penn-Helsinki Parsed Corpus of Middle English; Iter: Gateway to the Middle Ages and Renaissance; the Online Reference Book for Medieval Studies; and hundreds of electronic journals and books in medieval studies are accessible through the University Libraries Web site, http://www.lib.utexas.edu/. In addition, the Harry Ransom Humanities Research Center has a significant collection of medieval and Renaissance manuscripts, both sacred and secular.

AREAS OF STUDY
Among areas of study in the humanities, medieval culture is perhaps most naturally cross-disciplinary. The doctoral degree program in medieval studies draws upon the collaboration of medievalists in ten units of the Colleges of Fine Arts and Liberal Arts: the Departments of Art and Art History, Classics, English, French and Italian, Germanic Studies, History, Philosophy, Slavic and Eurasian Studies, and Spanish and Portuguese and the School of Music. Students may also receive assistance from faculty members in architecture, comparative literature, linguistics, government, Middle Eastern studies, Asian studies, and theatre and dance.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Matthew Bailey
Rebecca A. Baltzer
Douglas Biow
Daniel Birkholz
Mary E. Blockley

Thomas Cable
Alison Knowles Frazier
Susanne Hafner
Michael Paul Harney
Geraldine Heng
ADMISSION REQUIREMENTS

In addition to meeting the requirements for admission to the Graduate School, applicants to the medieval studies program are expected to have the following qualifications.

1. A master’s degree or the equivalent in the field in which the applicant plans to teach. The applicant’s undergraduate and graduate experience should provide appropriate training for teaching lower-division courses in the field.

2. Appropriate academic preparation through the master’s degree level for medieval studies. If the Admissions Committee determines that the applicant’s background is inadequate for doctoral work in the chosen area of specialization, admission may be conditional on further coursework or other study to correct the deficiency.

3. Reading proficiency in Latin and the two modern foreign languages most important for scholarship in the student’s dissertation area; these are normally French and German. (The student of Slavic languages may substitute an appropriate language for Latin.) Deficiencies in Latin or one of the modern languages may be made up in the first year. Proficiency may be demonstrated by superior performance in two years of college-level coursework, by equivalent achievement on the standard national proficiency examination, or by satisfactory performance on a written or oral translation test administered by a qualified faculty member.

DEGREE REQUIREMENTS

The doctoral degree requires completion of thirty semester hours of coursework beyond the master’s degree, consisting of Medieval Studies 392L and 392M, eighteen additional hours of related coursework approved by the graduate adviser, and the dissertation courses, Medieval Studies 399R and 399W. Among the related work, the student must complete three hours of a vernacular literature or language, three hours of related work with a theoretical component, and three hours of manuscript study. The section “Related Courses” on page 544 includes many courses that a student might use to fulfill these requirements. Other courses may be approved by the graduate adviser; the decision whether any course fulfills any requirement rests with the graduate adviser. These thirty hours of coursework are in addition to work done for the master’s degree and to fulfill the language requirement.

After meeting the language requirement and completing twenty-four hours of coursework, the student submits a detailed dissertation proposal and takes a comprehensive examination. Upon passing the examination, the student is recommended for admission to candidacy for the degree.

FOR MORE INFORMATION

Mailing address: The University of Texas at Austin, Graduate Program in Medieval Studies, c/o Department of English, 1 University Station B5005, Austin TX 78712
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses and topics will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

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Medieval Studies: MDV

385L, 685L. Conference Course on Special Topics. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

392L. Readings in Medieval Latin. May be repeated for credit when the topics vary. Required core course. Prerequisite: Graduate standing and consent of the graduate adviser.

392M, 692M. Seminar in Medieval Culture. Required core course on major medieval historical developments and monuments of culture in thought, literature, art, architecture, and music. For 392M, three lecture hours a week for one semester; for 692M, six lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of the graduate adviser.

399R, 699R, 999R. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree and consent of the graduate adviser.

399W, 699W, 999W. Dissertation. Offered on the credit/no credit basis only. Prerequisite: Medieval Studies 399R, 699R, or 999R, and consent of the graduate adviser.

Related Courses

Each of these courses is described in the section of this catalog for the program that offers it.

Art History 383. Topics in Medieval Art.

Comparative Literature 381. The Comparative Study of Literary Periods and Movements.

English 387R. Rhetorical History.

English 392M. Studies in English Literature.

English 395N. Studies in the History of Language.

French 381. Old French Language.

French 381P. Old Provençal.

French 390K. Studies in French Literature through the Renaissance.

Italian 390K. Studies in Italian Literature through the Renaissance.

German 381. Studies in Germanic Linguistics and Philology.

German 386. Periods in Germanic Literature.

German 392. Seminar in Germanic Literature and Culture.

History 397L. Medieval History.

Latin 383. Graduate Reading.


Music 180K. Problems in Performance Practice.

Philosophy 381. History of Philosophy.

Russian 383. Periods in Russian Literature.


Spanish 386. Old Spanish Language.

Spanish 387. Old Spanish Literature.
NEUROSCIENCE
Master of Arts
Doctor of Philosophy

FACILITIES FOR GRADUATE WORK
The Institute for Neuroscience offers excellent opportunities for multidisciplinary study in the neurosciences at both graduate and postdoctoral levels. Facilities include those maintained by the participating programs in the Colleges of Pharmacy, Liberal Arts, Natural Sciences, Engineering, Education, and Communication. Training grants and federal and state grants to investigators in the institute provide stipends and support research. Faculty members throughout the institute participate in interdisciplinary seminars and a year-long, broadly based neuroscience course. The goal of the institute is to train students to employ multidisciplinary approaches in their careers in neuroscience research and teaching. Toward this end, the faculty seeks to provide a diverse, cohesive, and interactive atmosphere and a flexible curriculum that meets the needs of each individual.

AREAS OF STUDY
Neuroscience encompasses behavioral neuroscience, neurobiology, neuropharmacology, and cellular/molecular neuroscience. Studies in these areas are centered primarily in the graduate programs in psychology; pharmacy (medicinal chemistry and pharmacology); cellular and molecular biology; ecology, evolution, and behavior; biomedical engineering; kinesiology and health education; microbiology; biochemistry; linguistics; and communication sciences and disorders.

GRADUATE STUDIES COMMITTEE
The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Creed W. Abell
Lawrence D. Abraham
Seema Agarwala
Duane G. Albrecht
Adriana A. Alcantara
Karen Artzt
Nigel S. Atkinson
Ronald E. Barr
Susan Bergeson
George D. Bittner
Creagh Breuner
Craig A. Champlin
Lawrence K. Cormack
David P. Crews
Yvon Delville
Michael P. Domjan
Sharon Dormire
Christine Duvauchelle
David M. Eaglemann
Carlton K. Erickson
Roger P. Farrar
Benito Fernández
Wilson S. Geisler III
Nace L. Golding

Rueben A. Gonzales
Francisco Gonzalez-Lima
Andrea Gore
Ellen Gottlieb
Lisa Griffin
Adron Harris
Alexander C. Huk
Jody Jensen
Daniel Johnston
Theresa Jones
Robert A. Josephs
Swathi Kiran
Helmut J. Koester
Steven W. Leslie
Tom J. Mabry
Peter F. MacNeilage
W. Todd Maddox
Dennis McFadden
Cindy May Meston
John Mihic
Risto Miikkulainen
Hitoshi Morikawa
Richard A. Morrisett
Martin Poenie

545 Intercollegial Programs  •  Neuroscience
ADMISSION REQUIREMENTS

The requirements of the Graduate School for admission into a Doctor of Philosophy degree program must be met. However, the qualifications of most admitted applicants exceed these minimum requirements. All applicants must hold a bachelor’s degree from an accredited college or university, usually in biological science, chemistry, experimental psychology, kinesiology, pharmacy, zoology, or biomedical engineering. Undergraduate preparation should include one year of chemistry, one year of biology, mathematics through calculus, one semester of cell biology, and one semester of experimental psychology. However, students without some of these prerequisites may be admitted on the condition that they make up any deficiencies during the first two years of study.

DEGREE REQUIREMENTS

Master of Arts. The master’s degree student must complete thirty semester hours of coursework and must submit a thesis based on individual research. The thirty hours include the core courses in neuroscience: Neuroscience 382T, 383T, 185, 186, a statistics course, and an ethics course.

Doctor of Philosophy. At least eighty-one semester hours of coursework are required, including Neuroscience 382T, 383T, 185, 186, a statistics course, and an ethics course. One goal of this requirement is to help the student prepare for the qualifying examinations, taken in the spring of the second year.

DUAL DEGREE PROGRAM

Doctor of Philosophy/Doctor of Medicine

The graduate program in neuroscience participates in a dual degree program with the University of Texas Medical Branch at Galveston (UTMB). Applicants must apply separately to and be admitted to both the PhD program in neuroscience at the University of Texas at Austin and the medical school at UTMB. Students accepted into the dual degree program spend their first two years in the medical school at UTMB, followed by three to four years of doctoral work at UT Austin and eighteen months of clinical rotations. The degrees are conferred separately by each institution.

FOR MORE INFORMATION

Campus address: Institute for Neuroscience, Pharmacy Building (PHR) 2.222A, phone (512) 471-3640, fax (512) 471-0390; campus mail code: A8000

Mailing address: The University of Texas at Austin, Institute for Neuroscience, PO Box E, Austin TX 78713-7266

E-mail: INS_UTA@psy.utexas.edu

URL: http://www.utexas.edu/neuroscience/
GRADUATE COURSES

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Neuroscience: NEU

380E. Vision Systems. Introduction to the anatomy, physiology, and psychophysics of human vision from an information-processing and computational perspective. Neuroscience 380E and Psychology 380E may not both be counted. Prerequisite: Graduate standing and consent of instructor.

380F. Biomedical Pharmacology I. Drug classifications, mechanisms of drug action, drug side effects/adverse reactions in humans, the use of drugs in research. Neuroscience 380F and Pharmacy 380F may not both be counted. Prerequisite: Graduate standing and a background in physiology and organic chemistry.

380N. Biomedical Pharmacology II. Fundamental concepts of pharmacology, including molecular mechanisms of drug action, absorption, distribution and elimination, tolerance, dependence, mutagenesis, teratogenesis, and carcinogenesis. Pharmacy students must take this course on the letter-grade basis. Neuroscience 380N and Pharmacy 380N may not both be counted. Prerequisite: Graduate standing, and Neuroscience 380F or consent of instructor.

382T. Principles of Neuroscience: Cellular and Molecular Neuroscience. A proseminar covering the core material on essential topics in neuroscience from the molecular to the systems level. Only one of the following may be counted: Biology 381C, Kinesiology 382T, Neuroscience 382T, Pharmacy 382T, Psychology 382T, Zoology 382T. Prerequisite: Graduate standing, consent of instructor, and concurrent enrollment in Neuroscience 185.

383C. Functional Neuroanatomy. An examination of the anatomy of the brain and spinal cord, emphasizing connections and functions of neural systems. Neuroscience 383C and Psychology 383C may not both be counted. Prerequisite: Graduate standing and consent of instructor.

383D. Neuropharmacology. Neuroscience 383D (or 483D) and Pharmacy 383D (or 483D) may not both be counted. Prerequisite: Graduate standing.

383T. Principles of Neuroscience: Systems and Behavioral Neuroscience. A proseminar covering the core material on essential topics in neuroscience from the molecular to the systems level. Only one of the following may be counted: Biology 381D, Kinesiology 383T, Neuroscience 383T, Pharmacy 383T, Psychology 383T, Zoology 383T. Prerequisite: Graduate standing, consent of instructor, and concurrent enrollment in Neuroscience 186.

384M. Advanced Statistics: Inferential. Same as Psychology 384M. Covers t-test, chi-square, analysis of variance, and nonparametric tests. Prerequisite: Graduate standing, an undergraduate statistics course, and consent of instructor.

185. Current Research in Cellular and Molecular Neuroscience. Review and discussion of research in the field of cell and molecular neuroscience, covering important early studies and contemporary work. One lecture hour a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing, consent of instructor, and concurrent enrollment in one of the following courses: Biology 381C, Kinesiology 382T, Neuroscience 382T, Pharmacy 382T, Psychology 382T.

185D. Responsible Conduct of Science. Ethical considerations in the conduct of science, including issues of animal welfare, data analysis, fraud, publications, misconduct, intellectual property, grants, peer review, and mentor responsibility. One lecture hour a week for one semester. Offered on the credit/no credit basis only. Neuroscience 185D and Pharmacy 185D may not both be counted. Prerequisite: Graduate standing.
385L. Graduate Physiology and Biophysics. Lectures, conference discussion, and laboratory projects, depending on topic. Not all topics are offered every year. With consent of instructor, may be repeated for credit when the topics vary. Prerequisite: Graduate standing, courses in organic chemistry, twelve semester hours of upper-division biological science, and consent of instructor.

Topic 1: Basic Processes of Nerve Cells. Three lecture hours a week for one semester. Only one of the following may be counted: Biology 381K (Topic 10: Basic Processes of Nerve Cells), Neuroscience 385L (Topic 1), Zoology 385L (Topic 13: Basic Processes of Nerve Cells).

Topic 2: Current Concepts in Neurobiology. Three lecture hours a week for one semester. Only one of the following may be counted: Biology 381K (Topic 4: Current Concepts in Neurobiology), Neuroscience 385L (Topic 2), Zoology 385L (Topic 15: Current Concepts in Neurobiology).

186. Current Research in Systems and Behavioral Neuroscience. Review and discussion of research in the field of systems and behavioral neuroscience, covering important early studies and contemporary work. One lecture hour a week for one semester. Offered on the letter-grade basis only. Prerequisite: Graduate standing, consent of instructor, and concurrent enrollment in one of the following courses: Biology 381D, Kinesiology 383T, Neuroscience 383T, Pharmacy 383T, Psychology 383T.

386S. Molecular Biology of the Nervous System. Study of the structure and function of macromolecules in the brain. Neuroscience 386S and Pharmacy 386S may not both be counted. Prerequisite: Graduate standing, and a course in biochemistry or consent of instructor.

388D. Individual Differences. Differences among individuals in abilities, motives, and personality: their measurement, their genetic and environmental sources, and their societal implications. Neuroscience 388D and Psychology 388D may not both be counted. Prerequisite: Graduate standing and consent of instructor.

190, 290, 390. Research. Individual research. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and fifteen semester hours of coursework in neuroscience. Students must sign up in the Neuroscience Graduate Studies Office before registering.

390D. Methods in Neuroscience. Laboratory experience in basic methods used in pharmacology and toxicology research. At least nine laboratory hours a week for one semester. Neuroscience 687KA and 390D may not both be counted. Prerequisite: Graduate standing.

390E. Methods in Neuropharmacology. Laboratory experience in basic methods used in pharmacology and toxicology research. At least nine laboratory hours a week for one semester. Neuroscience 687KB and 390E may not both be counted. Prerequisite: Graduate standing.

390P. Experimental Design and Statistics in Pharmacology. Classical and experimental design and analysis of variance as it relates to pharmacology and neuroscience research. Practical aspects of design and analysis. Nonlinear regression and its use in model fitting and hypothesis testing. Nine laboratory hours a week for one semester. Neuroscience 390P and Pharmacy 390P may not both be counted. Prerequisite: Graduate standing.

394P. Seminars in Behavioral Neuroscience and Biopsychology. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Current Topics in Behavioral Neuroscience. Brain-behavior relationships, particularly recent research in behavioral neuroscience, including the anatomical and neurochemical mechanisms of behavioral events, and behavioral influences on the brain. Offered on the credit/no credit basis only. Neuroscience 394P (Topic 1) and Psychology 394P (Topic 1: Current Topics in Behavioral Neuroscience) may not both be counted.

Topic 2: Clinical Psychopharmacology. Recent findings concerning the mechanisms of action and the behavioral effects of psychoactive drugs, particularly those used in psychiatry. Various drug types (such as sedative-hypnotics, hallucinogens, and drugs used to treat depression, schizophrenia, Parkinson’s disease, and anxiety) and pathways in the brain are discussed to examine the neurochemical basis of psychiatric disorders and substance abuse. Neuroscience 394P (Topic 2) and Psychology 394P (Topic 2: Clinical Psychopharmacology) may not both be counted.

Topic 3: Neurobiology of Learning and Memory. Neuroanatomical systems that are functionally related to basic forms of learning and memory in mammals. Neuroscience 394P (Topic 3) and Psychology 394P (Topic 3: Neurobiology of Learning and Memory) may not both be counted.

Topic 4: Advanced Topics in Neuroanatomy. Neuroanatomical systems and function across species. Basic forms of neuroanatomy in mammals. Neuroscience 394P (Topic 4) and Psychology 394P (Topic 7: Advanced Topics in Neuroanatomy) may not both be counted.
394U. *Seminars in Human Experimental Psychology.* May be repeated for credit when the topics vary. *Prerequisite:* Graduate standing and consent of instructor.

Topic 1: *Psychoacoustics.* Anatomy and physiology of the peripheral auditory system; behavioral measures of auditory performance—masking, sound localization, pitch and loudness perception, temporary and permanent hearing loss. Only one of the following may be counted: Communication Sciences and Disorders 394K (Topic 2: *Psychoacoustics*), Neuroscience 394U (Topic 1), Psychology 394U (Topic 5: *Psychoacoustics*).

Topic 2: *Topics in Vision and Hearing.* Current research in human vision and/or hearing. Neuroscience 394U (Topic 2) and Psychology 394U (Topic 8: *Topics in Vision and Hearing*) may not both be counted.

396D. *Clinical Psychopharmacology.* Same as Psychology 396D. Recent findings concerning the mechanisms of action and the behavioral effects of psychoactive drugs, particularly those used in psychiatry. *Prerequisite:* Graduate standing and consent of instructor.

698. *Thesis.* The equivalent of three lecture hours a week for one semester. Offered on the credit/no credit basis only. *Prerequisite:* For 698A, graduate standing in neuroscience and consent of the graduate adviser; for 698B, Neuroscience 698A.

399R, 699R, 999R. *Dissertation.* Offered on the credit/no credit basis only. *Prerequisite:* Admission to candidacy for the doctoral degree.

399W, 699W, 999W. *Dissertation.* Offered on the credit/no credit basis only. *Prerequisite:* Neuroscience 399R, 699R, or 999R.

**Related Courses**

Each of these courses is described in the section of this catalog for the program that offers it.

**Biology 381K.** *Ecology, Evolution, and Behavior: Physiology and Biophysics.*

  Topic 8: *Addiction Biology.*

**Biology 384K.** *Ecology, Evolution, and Behavior.*

  Topic: *Advanced Topics in Animal Communication.*

**Biology 385K.** *Ecology, Evolution, and Behavior: Genetics.*

  Topic 1: *Developmental Genetics.*

**Biology 392.** *Problems in Host-Parasite Biology.*

  Topic 1: *Current Topics in Virology and Immunology.*

**Biology 397J.** *Advanced Genetics.*

**Communication Sciences and Disorders 394E.** *Auditory Electrophysiology.*

**Communication Sciences and Disorders 396M.** *Instrumentation in Communication Sciences.*

**Communication Sciences and Disorders 396N.** *Speech Production and Perception.*

**Computer Sciences 394N.** *Neural Networks.*

**Electrical Engineering 385J, 685J.** *Topics in Biomedical Engineering.*


**Health Education 395.** *Advanced Topical Studies.*

  Topic 1: *Foundations of Health Promotion.*

**Kinesiology 382.** *Conference-Laboratory.*

  Topic 4: *Biomechanics Laboratory.*

**Kinesiology 395.** *Advanced Topical Studies.*


  Topic 10: *Neural Control of Posture and Locomotion.*

  Topic 28: *Physical Dimensions of Aging.*

**Linguistics 393.** *Seminar in Linguistic Topics.*

  Topic 4: *Neurolinguistics.*

**Mechanical Engineering 383Q.** *Analysis of Mechanical Systems.*

  Topic 8: *Digital Signal Processing.*

**Mechanical Engineering 385J.** *Topics in Biomedical Engineering.*

  Topic 15: *Biosignal Analysis.*

**Molecular Biology 395F.** *Genetics.*

**Molecular Biology 395G.** *Biochemistry.*

**Molecular Biology 395H.** *Cell Biology.*

**Molecular Biology 395J.** *Molecular Biology.*

**Pharmacy 380F.** *Biomedical Pharmacology I.*

**Pharmacy 189Q.** *Seminar in Alcohol Studies.*

**Psychology 383C.** *Functional Neuroanatomy.*

**Psychology 383M.** *Fundamentals of Physiological Psychology.*

**Psychology 391N.** *Learning and Memory.*

**Psychology 394P.** *Seminars in Behavioral Neuroscience and Biopsychology.*

  Topic 1: *Current Topics in Behavioral Neuroscience.*

  Topic 3: *Neurobiology of Learning and Memory.*

  Topic: *Behavioral Neuroendocrinology.*

  Topic: *Comparative Vertebrate Neuroanatomy.*

  Topic: *Integrative Systems of Neuroscience.*

**Psychology 394U.** *Seminars in Cognition and Perception.*

  Topic 5: *Psychoacoustics.*

  Topic: *Computational Modeling in Experimental Psychology.*
SCIENCE AND TECHNOLOGY COMMERCIALIZATION

Master of Science in Science and Technology Commercialization

The Master of Science in Science and Technology Commercialization is administered by IC² Institute, a nontraditional center for research and educational excellence. The institute also established and operates the Austin Technology Incubator.

The project-based Master of Science in Science and Technology Commercialization (MSSTC) focuses not only on general management knowledge and business skills but also on the specialized entrepreneurship, technology transfer, and commercialization expertise necessary to convert scientific knowledge and technology to wealth. Students in the program study all aspects of starting and managing entrepreneurial and intrapreneurial ventures, assessing a technology's commercial potential, and accelerating the movement of products and services from conception to market introduction and growth.

The one-year executive program provides graduate education for professionals while they continue their careers. Classes are generally held on alternate Fridays and Saturdays, with an additional three and one-half day orientation at the beginning of the program year. The MSSTC program is offered both on campus and online. The coursework is rigorous and demanding, requiring a serious commitment on the part of the student.

AREAS OF STUDY

The master's degree addresses challenges in both technology policy and technology enterprise.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Uttarayan Bagchi
John Sibley Butler
John Daly
Robert A. Peterson
Timothy W. Ruefli

ADMISSION REQUIREMENTS

The prospective student should have at least five years of professional experience, an above-average score on the Graduate Record Examinations General Test or the Graduate Management Admission Test, and an undergraduate grade point average of at least 3.00.

DEGREE REQUIREMENTS

The program requires thirty-six semester hours of graduate coursework. Students must enter the program in the summer and must take courses in a prescribed sequence. There are no electives.

FOR MORE INFORMATION

Location: 2815 San Gabriel Street, phone (512) 475-8900, fax (512) 475-8903; campus mail code: A0300
Mailing address: The University of Texas at Austin, MSSTC Program, IC² Institute, 2815 San Gabriel Street, Austin TX 78705-3596
E-mail: exec.ms@icc.utexas.edu
URL: http://msstc.ic2.org/

550  Fields of Study
GRADUATE COURSES

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Classes generally meet all day on alternate Fridays and Saturdays.

Science and Technology Commercialization: STC

380. Converting Technology to Wealth. The process of commercialization through which knowledge (ideas, innovations, science, technology, talent, and expertise) is converted to wealth. The importance of technology innovation and commercialization to the economy of a country. Students perform a technology assessment. Offered on the letter-grade basis only. Prerequisite: Graduate standing and admission to the science and technology commercialization program.

381. Legal Issues of the Commercialization Process. The numerous legal challenges faced by organizations as they commercialize technology in a global environment. Offered on the letter-grade basis only. Prerequisite: Graduate standing and admission to the science and technology commercialization program.

382. Marketing Technological Innovations. Forces that drive competition and industrial markets. Demand cycle, research and development and design cycle, process cycle, global market cycle. Competitive trends and new product and marketing strategies. Offered on the letter-grade basis only. Prerequisite: Graduate standing and admission to the science and technology commercialization program.

383. Technology Management and Transfer: Theory and Practice. The evaluation, formulation, and use of technology transfer models. Emphasis in case studies is on facilitating factors and barriers. Students develop and document a technology transfer model. Offered on the letter-grade basis only. Prerequisite: Graduate standing and admission to the science and technology commercialization program.

384. Strategic Analysis for Technology Commercialization. Technology strategy as part of business strategy. The use of models and other concepts to measure the effectiveness of commercialization; the analysis and measurement of risk. Offered on the letter-grade basis only. Prerequisite: Graduate standing and admission to the science and technology commercialization program.

385. Creative and Innovative Management. Concepts, ideas, initiatives, and methods used to give an organization a new direction or mode of operation; implementation of new ideas; successful moves in new directions. Offered on the letter-grade basis only. Prerequisite: Graduate standing and admission to the science and technology commercialization program.

386. Topics in Science and Technology Commercialization. The process of technology commercialization, managing technology, and other topics that include the commercialization of technology. May be repeated for credit when the topics vary. Offered on the letter-grade basis only. Prerequisite: Graduate standing and admission to the science and technology commercialization program.


Topic 2: Managing Risk in Science and Technology Commercialization. Risk analysis and strategies for the creation, implementation, and management of technology enterprises. Introduction to decision and risk analysis, methods for structuring and modeling decision problems, and application of methods to problems that involve risk and uncertainty in the commercialization of new technologies.

389. Problems in Specialized Fields. Independent study. Offered on the letter-grade basis only. Prerequisite: Graduate standing and admission to the science and technology commercialization program.
390. Government Policies: Science and Technology Commercialization. How government policies affect research and development and commercialization; how organizations can influence these policies, maximize their usefulness, or minimize their interference with the ability to commercialize technology. Offered on the letter-grade basis only. Prerequisite: Graduate standing and admission to the science and technology commercialization program.

391. The Internationalization of Technology. Critical technologies in the world market. Global commercialization efforts and processes for brokering technology internationally. Offered on the letter-grade basis only. Prerequisite: Graduate standing and admission to the science and technology commercialization program.

392C. Strategic Management of Intellectual Property. Methods of protecting intellectual property through patents, copyrights, trademarks, and a comprehensive trade secrets program. The extra activities that must occur in an organization at each step in the value chain to ensure that intellectual product and process property is well protected. Offered on the letter-grade basis only. Prerequisite: Graduate standing and admission to the science and technology commercialization program.

393. Conference Course in Science and Technology Commercialization. Individual study in selected aspects of the commercialization of technology. May be repeated for credit when the topics vary. Offered on the credit/no credit basis only. Prerequisite: Graduate standing, admission to the science and technology commercialization program, and consent of the graduate adviser.

394C. Managing New Product Development and Production. The current methods and best practices used by organizations to accelerate the product development process. Offered on the letter-grade basis only. Prerequisite: Graduate standing and admission to the science and technology commercialization program.

395. The Art and Science of Market-Driven Entrepreneurship. The process of creating new ventures: the dynamics of growth-oriented firms; the roles of entrepreneur and intrapreneur in organizational environments; factors that drive the creative process; the importance of entrepreneurship to the economy. Offered on the letter-grade basis only. Prerequisite: Graduate standing and admission to the science and technology commercialization program.

396. Technology Enterprise Design and Implementation. Students develop a detailed, growth-oriented business plan for a technology enterprise or project of their choice. Business plan evaluation and implementation. Offered on the letter-grade basis only. Prerequisite: Graduate standing and admission to the science and technology commercialization program.
WRITING

Master of Fine Arts

FACILITIES FOR GRADUATE WORK

The James A. Michener Center for Writers offers a cross-disciplinary Master of Fine Arts program that draws on strong programs in English (fiction and poetry), radio-television-film (screenwriting), and theatre (playwriting). The University Libraries, including the Fine Arts Library, provide rich resources for students interested in the creative process. The Harry Ransom Humanities Research Center houses a number of noted book collections as well as manuscripts, edited drafts, and early editions of creative works. The Jesse H. Jones Communication Center has extensive film and video production facilities, and the Performing Arts Center offers outstanding theatrical production facilities.

Students admitted to the program are offered James A. Michener Fellowships to support their study.

AREAS OF STUDY

Students seeking the MFA are expected to develop professional skills in at least two of the following fields of creative work: fiction, poetry, screenwriting, and playwriting. The curriculum requires students to work across disciplines; for example, the student might study fiction as a primary field and screenwriting as a secondary field. Each candidate must write a thesis in his or her primary field.

GRADUATE STUDIES COMMITTEE

The following faculty members served on the Graduate Studies Committee in the spring semester 2004–2005.

Michael W. Adams  Peter N. La Salle
Robert Foshko       James L. Magnuson
Zulfikar Ghose      Charles E. Ramirez-Berg
Elizabeth Harris    Thomas G. Schatz
R. Rolando Hinojosa-Smith  David Anthony Wevill
Judith Kroll       Thomas Bacon Whitbread
Joseph E. Kruppa    Suzan L. Zeder

DEGREE REQUIREMENTS

The student must complete at least fifty-four semester hours of coursework, including nine hours of creative work, six hours in studies courses, and three elective hours in the primary field; six hours of creative work and six hours in studies courses in the secondary field; a six-hour minor outside the primary and secondary fields; and the six-hour thesis course. Reviews conducted each semester determine the student’s eligibility to continue in the program. Further information about degree requirements is available from the graduate adviser.

FOR MORE INFORMATION

Campus address: J. Frank Dobie House (FDH), 702 East Dean Keeton Street, phone (512) 471-1601, fax (512) 471-9997; campus mail code: A3400

Mailing address: The University of Texas at Austin, MFA in Writing, James A. Michener Center for Writers, 702 East Dean Keeton Street, Austin TX 78705-3201

URL: http://www.utexas.edu/academic/mcw/
GRADUATE COURSES

Courses offered by the Departments of English, Radio-Television-Film, and Theatre and Dance make up the core of the MFA degree program, supplemented by courses in writing offered by the Michener Center.

The faculty has approval to offer the following courses in the academic years 2005–2006 and 2006–2007; however, not all courses are taught each semester or summer session. Students should consult the Course Schedule to determine which courses will be offered during a particular semester or summer session. The Course Schedule may also reflect changes made to the course inventory after the publication of this catalog.

Unless otherwise stated below, each course meets for three lecture hours a week for one semester.

Writing: WRT

380. Seminar in Writing. Topics include creative theory and problems in writing, editing, and publishing in a variety of media. Required introductory course for all MFA candidates in writing. Prerequisite: Graduate standing in writing, or graduate standing and consent of the graduate adviser.

182, 282, 382. Independent Projects. Restricted to advanced MFA candidates. Conference work and independent study. May be repeated for credit. Prerequisite: Graduate standing in writing, or graduate standing and consent of the graduate adviser.

698. Thesis. Individual instruction. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in writing and consent of the graduate adviser; for 698B, Writing 698A.
5. Members of Graduate Studies Committees

The faculty members and research scientists listed here were members of Graduate Studies Committees during the spring semester 2004–2005; the titles shown are for that period.

Peter F. Abboud, Professor, Center for Middle Eastern Studies and Department of Middle Eastern Studies
BS, London, 1956; MA, The American University in Cairo, 1960; PhD, Texas, 1964

P. Elizabeth Abel, RN, Associate Professor, School of Nursing
BSN, Iowa, 1975; MAN, 1978; PhD, Emory, 1987

Creed W. Abell, Professor, Henry M. Birlage Centennial Endowed Professor in Pharmacy, College of Pharmacy
BSCh, Virginia Military Institute, 1956; MSCh, Purdue, 1958; PhD, Wisconsin, 1962

Jacob A. Abraham, Professor, Cockrell Family Regents Chair in Engineering #8, Department of Electrical and Computer Engineering
BSEE, Kerala, 1970; MSEEE, Stanford, 1971; PhD, 1974

Lawrence D. Abraham, Professor, Department of Curriculum and Instruction and Department of Kinesiology and Health Education
BA, Oberlin College, 1971; MS, Kansas State Teacher's College, 1972; EdD, Columbia, 1975

Lee Abraham, Associate Professor, Department of Theatre and Dance
BA, Antioch College, 1970; MFA, California Institute of the Arts, 1977

Zsuzsanna I. Abrams, Assistant Professor, Department of Germanic Studies
BA, Wisconsin (Eau Claire), 1991; MA, Arizona, 1993; PhD, 1997

Robert H. Abzug, Professor, Oliver H. Radkey Regents Professor in History, Department of American Studies and Department of History
BA, Harvard, 1967; PhD, California (Berkeley), 1977

Gayle J. Acton, Associate Professor, School of Nursing
BSN, Central State, 1974; MSN, Oklahoma (Oklahoma City), 1980; PhD, Texas (Austin), 1993

Michael W. Adams, Distinguished Teaching Associate Professor, Department of English
BA, Texas Tech, 1968; PhD, Texas (Austin), 1973

Paul C. Adams, Assistant Professor, Department of Geography and the Environment
BEnvirond, Colorado (Boulder), 1984; MS, Wisconsin (Madison), 1990; PhD, 1993

Christopher O. Adejumo, Associate Professor, Center for African and African American Studies and Department of Art and Art History
BFA, Université nationale du Bénin, 1983; MFA, Massachusetts (Dartmouth), 1993; PhD, Ohio State, 1997

Ari Adut, Assistant Professor, Department of Sociology
BA, Bogazici Universitesi, 1993; DEA, École des Hautes Études en Sciences Sociales, 1994; PhD, Chicago, 2003

Seema Agarwala, Assistant Professor, Section of Neurobiology
BS, Calcutta, 1983; PhD, State University of New York (Stony Brook), 1990

J. K. Aggarwal, PE, Professor, Cullen Trust for Higher Education Endowed Professor in Engineering #2, Department of Computer Sciences and Department of Electrical and Computer Engineering
BS, Bombay, 1956; BE, Liverpool, 1960; MSEE, Illinois, 1961; PhD, 1964

Kamran S. Aghaie, Assistant Professor, Center for Middle Eastern Studies, Department of Middle Eastern Studies, and Center for Women's and Gender Studies
BA, Tennessee (Knoxville), 1991; MA, California (Los Angeles), 1995; PhD, 1999
C. Mauli Agrawal, Associate Professor, University of Texas Health Science Center at San Antonio
BTech, Indian Institute of Technology Kanpur, 1982; MS, Clemson, 1985; PhD, Duke, 1989

Ricardo C. Ainslie, Professor, Department of Educational Psychology
BA, California (Berkeley), 1972; MA, Michigan, 1975; PhD, 1979

Maruthi R. Akella, Assistant Professor, Department of Aerospace Engineering and Engineering Mechanics
BTechME, Calicut, 1992; MEAS E, Indian Institute of Science (Bangalore), 1994; PhD, Texas A&M (College Station), 1998

Duane G. Albrecht, Professor, Department of Psychology
BA, California (Berkeley), 1973; PhD, 1978

Adriana A. Alcantara, Assistant Professor, Department of Psychology
BA, California State (Long Beach), 1986; MA, Illinois (Urbana-Champaign), 1990; PhD, 1993

Kamran Asdar Ali, Assistant Professor, Department of Anthropology, Center for Middle Eastern Studies, and Department of Middle Eastern Studies
MB, BS, Karachi, 1987; MA, Johns Hopkins, 1991; PhD, 1997

Samer Ali, Assistant Professor, Center for Middle Eastern Studies and Department of Middle Eastern Studies
BA, Chicago, 1990; MA, Utah, 1997; PhD, Indiana (Bloomington), 2002

Kimberly A. Alidio, Assistant Professor, Center for Asian American Studies and Department of History
BA, Oberlin College, 1993; MA, Michigan (Ann Arbor), 1997; PhD, 2001

Edwin B. Allaire, Professor, Department of Philosophy
BA, Drew, 1956; MA, Iowa, 1958; PhD, 1960

Daniel Allcock, Associate Professor, Department of Mathematics
BSMath, BSPhy, Texas (Austin), 1991; PhD, California (Berkeley), 1996

David T. Allen, Professor, Melvin H. Gertz Regents Chair in Chemical Engineering, Department of Chemical Engineering
BSChE, Cornell, 1979; MSChE, California Institute of Technology, 1981; PhD, 1983

Gregory D. Allen, Professor, School of Music
BMusic, Oberlin College, 1970; MMusic, Peabody Conservatory of Music, 1972

Jafari S. Allen, Assistant Professor, Center for African and African American Studies, Department of Anthropology, and Center for Women’s and Gender Studies
BA, New York, 1997; MA, Columbia, 2000; MA, 2002; PhD, 2003

John R. Allison, Professor, Mary John and Ralph Spence Centennial Professor, Department of Information, Risk, and Operations Management
JD, Baylor, 1972

Andres Almazan, Assistant Professor, Department of Finance
Licenciatura en Ciencias Empresariales, Universidad de Málaga, 1989; Master en Economía, Centro de Estudios Monetarios y Financieros, 1991; PhD, Massachusetts Institute of Technology, 1996

Byron P. Almen, Assistant Professor, School of Music
BA, St. Olaf College, 1990; MMusic, Indiana (Bloomington), 1992; PhD, 1998

Dean Johnson Almy III, Assistant Professor, School of Architecture
BArch, Cornell, 1983; MArch, Texas (Austin), 1989

Anthony Alofsin, Professor, Roland Gommel Roessner Centennial Professor in Architecture, School of Architecture and Department of Art and Art History

Mark I. Alpert, Professor, Foley’s Professor in Retailing, Department of Marketing
BS, Massachusetts Institute of Technology, 1964; MBA, Southern California, 1965; MS, 1967; DBA, 1968

Kevin Alter, Associate Professor, School of Architecture
BA, Bennington College, 1985; MArch, Harvard, 1990

Orly Alter, Assistant Professor, Department of Biomedical Engineering
BS, Universitat Tel Aviv, 1989; PhD, Stanford, 1999

Aydogan Alti, Assistant Professor, Department of Finance
BA, Bogaziçi, 1996; PhD, Carnegie Mellon, 2002

Rosental Alves, Professor, Knight Chair in Journalism, School of Journalism
BA, Universidade Federal do Rio de Janeiro, 1977

Lorenzo Alvisi, Associate Professor, Department of Computer Sciences
Laurea, Università degli Studi di Bologna, 1987; MS, Cornell, 1994; PhD, 1995

Anthony P. Ambler, Professor, B. N. Gafford Professor in Electrical Engineering, Department of Electrical and Computer Engineering
BS, University of Manchester Institute of Science and Technology, 1976; MS, 1977; PhD, 1981

Edward Anderson, Assistant Professor, Department of Human Ecology
BS, Illinois (Urbana-Champaign), 1984; MA, Virginia, 1987; PhD, 1989
Edward G. Anderson, Associate Professor, Department of Management
BA, Stanford, 1988; MBA, Michigan (Ann Arbor), 1993; PhD, Massachusetts Institute of Technology, 1997

Robert D. Anderson, Senior Lecturer, Department of Art and Art History
BA, California State College (Long Beach), 1972; MFA, 1976

Ronald B. Anderson, Associate Professor, Department of Advertising
BA, Oklahoma, 1973; MS, San Diego State, 1979; PhD, Michigan State, 1987

Urton L. Anderson, Professor, Clark W. Thompson Jr. Professor in Accounting Education, Department of Accounting
BA, St. Olaf College, 1974; MA, Minnesota (Minneapolis-St. Paul), 1977; PhD, 1985

Jeffrey G. Andrews, Assistant Professor, Department of Electrical and Computer Engineering
BS, Harvey Mudd College, 1995; MS, Stanford, 1999; PhD, 2002

Jacqueline L. Angel, Associate Professor, Lyndon B. Johnson School of Public Affairs
BA, Pennsylvania State, 1979; MA, Oklahoma, 1983; PhD, Rutgers (New Brunswick), 1989

Ronald J. Angel, Professor, Department of Sociology
BA, Illinois (Urbana-Champaign), 1970; MS, Wisconsin (Madison), 1977; PhD, 1981

Ignazio Angelelli, Professor, Department of Philosophy
Doctorat, Université de Fribourg, 1965

Eric V. Anslyn, Distinguished Teaching Professor, Norman Hackerman Professor in Chemistry, Department of Chemistry and Biochemistry
BS, California State (Northridge), 1982; PhD, California Institute of Technology, 1987

Elliott Antokoletz, Professor, School of Music
BA, Hunter College, 1968; MA, 1970; PhD, City University of New York, 1975

Peter R. Antoniewicz, Professor, Department of Physics
BS, North Carolina State, 1959; MS, Purdue, 1964; PhD, 1965

Kenneth S. Apfel, Professor, Sid Richardson Chair in Public Affairs, Lyndon B. Johnson School of Public Affairs
BA, Massachusetts (Amherst), 1970; MA, Northwestern, 1973; MPAff, Texas (Austin), 1978

Dean R. Appling, Professor, Lester J. Reed Professor in Biochemistry, Department of Chemistry and Biochemistry
BS, Texas A&M, 1977; PhD, Vanderbilt, 1981

Aristotle Arapostathis, Professor, Department of Electrical and Computer Engineering
BSEE, Massachusetts Institute of Technology, 1976; MSEE, California (Berkeley), 1978; PhD, 1982

Todd Arborgast, Professor, Department of Mathematics
BS, Minnesota (Minneapolis-St. Paul), 1981; MS, Chicago, 1983; PhD, 1987

Katherine M. Arens, Professor, Department of Germanic Studies and Center for Women's and Gender Studies
BA, Northwestern, 1975; MA, Stanford, 1976; PhD, 1980

Efraim Pacillas Armendariz, Professor, Department of Mathematics
BA, Agricultural and Mechanical College of Texas, 1960; MS, 1962; PhD, Nebraska (Lincoln), 1966

Marilyn P. Armour, Assistant Professor, School of Social Work
BA, Bard College, 1965; MSW, Minnesota (Minneapolis-St. Paul), 1968; PhD, 2000

David Armstrong, Professor, Department of Classics
BA, Princeton, 1961; PhD, Texas (Austin), 1968

Neal E. Armstrong, PE, Professor, Zarrow Centennial Professor in Engineering, Department of Civil, Architectural, and Environmental Engineering
BA, Texas, 1962; MA, 1965; PhD, 1968

Victor L. Arnold, Professor, Kleberg–King Ranch Centennial Professor in Management, Department of Management
BS, Colorado State, 1965; MS, 1968; PhD, Wisconsin (Madison), 1971

Jossianna Arroyo Martinez, Associate Professor, Department of Spanish and Portuguese
BA, Universidad de Puerto Rico, Recinto de Rio Piedras, 1989; PhD, California (Berkeley), 1998

Karen Artzt, Ashbel Smith Professor, Section of Molecular Genetics and Microbiology
BA, Cornell, 1964; PhD, 1972

Francisco Arumi-Noé, Professor, School of Architecture
BS, North Carolina (Chapel Hill), 1962; MS, 1965; PhD, Texas (Austin), 1970

Nicholas M. Asher, Professor, Department of Linguistics and Department of Philosophy
BA, MA, Yale, 1976; BA, Oxford, 1978; PhM, Yale, 1981; PhD, 1982

Rowland Atiase, Professor, Department of Accounting
BS, Ghana, 1973; MBA, California (Berkeley), 1975; MAEcon, 1979; PhD, 1980

Nigel S. Atkinson, Associate Professor, Section of Neurobiology
BS, Texas A&M, 1979; PhD, Pennsylvania State (Hershey Medical Center), 1986
Simon D. Atkinson, Professor, Mike Hogg Professor in Community and Regional Planning, School of Architecture
Diploma in Architecture, Leeds School of Architecture and Planning, 1965; Diploma in Planning, School of Architecture, Architectural Association (England), 1966; MA in Regional Studies, Sussex, 1969; Associate, RIBA; Member, RTPI; FRSA

Robert D. Auerbach, Professor, Lyndon B. Johnson School of Public Affairs
BA, Roosevelt, 1950; MA, 1964; MA, Chicago, 1967; PhD, 1969

James A. Austin Jr., Senior Research Scientist, Institute for Geophysics
BA, Amherst, 1973; PhD, Massachusetts Institute of Technology, 1979

Kay Avant, RN, Associate Professor, School of Nursing
BSN, Texas Christian, 1963; MSN, North Carolina (Chapel Hill), 1965; PhD, Texas Woman's, 1978

James B. Ayres, Distinguished Teaching Professor, Shakespeare at Winedale Regents Professor, Department of English
BA, Baylor, 1958; MA, Florida State, 1960; PhD, Ohio State, 1964

Adnan Aziz, Associate Professor, Department of Electrical and Computer Engineering
Btech, Indian Institute of Technology (Kanpur), 1989; PhD, California (Berkeley), 1995

Ivo M. Babuska, Professor, Robert B. Trull Chair in Engineering, Department of Aerospace Engineering and Engineering Mechanics and Department of Mathematics
Dipling, Ceske vysoky uceni technické v Praze, 1949; Dr, 1951; Csc, Czechoslovak Academy of Sciences, 1955; Dsc, 1960

Uttarayan Bagchi, Professor, Department of Management
BS, Indian Institute of Technology (Kharagpur), 1974; MS, 1976; MS, Washington State, 1978; PhD, Pennsylvania State, 1982

Matthew Bailey, Associate Professor, Department of Spanish and Portuguese
BA, Maine (Orono), 1977; PhD, Tulane, 1989

Chandradjit L. Bajaj, Professor, Computational and Applied Mathematics Chair in Visualization, Department of Computer Sciences
Btech, Indian Institute of Technology (Delhi), 1980; MS, Pittsburgh, 1981; MS, Cornell, 1983; PhD, 1984

Mark B. Baker, Associate Professor, Department of Information, Risk, and Operations Management
BBA, Miami (Florida), 1968; JD, Southern Methodist, 1974

Mary J. Baker, Professor, Department of French and Italian
BA, Stanford, 1961; MA, Virginia, 1964; PhD, Harvard, 1969

Samuel Baker, Assistant Professor, Department of English
BA, Columbia, 1991; MA, Chicago, 1994; PhD, 2001

Anantaram Balakrishnan, Professor, Red McCombs Endowed Chair in Business No. 1, Department of Information, Risk, and Operations Management
Btech, Indian Institute of Technology (Madras), 1976; MBA, Indian Institute of Management (Ahmedabad), 1978; PhD, Massachusetts Institute of Technology, 1985

Ross Baldick, Professor, Department of Electrical and Computer Engineering
BSc, Sydney, 1983; BE, 1985; MSEECS, California (Berkeley), 1988; PhD, 1990

Kenneth S. Ball, PE, Professor, Department of Mechanical Engineering
BSME, Lehigh, 1982; MSME, Drexel, 1984; PhD, 1987

Dawna I. Ballard, Assistant Professor, Department of Communication Studies
BA, Howard, 1994; MA, California (Santa Barbara), 1997; PhD, 2002

Rebecca A. Baltzer, Professor, School of Music
BA, Randolph-Macon Woman's College, 1962; MA, Boston, 1964; PhD, 1973

Sanjay K. Banerjee, Professor, Cockrell Family Regents Chair in Engineering #4, Department of Electrical and Computer Engineering
Btech, Indian Institute of Technology (Kharagpur), 1979; MS, Illinois (Urbana-Champaign), 1981; PhD, 1983

Jay L. Banner, Professor, Department of Geological Sciences
BA, Pennsylvania, 1978; MSEarthSci, State University of New York (Stony Brook), 1981; PhD, 1986

Aaron Bar-Adon, Professor, Department of Linguistics, Center for Middle Eastern Studies, and Department of Middle Eastern Studies
BA, MA, ha'Universita ha'Ivrith bi'Yerushalayim, 1949; PhD, 1959

Zoltan D. Barany, Professor, Frank C. Erwin Jr. Centennial Professor in Government, Department of Government and Department of Slavic and Eurasian Studies
BA, Carleton, 1986; MA, Nebraska (Lincoln), 1988; PhD, Virginia, 1991

Paul F. Barbara, Professor, Richard J. V. Johnson–Welch Regents Chair in Chemistry, Department of Chemistry and Biochemistry
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MD, Tianjin Medical College, 1988; PhD, North Carolina (Chapel Hill), 1996

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BMusic, State University of New York (Fredonia), 1977; MMusic, Nebraska (Lincoln), 1979; PhD, Texas (Austin), 1987

Michael Young, Assistant Professor, Department of Sociology
BA, Columbia, 1989; PhD, New York, 2000

Phyllis C. Young, Professor, Parker C. Fielder Regents Professor in Music, School of Music
BMusic, Texas, 1949; MMusic, Nebraska (Lincoln), 1979; PhD, Texas (Austin), 1987

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BSCE, Duke, 1959; MSCE, Cornell, 1961; PhD, Lehigh, 1965

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BS, Marlboro College, 1972; PhD, Cornell, 1981

Emilio Zamora, Associate Professor, Department of History, School of Information, and Center for Mexican American Studies
BA, Texas A&I (Kingsville), 1969; MA, 1972; PhD, Texas (Austin), 1983

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Zhanmin Zhang, Assistant Professor, Department of Civil, Architectural, and Environmental Engineering  
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Jorge G. Zornberg, Assistant Professor, Department of Civil, Architectural, and Environmental Engineering  
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David Zuckerman, Professor, Department of Computer Sciences  
AB, Harvard, 1987; PhD, California (Berkeley), 1991
Appendix

Course Abbreviations

The University offers courses in the following fields of study. The abbreviations in the second column are used in catalogs, course schedules, and student records. Fields marked with a diamond are offered only at the undergraduate level.

- Accounting ........................................ ACC
- Actuarial foundations ............................ ACF
- Advertising ........................................ ADV
- Aerospace engineering .......................... ASE
- African and African American studies ...... AFR
- Air force science ................................ AFS
- American Sign Language ....................... ASL
- American studies ................................. AMS
- Ancient history and classical civilization .... AHC
- Anthropology ...................................... ANT
- Applied learning and development .......... ALD
- Arabic ................................................ ARA
- Archaeology ........................................ ARA
- Architectural engineering ...................... ARE
- Architectural interior design ................... ARI
- Architecture ........................................ ARC
- Art education ....................................... AED
- Art history .......................................... ARH
- Asian American studies ......................... AAS
- Asian studies ........................................ ANS
- Astronomy .......................................... AST
- Bassoon ............................................ BSN
- Bengali ............................................... BEN
- Biochemistry ....................................... BCH
- Biology ............................................... BIO
- Biomedical engineering ......................... BME
- Business administration ......................... B A
- Chemical engineering ............................ CHE
- Chemistry ........................................... CH
- Chinese ............................................... CHI
- Civil engineering ................................ C E
- Clarinet ............................................. CLA
- Classical civilization .............................. C C
- Cognitive science ................................ CGS
- Communication .................................... COM
- Communication sciences and disorders ...... CSD
- Communication studies .......................... CMS
- Community and regional planning .......... CRP
- Comparative literature ......................... C L
- Computational and applied mathematics ..... CAM
- Computer sciences ............................... C S
- Conducting ......................................... CON
- Cultural studies .................................... CLS
- Curriculum and instruction ...................... EDC
- Czech ................................................ CZ
- Danish ............................................... DAN
- Design ............................................... DES
- Developmental studies ......................... DEV
- Double bass ......................................... DB
- Drum set ............................................ DRS
- Dutch ................................................ DCH
- Economics .......................................... ECO
- Educational administration ..................... EDA
- Educational psychology ......................... EDP
- Electrical engineering ........................... E E
- Energy and mineral resources .................. EMR
- Engineering management ...................... ENM
- Engineering mechanics .......................... E M
- English ............................................... E
- Ensemble ............................................ ENS
- Euphonium ......................................... EUP
- European studies ................................. EUS
- Finance ............................................. FIN
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