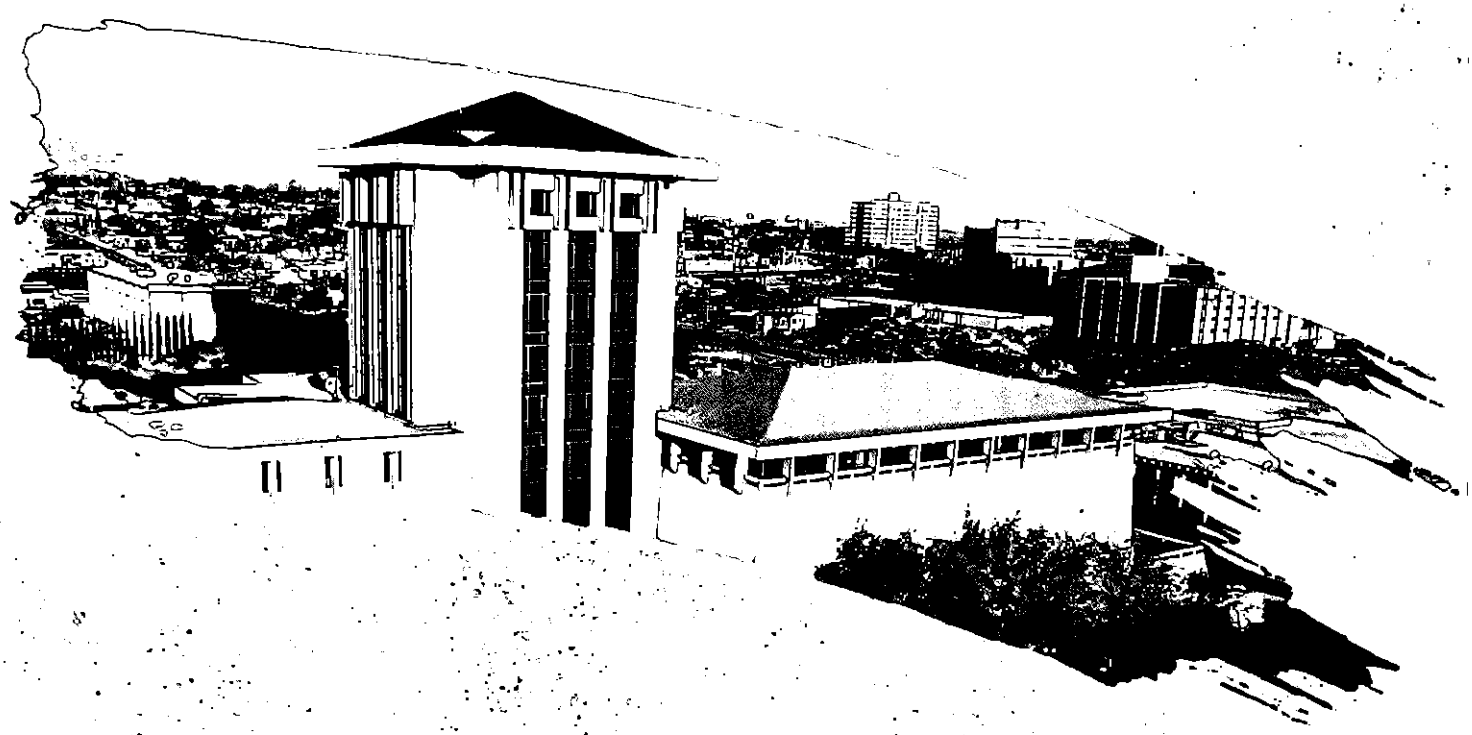
Graduate Studies 1991-1993



UTEP

THE UNIVERSITY OF TEXAS AT EL PASO

Degrees Offered and Areas of Study

Master of Accountancy

Master of Arts
- Applied English Linguistics
- Art
  - Art Education
  - Studio Art
- Communication
- Education
- English
  - English and American Literature
  - Creative Writing
  - Professional Writing and Rhetoric
- History
  - Border History
- Political Science
- Psychology
  - Clinical
  - General Experimental
- Sociology
- Spanish
- Theatre Arts

Master of Arts in Interdisciplinary Studies

Master of Arts in Teaching
- Mathematics

Master of Business Administration

Master of Education
- Education
- Educational Administration
- Educational Diagnostician
- Educational Supervision
- Guidance and Counseling
- Curriculum Specialist
- Instructional Specialist
- Reading Education
- Special Education

Master of Music
- Music Education
- Music Performance

Master in Public Administration

Master of Science
- Biological Sciences
- Chemistry
- Civil Engineering
- Computer Engineering
- Computer Science
- Economics
- Electrical Engineering
- Engineering
- Geological Sciences
- Geophysics
- Health and Physical Education — Physical Education
- Industrial Engineering
- Manufacturing Engineering
- Mathematics
- Mechanical Engineering
- Metallurgical and Materials Engineering
- Physics
- Speech-Language Pathology
- Statistics

Master of Science in Interdisciplinary Studies

Master of Science in Nursing

Ph.D. in Geological Sciences

Ph.D. in Electrical Engineering

U.T. Austin/U.T. El Paso Co-op Programs
- Master of Science in Social Work
- Doctor of Philosophy with concentration in Border Studies

The University of Texas at El Paso

Graduate Studies Catalog 1991–1993

General Information 3–29
Programs of Study 31–87
The Graduate Faculty 88–96
Index 97–98
Campus Map 100–101

September, 1991

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GENERAL INFORMATION

Introduction
Administration
Calendar, 1991-1993
Admission
Policies and Procedures
Financial Information
Facilities, Services and Student Life

University History

Founded in 1913 by the Texas Legislature, the institution now known as The University of Texas at El Paso is the second oldest academic component of The University of Texas System. Originally the State School of Mines and Metallurgy, its campus was first located on the present Fort Bliss Military Reservation where an historic monument marks the site. After a damaging fire, the school moved in 1916 to the present campus on the western foothills of the Franklin Mountains overlooking the Rio Grande.

The majestic site of over 300 acres, only a few hundred yards from the United States/Mexico border, is complemented by a characteristic and unusual architecture. The first buildings on the new campus, designed by the noted El Paso architect Henry Trost, began the tradition of Bhutanese style and details, unique in the Western Hemisphere. This motif was inspired by Kathleen Worrell, the wife of the first dean, who had seen photographs of Bhutan's distinctive buildings in a rugged mountain setting reminiscent of that of the college. Architects have continued the original theme as new buildings have been added to the campus.

The school experienced steady growth. In 1919 the institution became a branch of The University of Texas System and was renamed The Texas College of Mines and Metallurgy. In 1927 liberal arts courses were added to the curriculum, and in 1940 the Master of Arts became the first graduate degree offered. In 1949 the institution was renamed Texas Western College (enrollment 2,383), and in 1967 the name became The University of Texas at El Paso (enrollment 9,029).

Recent years have seen continuing growth, new facilities, and expansion of programs. Enrollment passed the 10,000 mark for the first time in 1968 and in 1990 reached a record high of 16,668. In 1974, the first doctoral-level degree program, the Doctor of Geological Sciences (now the Ph.D. in Geological Sciences), was approved by the Coordinating Board of the Texas College and University System, with the first degree awarded in 1979. In 1990, a second doctoral level degree program, a Ph.D. in Electrical Engineering was approved.

Structures added in recent years include the nine-story Education Building, Barry and Kelly residence halls, and the Dining Commons, all built in 1970; the Fox Fine Arts Center, opened in 1974; the Engineering-Science Complex, completed in 1976; and the Special Events Center, 1977. A major addition to the Union was completed in 1981. A new building for the College of Business Administration was completed in 1982, and a new University Library opened in 1984.

In 1989, The University of Texas at El Paso celebrated its Diamond Jubilee, the seventy-fifth anniversary of its founding by the Texas Legislature. The University enters its fourth quarter-century with a proud history, a distinctive physical plant, outstanding academic programs, a distinguished faculty, and a tradition of service to its student body and community.

PURPOSES AND GOALS

As an integral component of The University of Texas System in an unusual environment (both culturally and physically), and as a public comprehensive urban institution of higher education, The University of Texas at El Paso has a varied mission. Its goals include providing a wide range of baccalaureate, graduate, continuing education, and professional development opportunities for residents of the West Texas Region, the nation, and the international community. In addition, the University seeks to promote significant faculty creativity, discovery, and publication through research programs and artistic presentations. Finally, the University recognizes service obligations, both regionally and beyond, in such areas as culture, economics, health, sociopolitics, and technology.

As the only state-supported comprehensive university in far West Texas, the University has a major obligation to meet the higher education needs of its border constituency. The cultures that coexist in this region present the institution with significant challenges and unusual opportunities for instruction, research and service. The University of Texas at El Paso experiences in microcosm problems that characterize two nations that have different languages, cultures, and governments but that share a common physical environment. No other university within Texas or the nation deals with such issues on a comparable scale. The University of Texas at El Paso, therefore, is committed to promoting those disciplines that can capitalize on the strengths of its bicultural region. Its primary responsibility remains, however, to educate students irrespective of their cultural origins and to produce highly qualified graduates who have the intellectual sophistication to meet the challenges—both cultural and technological—of a complex modern world.

DEGREES AND PROGRAMS

The University of Texas at El Paso offers a wide range of degree options and programs, encompassing a comprehensive series of academic concentrations and selected areas of professional study. The six undergraduate Colleges—Business Administration, Education, Engineering, Liberal Arts, Nursing and Allied Health Sciences, and Science—comprise some twenty-nine academic departments and offer over sixty-five baccalaureate degree options. Master's degrees are offered in all six colleges, and since 1974 the doctorate has been offered in Geological Sciences. In 1990, a doctorate in Electrical Engineering was instituted. Graduate work is coordinated through the Graduate School.

The University is accredited through the doctoral level by the Southern Association of Schools and Colleges. Accreditation information relating to the individual colleges is shown in the sections about those colleges.

STUDENT BODY

UT El Paso's student body represents a unique mix of cultures reflective of its location in the largest metropolitan area on the U.S.-Mexico border and in the largest bilingual community on any political border in the world. Hispanic students make up over half the enrollment. In addition, the annual enrollment usually includes more than 1,000 international students from nearly 60 foreign countries. Because of its proximity to the international border, the University has the largest enrollment of Mexican citizens of any comparable university in the United States.

Board of Regents

OFFICERS

LOUIS A. BEECHERL, JR., Chairman
MARIO E. RAMIREZ, M.D., Vice-Chairman
ROBERT J. CRUIKSHANK, Vice-Chairman
ARTHUR H. DILLY, Executive Secretary

MEMBERS

Terms Expire February 1, 1993:
SAM BARSHOP, San Antonio
LOUIS A. BEECHERL, JR., Dallas
W.A. "TEX" MONCRIEF, JR., Fort Worth

Terms Expire February 1, 1995:
ROBERT J. CRUIKSHANK, Houston
TOM LOEFFLER, San Antonio
MARIO E. RAMIREZ, M.D., Roma

Terms Expire February 1, 1997:
REV. ZAN W. HOLMES, JR., Dallas
BERNARD RAPPOPORT, Waco
ELLEN C. TEMPLE, Lufkin

OFFICE OF THE CHANCELLOR

HANS MARK, Chancellor
JAMES P. DUNCAN, Executive Vice-Chancellor for Academic Affairs
CHARLES B. MULLINS, M.D., Executive Vice-Chancellor for Health Affairs
MICHAEL E. PATRICK, Executive Vice-Chancellor for Asset Management

Administrative Officers

DIANA S. NATALICIO, *President,* 1971*
B.S., St. Louis University; M.A., Ph.D., The University of Texas at Austin

JOHN GLYNDON BRUHN, *Vice President for Academic Affairs,* 1991
B.A., M.A., University of Nebraska; Ph.D., Yale University

GLEN I. WILLIAMS, *Vice President for Administration and Finance,* 1988
B.S., University of North Dakota; M.S., University of Minnesota

ARTURO PACHECO, *Vice President for Student Affairs,* 1991
A.A., San Jose College; B.A., San Jose State University; M.A., San Francisco State University; Ph.D., Stanford University

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PATRICIA T. CASTIGLIA, R.N., *Dean, The College of Nursing and Allied Health,* 1990
B.S., University of Buffalo; M.S., Ph.D., State University of New York at Buffalo

REYNALDO S. ELIZONDO, *Dean, The College of Science,* 1987
B.S., Texas A&M University; Ph.D., Tulane School of Medicine

JON MAURICE ENGELHARDT, *Dean, The College of Education,* 1988
B.A., M.A., Arizona State University; Ph.D., The University of Texas at Austin

FRANK HOY, *Dean, The College of Business Administration,* 1991
B.B.A., The University of Texas at El Paso; M.B.A.; University of North Texas; Ph.D., Texas A&M University

CARL THOMAS JACKSON, *Dean, The College of Liberal Arts,* 1962
A.B., University of New Mexico; Ph.D., University of California at Los Angeles

STEPHEN RITER, P.E., *Dean, The College of Engineering,* 1980
B.A., B.S.E.E., Rice University; M.S., Ph.D., University of Houston

JACK SMITH, *Dean, The Graduate School,* 1989
B.S., M.S., Ph.D., University of Arizona

*First year of appointment at The University of Texas at El Paso

THE GRADUATE SCHOOL

Since the awarding of the first master's degree in history in 1942, the graduate program has experienced significant growth. By 1955, a Graduate Division was needed, and in 1967 a Graduate School was organized. The present structure of the Graduate School was adopted in 1974. In that same year, the first doctoral-level degree program, the Doctor of Geological Sciences, was approved by the Coordinating Board of the Texas College and University System, with the first degree awarded in 1979. Today, the Graduate School offers, in addition to Doctor of Philosophy degrees in Geological Sciences and Electrical Engineering, eleven different Master's degrees in over 40 areas.

The Graduate School is essentially a body of professors and scholars designated as Members of the Graduate Faculty and of students duly admitted to pursue their studies beyond the baccalaureate degree. The Graduate School faculty and administration award all post-baccalaureate degrees conferred by the University under authority delegated by the Board of Regents of The University of Texas System.

Graduate School Administration

JACK SMITH, *Dean, The Graduate School,* 1989
B.S., M.S., Ph.D., University of Arizona

GUIDO ALAN BARRIENTOS, *Associate Dean for Graduate Studies,* 1963
B.A., Universidad de San Carlos (Guatemala), M.A., Ph.D., University of Kansas

ELEANOR FLORENCE MITCHELL, *Assistant to the Graduate Dean,* 1972
B.S., Lincoln University

The Graduate Council, 1991-1992

The Graduate Faculty of The University of Texas at El Paso exercises its legislative functions through a Graduate Assembly. The Graduate Assembly is the final faculty authority for recommending policies concerned with academic standards for admission and retention of students, for furthering the development of the graduate program, and other matters affecting graduate study. The Graduate Council serves as the administrative arm of the Graduate Assembly.

MARIA A. AMAYA (1994)
Assistant Professor of Nursing
College of Nursing and Allied Health

RICHARD BATH (1992)
Professor of Political Science
Chairman, Graduate Assembly and Graduate Council

JEFF BRANNON (1994)
Associate Professor of Economics and Finance
Member at Large

JAMES CRAIG (1992)
Professor of Physics
College of Science

DIANE DOSER (1993)
Associate Professor of Geological Sciences
Member at Large

PETER GOLDING (1993)
Associate Professor of Mechanical/Industrial Engineering
College of Engineering

WILLIAM HERNDON (1994)
Professor of Chemistry
College of Science

JAMES HOLCOMB (1994)
Assistant Professor of Economics and Finance
College of Business Administration

HARMON HOSCH (1992)
Associate Professor of Psychology
College of Liberal Arts

Z. ANTHONY KRUSZEWSKI (1993)
Professor of Political Science
Member at Large

LETICIA LANTICAN (1992)
Associate Professor of Nursing
College of Nursing and Allied Health

MO MAHMOOD (1994)
Associate Professor of Management
College of Business Administration

JAMES MILSON (1994)
Professor of Teacher Education
College of Education

MIGUEL PICORNELL (1993)
Assistant Professor of Civil Engineering
College of Engineering

ELLERY SCHALK (1994)
Professor of History
College of Liberal Arts

MILAGROS SEDA (1993)
Assistant Professor of Teacher Education
College of Education

ROBERTO VILLARREAL (1994)
Professor of Political Science
Member at Large

CARL HALL
Associate Professor of Mathematical Sciences
Chairman of the Faculty Senate

JACK SMITH
Dean of the Graduate School Ex-Officio

*Term expires on August 31 of the year indicated.

1991-1992 CALENDAR 1992-1993

FALL SEMESTER

1991			1992	
Mon	July 1	Admission applications due for Fall Semester (Upon submission of a $15.00 Late Fee, applications will be accepted after this date with the exception of international applications and supporting documents which must be received by the due date.)	Wed	July 1
April-July		Fall Telephone Pre-registration*	April-July	
Mon-Fri	Aug 19-23	Fall On-Campus Registration* (Registration will be conducted during varying times and days. Additional registration days may be scheduled prior to On-Campus Registration.)	Mon-Fri	Aug 24-28
Mon	Aug 26	Classes Begin	Mon	Aug 31
Mon-Fri	Aug 26-30	Late Registration and Add/Drop. Registration and Add/Drop end 5:00 p.m. on last day.	Mon-Fri	Aug 31-Sept. 4
Mon	Sept 2	Labor Day holiday	Mon	Sept 7
Wed	Sept 11	12th Class Day—Census Day	Wed	Sept 16
Fri	Sept 20	Last day to select Pass/Fail Option	Fri	Sept 25
Fri	Oct 4	Student Course Drop deadline	Fri	Oct 9
Mon	Oct 7	Graduation Application deadline for December degrees	Mon	Oct 12
Fri	Nov 15	Deadline for Faculty Course Drops	Fri	Nov 20
Thur-Fri	Nov 28-29	Thanksgiving holidays	Thur-Fri	Nov 26-27
Wed	Nov 27	Deadline for graduate degree candidates for submission of theses, dissertations and research papers, and for certification of graduate degree final examinations to the Graduate Dean	Fri	Dec 4
Fri	Dec 6	Last day of classes. Last day for Complete Withdrawal	Fri	Dec 11
Mon-Fri	Dec 9-13	Final examinations	Mon-Fri	Dec 14-18
Fri	Dec 13	Winter Commencement, 7:00 pm	Fri	Dec 18
Dec 16-Jan 19, 1992		Winter holidays for students	Dec 21-Jan 17, 1993	
Tue	Dec 17	Fall Semester final grades due in Registrar's Office, 12:00 noon	Tues	Dec 22
Mon	Dec 23	Grades mailed to students	Thurs	Dec 31

SPRING SEMESTER

1992			1993	
Fri	Nov 15, 1991	Admission applications due for Spring Semester (Upon submission of a $15.00 Late Fee, applications will be accepted after this date with the exception of international applications and supporting documents which must be received by the due date.)	Mon	Nov 17, 1992
November 1991		Spring Telephone Pre-registration*	November 1992	
Mon-Fri	Jan 13-17	Spring On-Campus Registration* (Registration will be conducted during varying times and days. Additional registration days may be scheduled prior to On-Campus Registration.)	Mon-Fri	Jan 11-15
Mon	Jan 20	Classes Begin	Mon	Jan 18
Mon-Fri	Jan 20-24	Late Registration and Add/Drop. Registration and Add/Drop end 5:00 pm on last day	Mon-Fri	Jan 18-22
Tues	Feb 4	12th Class Day—Census Day	Tues	Feb 2
Fri	Feb 14	Last day to select Pass/Fail Option	Fri	Feb 12
Fri	Feb 28	Student Course Drop deadline	Fri	Feb 26
Mon	Mar 2	May Graduation Application deadline for degrees	Mon	Mar 1
Mon-Fri	Mar 23-27	Spring holidays for students, no classes	Mon-Fri	Mar 22-26
Fri	Apr 10	Deadline for Faculty Course Drops	Fri	Apr 9
Fri	May 1	Deadline for graduate degree candidates for submission of theses, dissertations and research papers, and for certification of graduate degree final examinations to the Graduate Dean	Fri	Apr 30
Fri	May 8	Last day of classes. Last day for Complete Withdrawal	Fri	May 7
Mon-Fri	May 11-15	Final examinations	Mon-Fri	May 10-14
Sat	May 16	Spring Commencement, 7:00 pm	Sat	May 15
Tues	May 19	Spring Semester final grades due in Registrar's Office, 12:00 noon	Tues	May 18
Mon	May 25	Memorial Day Holiday	Mon	May 31
Tues	May 26	Grades mailed to students	Mon	May 24

SUMMER SESSION

1992			1993	
Wed	Apr 1	Admission applications due for Summer Session (Upon submission of a $15.00 Late Fee, applications will be accepted after this date with the exception of international applications and supporting documents which must be received by the due date.)	Thur	Apr 1
April		Summer Telephone Pre-registration*	April	
Mon-Fri	May 25-29	Summer On-Campus Registration* (Registration will be conducted during varying times and days. Additional registration days may be scheduled prior to On-Campus Registration.)	Mon-Fri	May 31-Jun 4
Mon	Jun 1	Classes Begin	Mon	Jun 7
Mon-Wed	Jun 1-3	Late Registration and Add/Drop. Registration and Add/Drop end 5:00 p.m. on last day.	Mon-Wed	Jun 7-9
Mon	Jun 8	6th Class Day—Census Day	Mon	Jun 14
Fri	Jun 12	Last day to select Pass/Fail Option	Fri	Jun 18
Fri	Jun 19	Student Course Drop deadline	Fri	Jun 25
Mon	Jun 22	Graduation Application deadline for August degrees	Mon	Jun 28
Fri	Jul 10	Deadline for Faculty Course Drops	Fri	Jul 16
Fri	Jul 10	Deadline for graduate degree candidates for submission of theses, dissertations and research papers, and for certification of graduate degree final examinations to the Graduate Dean	Fri	Jul 16
Wed	Jul 22	Last day of classes. Last day for Complete Withdrawal	Wed	Jul 28
Thur-Fri	Jul 23, 24	Final examinations	Thur-Fri	Jul 29, 30
Tues	Jul 28	Summer Session final grades due in Registrar's Office, 12:00 noon	Tues	Aug 3
Mon	Aug 3	Grades mailed to students	Mon	Aug 9

*Tentative. See term *Schedule of Classes* for confirmed Registration dates.

Admission into the Graduate School

A student who has a baccalaureate degree is processed for acceptance into a graduate program through the Graduate School unless the student is working toward a second undergraduate degree.

Applications for admission and all other admission documents should be submitted to the Office of Admission and Evaluation, 104 Academic Services Building. An individual should apply for admission either as a graduate student into a graduate program or as a post-baccalaureate student. A post-baccalaureate student is one who is interested in teacher certification or who is not interested in a degree at the time of enrollment but who wants to take courses for personal or educational enrichment.

Admissi n into a Graduate Program

General Requirements: The following documents must be submitted to the Office of Admission and Evaluation for consideration for acceptance into a graduate degree program:

1. Completed application for admission and immunization record. Applications from individuals who are not citizens or permanent residents of the United States must be accompanied by a *non-refundable $50 admission processing fee. The fee should* be in the form of a check or money order in U.S. dollars, made payable to The University of Texas at El Paso;
2. Proof of a baccalaureate degree from an accredited institution in the United States or of equivalent training at a foreign institution. Graduates of other colleges and universities must provide one complete, official transcript on which the baccalaureate degree is posted; if a master's degree has been earned, the official transcript reflecting that degree must also be furnished. If several institutions were attended, an official transcript is needed from each school where junior and senior level work was *completed. Applicants for the Master of Accountancy, Master of* Business Administration, and Master of Public Administration degrees must furnish official transcripts from each graduate and undergraduate college or university attended;
3. Evidence of a satisfactory grade point average (GPA) in upper division (junior and senior level) work and in any graduate work already completed;
4. A satisfactory score on a standardized examination (GRE, GMAT, MAT), if required by the graduate program, and the Test of English as a Foreign Language (TOEFL) for international students. Each applicant must have the official scores of required *examinations sent to the Office of Admission and Evaluation.* Student copies are not acceptable. UT El Paso students may obtain assistance from Study Skills and Tutorial Services in preparing for the standardized tests; and
5. Evidence of adequate subject preparation for the proposed graduate major.

The Committee on Graduate Studies of the proposed graduate major will recommend acceptance, conditional acceptance, or rejection after all required documents have been received by the Office of Admission and Evaluation and have been forwarded to the Graduate School for review. The Graduate Dean will notify the applicant of the *Committee's recommendation and of the Graduate Dean's decision.*

The Graduate Dean reserves the right to examine any application and, at his or her own discretion regardless of other criteria, admit or reject the student.

DEADLINES FOR SUBMISSION OF APPLICATIONS: An individual with a baccalaureate degree from an American college or university should submit the application for admission, official transcripts, and official test scores at least sixty days before the beginning of the semester or term for which admission is sought. The Office of Admission and Evaluation must receive all admission documents before forwarding the file to the Graduate School for departmental review. An individual who submits all admission documents during the week of registration and who meets all other admission requirements will be permitted to register during the late registration period.

International students should submit all documents for admission at least ninety days prior to the beginning of the semester or term for which admission is sought. International students needing a student visa to study in the United States must be accepted for admission into a graduate program before an I-20 can be issued.

GRADUATE ENTRANCE EXAMINATIONS: Standardized graduate entrance examinations are administered by the University's Counseling, Testing and Psychological Services. As part of graduate admission requirements, students may be required to take one or more of the following tests.

Graduate Record Examination General Test: The General Test of the Graduate Record Examination (GRE) is designed to test preparation and aptitude for graduate study. Most degree programs require the GRE for admission. For unconditional acceptance, students are required to achieve a score of 500 on the GRE verbal scale and 500 on the GRE analytical scale; applicants with lower scores may be accepted if other prerequisites are met with distinction as determined by the departmental graduate studies committee. The GRE is taken at the applicant's own expense and is given at UT El Paso five times a year, usually in October, December, February, April, and June.

Graduate Management Admission Test: The Graduate Management Admissions Test (GMAT) is an aptitude test designed to measure certain mental abilities important in the study of management at the graduate level. Students seeking admission to the M.B.A. or M.Acc. programs are usually required to achieve a score of 450 or higher. The GMAT is taken at the applicant's own expense and is given at UT El Paso four times a year, usually in October, January, March, and June.

Miller's Analogy Test: The Miller's Analogy Test (MAT) is designed to evaluate mental and reasoning abilities. Nursing students may be required to take the test after consultation with their graduate advisor. Students are usually required to achieve a score of 50 or higher on the test. The MAT is taken at the applicant's own expense and is given at UT El Paso at least once a week.

Test of English as a Foreign Language: The Test of English as a Foreign Language (TOEFL) is designed to measure the international student's proficiency in understanding the English language. Students from non-English speaking foreign countries must score at least a 550 on the TOEFL.

CLASSIFICATION OF GRADUATE STUDENTS: An individual applying for admission into a graduate degree program will be placed into one of the following admission categories after recommendation by the Committee on Graduate Studies and approval of the Graduate Dean:

Acceptance: An applicant will be accepted into a graduate program of the Graduate School if all official documents have been submitted and are in order, if the applicant shows evidence of satisfactory subject preparation, and if the Committee on Graduate Studies recommends acceptance without any conditions.

Conditional Acceptance: An applicant desiring to work toward an advanced degree in an area in which the undergraduate training is insufficient may be conditionally admitted into a graduate program with the understanding that coursework must be completed to make up the deficiencies noted by the graduate advisor. Such make-up work will be in addition to the regular degree requirements.

An applicant with less than the minimum grade point average required or with a less than satisfactory GRE, GMAT, or MAT score may also be conditionally admitted into a graduate program based on the recommendation of the Committee on Graduate Studies. The first 12 semester hours the conditional student must complete will be assigned by the graduate advisor. Frequently, special conditions will be included regarding the number of semester hours to be taken and the specific GPA to be maintained. If these conditions are not met, the student will not be permitted subsequent enrollment in the Graduate School. Only in the most exceptional cases will conditional students be allowed to drop or request a grade of incomplete in an assigned course.

Rejection: Normally, an applicant who fails to meet the minimum requirements for admission to a degree program will be denied admission. An applicant meeting the requirements for admission may be denied admission by the Committee on Graduate Studies in their proposed major if there are more qualified applicants than can be accommodated in the available facilities, or if there are more applicants than can be adequately instructed by the available faculty. A rejected student may reapply at a later time, may apply to another program, or may apply as a non-degree student.

INCOMPLETE DOCUMENTS: A citizen or permanent resident of the United States who has applied for admission to a graduate program and has furnished an official transcript but who has not furnished official test scores required for admission is eligible to enroll for the first semester, but the admission file will not be forwarded to the Graduate School for consideration for admission into a graduate program until all documents have been received.

A student admitted with incomplete documents may register for graduate courses with the permission of the graduate advisor; however, such registration does not constitute admission into a graduate program of the Graduate School. Courses taken prior to formal admission to a graduate program cannot be counted toward a graduate degree without specific recommendation of the departmental graduate studies committee and approval by the Graduate Dean. Such approval is rarely given for coursework taken after the student's first semester of study.

Students may be denied further enrollment after their first semester if all admission documents have not been received.

POST-BACCALAUREATE ADMISSION: An individual who has received a baccalaureate degree but who does not wish to apply for admission into a graduate program may apply for admission as a post-baccalaureate student. This type of admission is available to individuals who:

1. Are not seeking a graduate degree and wish to enroll in courses to enrich their educational background;
2. Intend to enter a graduate program at some future date, but need a substantial number of hours of prerequisite coursework; or
3. Wish to obtain teacher certification or endorsement from the College of Education.

Interested individuals must complete the Application for Post-Baccalaureate Admission and must submit an official transcript with the baccalaureate degree posted. If several institutions were attended, an official transcript is required from each institution from which junior and senior level credit was earned. Individuals who turn in their documents late and are accepted after the date noted in the Schedule of Classes will be allowed to register during the late registration period.

Post-baccalaureate admission is not available to international students who need a student visa (I-20) to attend school in the United States. Applicants for teacher certification must be citizens of the United States.

Admission as a post-baccalaureate student does not constitute admission into a graduate program of the Graduate School. An individual who also wishes to apply for admission into a graduate program must complete the Application for Admission into a Graduate Program and provide the documents described under "Admission into a Graduate Program."

A post-baccalaureate student who applies for admission to a graduate degree program will remain as a post-baccalaureate student until all admission documents have been provided.

Post-baccalaureate students may register for graduate courses with the permission of the graduate advisor for the graduate program to which the courses belong. However, no more than nine semester hours of courses taken prior to acceptance or conditional acceptance to the Graduate School may be approved for use toward a graduate degree. Such approval is given only for courses with a grade of "B" or better which are recommended by the graduate advisor.

RESERVING COURSES FOR GRADUATE CREDIT: Ordinarily, undergraduates are barred from graduate courses. A student who has a baccalaureate degree is not eligible to reserve courses for graduate credit. It is possible for undergraduate seniors to register in graduate courses in their last semester under the following conditions:

1. The undergraduate must not lack more than 12 semester hours (or 6 semester hours in an eight-week summer session) of work to complete all requirements for the baccalaureate degree and must have a grade-point average of at least 3.0 in junior and senior level courses.
2. These 12 hours (or less) must all be completed in the same semester or summer session in which the graduate courses are taken.
3. Total enrollment for all work must not exceed 15 semester hours (or 9 hours in a summer session).
4. All enrollment in graduate courses must be approved prior to registration by the graduate advisor of the department, the undergraduate dean, and the Graduate Dean.

An undergraduate cannot count credit for graduate courses toward a baccalaureate degree; it will be reserved for credit toward a graduate degree. A form for reserving courses for graduate credit, which needs the approval of the undergraduate dean, the graduate advisor in the student's major area, and the Graduate Dean, must be obtained from the Graduate School.

Policies and Procedures

Academic Regulations

REGISTRATION: Although every effort is made to advise students academically, final responsibility for registration rests with the student. Students may attend only those classes for which they are enrolled. A student is not enrolled in a course and will not receive a grade for it unless the proper fees are paid by the deadlines published in the catalog and class schedule or unless arrangements have been made for deferral of payment. After registration, class enrollments can be verified with the Graduate Dean or the Registrar.

University policy and dates governing registration and changes in registration are printed in the Schedule of Classes which is available prior to each semester or summer session.

GRADES AND GRADE-POINT AVERAGES: Credit is given in the Graduate School for the grades A, B, and C. Every semester hour of C, however, must be balanced by one of A, because the degree candidate is required to present an overall grade-point average of 3.0. Grades of D or F are not acceptable in courses which are to be used to satisfy minimum requirements for the graduate degree; such courses must be retaken (see "Repetition of Courses" below). In the event that a graduate student making a D is allowed to continue, the D must be balanced by two A's. An F must be balanced by three A's. A grade of A in a thesis course, dissertation course, or in a specifically authorized seminar, conference, or research course involving a report in lieu of a thesis may not be used to affect the GPA. Only upper division and graduate level courses taken in graduate status at the University or reserved in the senior year for graduate credit (except thesis, dissertation and authorized courses) are counted in the average.

In some courses the standard grading system is not practical; such courses are not counted in the grade-point average. Grades which fall in this category include I (incomplete), P (in progress), W (withdrawal), and S or U (in Pass/Fail courses).

INCOMPLETE OR IN PROGRESS WORK: Assignment of the grade I (incomplete) is made only in exceptional circumstances and requires the instructor to file with the Graduate Dean an outline of the work to be completed and the time span (in no case longer than one calendar year) allowable for the work's completion. In no case may *repetition of the course be assigned as work to be completed.* If the work has not been completed at the end of the specified time, the I will be changed to an F. Students will not be cleared for graduation until all incompletes have been eliminated from their record.

The grade of P (in progress) is limited to specific courses in which re-enrollment is required. This includes all thesis/dissertation courses (3598-3599, 3620-3621), graduate internships, and a few specified graduate courses. In appropriate courses a standard grade may be assigned instead of a P to a student enrolled in graduate internship courses.

COURSES TAKEN ON A PASS/FAIL BASIS: A student may elect to take an S or U (Pass/Fail) grade in a course, but this course cannot count as deficiency work or as a part of the minimum requirements for a degree.

STUDENT-INITIATED REGISTRATION CHANGES: The student should refer to the academic calendar at the beginning of this catalog or in the semester class schedule to identify the period during which adds, drops, withdrawals, and pass/fail registration may be accomplished. During Late Registration and Add/Drop period for each semester, all student changes in registration must have departmental approval. All student-initiated changes in registration require payment of an Add/Drop Fee.

Course Drops. It is the student's responsibility to officially drop any course that he/she no longer wishes to attend. Failure to do so may result in a grade of F on the student's academic record. Students dropping all classes are withdrawing and should consult the paragraphs on "Withdrawal from the University."

Classes dropped prior to the official census date of any term will be deleted from the student's semester record. Course drops filed by the student after this period but prior to the final deadline (end of the 6th week of a long session or an appropriately shorter period during a summer session), will result in a grade notation of W.

After the student drop deadline, students may be dropped from class only with approval of the instructor, who will initiate the drop transaction and assign the grade of W or F. Instructors are not obligated to drop students (see "Faculty-Initiated Course Drops" below).

FACULTY-INITIATED COURSE DROPS: At the discretion of the instructor, a student may be dropped from a course because of excessive absences or lack of effort. In all faculty-initiated course drops, the instructor determines whether the student is to receive a grade of W or F.

Students whose behavior in the classroom disrupts the teaching-learning process may be dropped upon the recommendation of the instructor, subject to the approval of the dean of students.

WITHDRAWAL FROM THE UNIVERSITY: Withdrawal from the University must be done through the Records Office, Office of the Registrar. If the withdrawal is completed prior to the deadline for student-initiated course drops, the student will receive W's. If the withdrawal is completed after that deadline, instructors will determine grades of W or F.

CLASS ATTENDANCE: The student is expected to attend all classes and laboratory sessions. It is the responsibility of the student to inform each instructor of extended absences. When, however, in the judgment of the instructor, a student has been absent to such a degree as to impair his or her status relative to credit for the course, the instructor may drop the student from the class with a grade of W or F.

Absence for Religious Holy Days: Students will receive permission to be absent for the observance of a religious holy day if the student has so notified the instructor of his/her intent in writing no later than the 15th day of the academic term. Students so excused will be permitted to take missed examinations or complete assignments.

REPETITION OF COURSES: In exceptional cases a course may be repeated and the new grade substituted for a previous grade provided the student has received written permission to do so from the Dean of the Graduate School prior to enrolling in the course to be repeated. *Any course repeated without adhering to this procedure will be used* along with all other previously attempted hours for that course in computing the grade point average.

COURSE LOAD: Graduate students who enroll for at least nine hours during a long semester or for at least six hours during a summer session are considered full-time graduate students. All other graduate students are considered part-time.

The maximum course load for a graduate student is 15 semester hours during a long semester, or nine semester hours in a summer term; registration in excess of these maxima must have the special consent of the Graduate Dean and will be permitted only under exceptional circumstances.

If the student is employed by the University as a teaching assistant, research assistant, or student assistant, the course load must be correspondingly reduced. The student should consult the graduate advisor about the combined course and work load.

Credit for supervised teaching is not counted in determining combined course and work load.

ACADEMIC STANDING: Students admitted into graduate programs must remove all admissions conditions within the time required and must maintain, in addition to the overall grade-point average, a 3.0 or better average in all upper division and graduate courses in the major and in the minor, respectively. Individual departments may impose more rigorous grading standards. High grades in courses outside the major and minor will not serve to bring up these averages. On the other hand, high grades in the major and minor may raise the overall average, provided they are in upper division or graduate courses.

Post-Baccalaureate students must maintain an overall grade-point average of 2.5 or higher.

ACADEMIC PROBATION AND DISMISSAL: A student admitted into a graduate program whose cumulative grade point average drops below 3.0 will be placed upon academic probation and must return his or her grade point average to at least 3.0 by the end of his or her next full-time academic enrollment period (whether semester or summer session). A student taking less than a full course load will have nine semester hours to return his or her grade point average to at least 3.0. Failure to meet the 3.0 grade point average requirement during the probationary period will result in the student's dismissal from the Graduate School. A student who has been dismissed may be readmitted for further graduate study in the same or in a different program only upon the recommendation of the relevant graduate studies committee and the approval of the Dean of the Graduate School.

Post-Baccalaureate students whose cumulative grade point averages drop below 2.5 will be placed on academic probation and must bring their grade point averages up to at least a 2.5 by the end of their next nine credit hours of enrollment. Failure to meet the 2.5 grade point average requirement during the probationary period will result in the student's dismissal from the University.

RESIDENCE: The minimum requirement for any degree is two semesters or the equivalent, which need not be consecutive.

A graduate student may register for certain courses without being in residence at the University. These include conference courses (with permission of the instructor), thesis, and dissertation courses.

No student may receive advice and assistance from a member of the faculty in the preparation of a thesis or dissertation without being registered (if necessary, for multiple semesters) for the appropriate thesis course.

COURSES COUNTED FOR ANOTHER DEGREE: No course counted toward another degree may be counted toward a graduate degree, either directly or by substitution.

PROGRAMS OF STUDY: During the first semester of graduate study each student must submit to the office of the Graduate Dean a Preliminary Program of Study signed by the departmental graduate advisor. The Preliminary Program of Study should show the courses required by the department which the student must complete prior to graduation. The selection of a supervising committee, composed of at least two departmental representatives and one member from outside the department (all members of the Graduate Faculty), may be delayed to the second semester of graduate study.

During the final semester of graduate study, each student must submit to the office of the Graduate Dean a Final Program of Study signed by the departmental graduate advisor. The Final Program of Study should show the courses taken and the courses required by the department which the student will complete during his or her last semester of graduate study. Programs which show an incomplete grade or an overall grade point average below a 3.0 average cannot be approved.

TRANSFER OF CREDIT: Ordinarily most work done for a graduate degree must be done at the University. For a master's degree usually 6 semester hours of graduate work may be transferred from another institution. However, additional transfer credit may be requested for appropriate work completed as an accepted graduate student in a graduate program at an accredited university. All course work transferred from other institutions requires both the approval of the committee on graduate studies in the student's major area and the Graduate Dean. In cases where such transfer is approved, the student must still meet the residence requirements of two full semesters or the equivalent. Courses for which a grade of "C" or lower was earned may not be transferred to UT El Paso. Correspondence courses are not accepted for graduate credit.

ENGLISH REQUIREMENTS: Students admitted to the Graduate School are expected to write papers and examinations in English, except in specified foreign language programs. For admission to some areas of graduate study, the student is required to pass an examination in English, in other areas, proficiency in written and spoken English will be checked in courses and in contacts with faculty members.

TIME LIMITS AND CATALOG CHANGES: All requirements for a master's degree must be completed within one six-year period. Work over six years old is lost and can be reinstated only by special permission of the Graduate Dean upon the recommendation of the committee on graduate studies. For the policy on time limits for completing requirements for doctoral degrees, consult the section on specific doctoral programs.

General and specific requirements for degrees in the Graduate School may be altered in successive catalogs. Provided the requisite course continues to be offered, the student is bound only by the course requirements of the catalog in force at the time of admission or re-admission within a six-year limit, unless, with the approval of the Graduate Dean, he or she elects to be bound by the course requirements of a subsequent catalog. This regulation applies to course requirements only.

General Degree Requirements

PREREQUISITES: Every master's degree program is based on the assumption that the student participating in it already possesses a general college education through the baccalaureate level. Accordingly, the first prerequisite for the entering student is a baccalaureate degree from an accredited institution (or, for international and special students, proof of equivalent training). A second prerequisite is that the entering student must have taken at least 12 semester hours of advanced undergraduate courses in the area of study in which he or she proposes to pursue a graduate major. Some areas may require more semester hours of undergraduate preparation. Students must earn at least a 3.0 grade point average in any deficiency work required. If a student without adequate preparation still wishes to enter a given graduate program, admission will be conditional until such time as the student has completed the courses of preparatory work designated by the graduate advisor. These courses will be in addition to the 30 hours (or more) required for the master's degree itself.

COURSE REQUIREMENTS: At least 30 semester hours of upper division and/or graduate instruction are required for any master's degree. Nine semester hours of upper division courses are the maximum allowable in any individual's program and not more than six semester hours may be included in either the major or the minor. Those graduate programs for which a major/minor is declared require the completion of at least 18 semester hours of instruction in the major area and a minimum of 6 hours in a supporting subject or subjects outside the major area. The relative number of hours in the major and minor fields, as well as the nature of the supporting work, will be determined in consultation with the student's graduate advisor. Every proposed program of work needs the approval of the Graduate Dean. The Graduate School discourages students from working toward more than one graduate degree at the same level.

THESIS REQUIREMENTS: The candidate for the master's degree writes a thesis under the direction of a supervising committee, consisting of at least two departmental representatives and one member from outside the department. The thesis is subject to the approval of the committee and ultimately to the approval of the Graduate Dean. The researching and writing of the thesis involves 6 semester hours of credit, but with special recommendation of the advisory committee and approval of the Dean, 9 semester hours of credit may be awarded. In order to earn the 6 credit hours for the thesis, the student must register for course 3598 when work on the thesis is begun. Thereafter, the student must register for 3599 during each semester or term in which work on the thesis is being done. Students may not enroll in 3598 and 3599 simultaneously, nor may they enroll in more than three hours of thesis at any one time.

Two completed and bound copies of the thesis, suitably titled, neatly printed on good quality bond paper in uniform large type, double-spaced, must be presented to the Dean of the Graduate School prior to the deadline date published in the Schedule of Classes for the semester in which the student intends to graduate. Both copies of the completed thesis submitted to the Graduate Dean's Office must bear original signatures of the members of the thesis committee.

If a student has not completed thesis work at the end of two years after the subject has been approved and recorded, the supervisor may require the choice of another subject. Credit in the thesis course will not be granted until the thesis is completed and approved. Information on thesis preparation should be obtained from the Graduate Dean's Office.

DISSERTATION REQUIREMENTS: The candidate for the doctoral degree writes a dissertation under the direction of a supervising committee. For composition of the supervising committee the student should refer to the section in this catalog that describes his/her respective doctoral program. The semester hours earned from the research and writing of the dissertation will depend upon the departmental program of study. The student must register for course 3620 when work on the dissertation is begun. Thereafter, the student must register for 3621 during each semester or term in which work on the dissertation is being done. Students may not enroll in 3620 and 3621 simultaneously.

An unbound original and two bound copies of the dissertation must be presented to the Dean of the Graduate School prior to the deadline date published in the Schedule of Classes for the semester in which the student intends to graduate. The dissertation must be suitably titled, neatly printed on good quality bond paper in uniform large type, double spaced and must bear the original signatures of the supervising committee.

With the dissertation the student must also present to the Graduate Dean two copies of an abstract not to exceed 350 words in length (double-spaced). The abstract will be forwarded to University Microfilms International for publication in "Dissertation Abstracts International."

The Graduate School also forwards the signed unbound original dissertation to University Microfilms International in Ann Arbor, Michigan, for micropublication. The student is required to pay the cost of microfilm reproduction and present the receipt received for payment to the Office of the Graduate Dean. Students presenting dissertations to the Graduate School must also complete and sign microfilm agreement forms that are available at the Graduate School.

IN-ABSENTIA REGISTRATION: A registered degree candidate who has completed the final requirements for the degree (including submission of the thesis or dissertation) too late for the semester deadline but before the first registration day of the following semester may register in absentia in the following semester or summer session for the sole purpose of receiving the degree. A student registered in absentia may not enroll for course work. See the Tuition and Fees section for a discussion of applicable fees.

SUBSTITUTIONS FOR THE THESIS: In selected programs, non-thesis options are available in lieu of the thesis. The particular option for each student must be approved by the departmental graduate advisor and the Graduate Dean. Among such non-thesis options are internship reports (where the internship is approved as an essential part of the graduate program by the Graduate Dean), professional reports, and reports or formal papers prepared in certain graduate seminar- or conference-type courses. Reports should be comparable to the thesis in every respect except for the evidence of original research. Reports and other formal papers are normally completed just as theses are; they must be reviewed and accepted by the supervising committee and upon acceptance of the report by the committee, the candidate submits two bound copies, consistent with theses in all respects, to the Office of the Graduate Dean for approval.

FINAL EXAMINATION: All graduate degree candidates are required to complete satisfactorily an oral or written examination or both. The examining committee, consisting of at least three members, will normally be the student's supervising committee. The committee will have one representative from the minor area, if the program has one. If there is no minor, one member of the committee must be from another department. Individual departments may elect to drop a student after a first or second failure of the examination upon the recommendation of the examining committee, but under no circumstances will a student be permitted to take the examination more than three times; a student failing such an examination for the third time will be dropped from the program.

GRADUATION REQUIREMENTS:

1. Completion of all required course work as listed on the Final Program of Study.
2. Acceptance of thesis, dissertation, or reports by the Graduate School.
3. Satisfactory completion of an oral or written exam or both.
4. Filing of an approved and paid Application for the Graduate Degree with the Registrar's Office.

DEGREE APPLICATION PROCEDURES: Graduate degree candidates must submit an Application for the Graduate Degree in the semester in which they expect to graduate and by the deadline date stated in the semester Class Schedule. This form must be completed by the student and approved by the Graduate Advisor. The student must bring the advisor-approved form to the Graduate School two to three weeks before the published deadline date to allow a complete review of the academic record. The degree application process is completed by payment of the Graduation Fee and filing the approved and paid application in the Registrar's Office. This fee is not refundable if the student does not graduate on the date specified in the application.

GRADUATION: Degrees are conferred at the end of each semester and at the end of the summer session. Formal commencement ceremonies are held in May for all candidates who complete degree requirements during the Spring Semester and in December for Fall candidates and graduates of the previous summer.

Specific Degree Requirem nts

MASTER OF ACCOUNTANCY: The objective of the Master of Accountancy program is to provide professional education for students interested in careers in Accounting. The program is designed to provide instruction in general accounting or to emphasize an area of accounting, specifically taxation, managerial, or financial/auditing.

Requirements for the Master of Accountancy degree are found under "Accounting" in this catalog.

MASTER OF ARTS: General requirements for all programs include:

1. A thesis (6 semester hours) plus 24 semester hours of coursework. There must be a minimum of 21 hours, including the thesis, of graduate courses (those numbered 3500 and above). For non-thesis programs, a minimum of 36 hours of coursework is required. Only 9 hours of 3300 and 3400 courses are permitted in a program and no more than 6 hours may be included in either the major or minor.
2. A major with a minimum of 18 semester hours including the thesis. Major fields for the Master of Arts include Art, Communication, Education, English, History, Linguistics, Political Science, Psychology, Sociology, Spanish, and Theatre Arts.
3. A minor of from 6 to 12 hours in a related field may be accepted or required by the department. A transfer student is normally expected to complete at least 3 hours of the minor in residence.

Specific Master of Arts degree requirements are found under the above departmental sections in this catalog.

MASTER OF ARTS IN INTERDISCIPLINARY STUDIES: The M.A.I.S. program is designed for the individual who, having completed a baccalaureate program or professional degree program at an accredited college or university, now wishes to expand his or her knowledge in areas outside of the previous training or present profession. To this end, each student will participate in the design of a degree program composed of courses offered by a variety of departments and core seminars designed specifically for students in the program.

Requirements for the M.A.I.S. degree are found under Master of Arts in Interdisciplinary Studies in this catalog.

MASTER OF ARTS IN TEACHING (With a Major in Mathematics): This program provides an opportunity for secondary school teachers of mathematics to earn an advanced degree with a primary emphasis on the subject matter of their field and at a level that will be of value in their classrooms. This option gives the student an opportunity to obtain a broad background in mathematics, rather than a specialized research-oriented program. The particular courses taken depend on the individual's background and interests and are selected in consultation with the Graduate Advisor of the Department of Mathematical Sciences.

Requirements for the Master of Arts in Teaching degree with a major in Mathematics are found under "Mathematics" in this catalog.

MASTER OF BUSINESS ADMINISTRATION: The objective of the M.B.A. program is to give students the opportunity to prepare for executive careers in business or in institutions that use business techniques and policies in management and administration. The program meets this objective by being broad in nature and aimed at general competence in overall management and administration. The

bulk of coursework is devoted to a broad understanding of the environment, controls and practices which are common to most institutions. The remaining courses are determined by the student's special area of interest or concern.

In addition, the M.B.A. program—in conjunction with the Master in Public Administration Program—offers qualified students the option of completing both the M.B.A. and the M.P.A. degrees simultaneously. The objective of this program is to permit students with broad interest in both the public and private sectors to register simultaneously in both programs. With the increasing interdependence of the public and private sectors, this option is attractive to those students wishing to pursue careers in positions that involve working with their counterparts in private or public organizations.

Requirements for the M.B.A. degree and the M.B.A.-M.P.A. option are found under "Business Administration" in this catalog.

MASTER OF EDUCATION: General requirements for all programs include:

1. Thirty-six semester hours of coursework.
2. There must be a minimum of 27 hours of graduate courses (those listed 3500 and above). The other courses must be those numbered 3300 and 3400 or above which are approved for graduate credit.
3. A transfer student must complete at least 3 semester hours of the minor in residence.

The following majors are offered:

Education
Educational Administration
Educational Diagnostician
Educational Supervision
Guidance and Counseling (School or Agency)
Curriculum Specialist
Instructional Specialist
Reading Education (All-Levels)
Special Education

Specific Master of Education degree requirements are found under the program area sections of this catalog, or students may consult the appropriate graduate advisor.

TEACHER CERTIFICATION: If a student wishes to work toward a graduate degree and at the same time meet the requirements for an initial teacher's certificate, he or she should consult with an advisor in the Advisement/Admissions Office and the appropriate graduate advisor.

The College also offers post-baccalaureate programs approved by the Texas Education Agency and the State Board of Education which lead to professional certificates (elementary, secondary and all-levels subject teaching fields; mid-management administration; superintendency; supervisor; reading specialist; diagnostician and counselor) and to endorsements (ESL, bilingual, kindergarten, special education counseling, special education supervision, and severely profoundly handicapped). Additional information about professional certificates and endorsements can be obtained from the Advisement/Admissions Office.

MASTER OF MUSIC: The Master of Music degree is offered in two programs: Performance, which specializes in the study of a performing medium; and Music Education, which is designed for advanced training in the teaching profession. All instrumental and vocal media are available for study.

Specific requirements for the Master of Music degrees are found under "Music" in this catalog.

MASTER IN PUBLIC ADMINISTRATION: The professional Master in Public Administration (M.P.A.) degree provides professional education for students interested in public service careers. The program is designed to stress the knowledge, skills, values and behavior essential to the successful public servant. Some flexibility in curriculum is permitted to meet the diverse educational needs of pre-entry and in-career students, changing career students, and students with interests in different career specialties in public administration. The curriculum components are designed to produce professionals capable of intelligent and creative analysis, communication, and action in the public sector.

In addition, the M.P.A. program—in conjunction with the Master in Business Administration Program—offers qualified students the option of completing both the M.P.A. and the M.B.A. degrees simultaneously. The objective of this program is to permit students with broad interest in both the public and private sectors to register simultaneously in both programs. With the increasing interdependence of the public and private sectors, this option is attractive to those students wishing to pursue careers in positions that involve working with their counterparts in private or public organizations.

Requirements for the M.P.A. degree and the two-degree option are found under "Political Science" in this catalog.

MASTER OF SCIENCE: General Requirements for all programs include:

1. A thesis (6 semester hours) plus 24 semester hours of coursework. (Some departments have plans requiring 36 hours without a thesis.) Only 9 hours of 3300 and 3400 courses may be included in either the major or minor.
2. A major with a minimum of 18 semester hours including the thesis. Major fields for the Master of Science include Biological Sciences, Chemistry, Civil Engineering, Computer Engineering, Computer Science, Economics, Electrical Engineering, Engineering, Geological Sciences, Geophysics, Health and Physical Education, Industrial Engineering, Manufacturing Engineering, Mathematics, Mechanical Engineering, Metallurgical and Materials Engineering, Physics, Speech-Language Pathology, and Statistics.
3. A minor of from 6 to 12 hours in a related field may be accepted or required by the department. A transfer student must complete at least 3 hours of the minor in residence.

Specific requirements for the M.S. degree may be found under the above departmental sections in this catalog.

MASTER OF SCIENCE IN INTERDISCIPLINARY STUDIES: The M.S.I.S. Program is designed for the individual who, having completed a baccalaureate program at an accredited college or university, now wishes to expand his or her knowledge at the graduate level not only in the baccalaureate field of study but more particularly in areas outside the previous training. Students' motivation for such training may stem from needs of their present employment, from the desire to prepare for unusual employment opportunities (outside the usual academic disciplines), and from the desire to be able to solve problems in trans-disciplinary areas. Individual programs of study are designed to fit the needs of the student.

Requirements for the M.S.I.S. degree are found under "Master of Science in Interdisciplinary Studies" in this catalog.

MASTER OF SCIENCE IN NURSING: This program offers to graduates the opportunity for advanced clinical nursing practice and for more complex functional roles. Students may select from among three clinical areas of concentration (Adult Health Nursing, Psychiatric-Mental Health Nursing, and Parent-Child Health Nursing).

Students may choose between two functional minors (education or nursing administration) and between the thesis and non-thesis options.

Requirements for the Master of Science in Nursing degree are found under "Nursing" in this catalog.

DOCTOR OF PHILOSOPHY DEGREE IN GEOLOGICAL SCIENCES: The Department of Geological Sciences offers the Ph.D. in Geological Sciences to outstanding students who wish to continue graduate studies at the doctoral level. Graduates from this program have gone on to successful careers in teaching, research, industry and governmental service. Outstanding students from allied areas of science and engineering are encouraged to apply for admission. A special program of leveling courses has been designed to make a crossover to the geological sciences possible with a minimum of delay.

Requirements for the Ph.D. in Geological Sciences are found under "Geological Sciences" in this catalog.

DOCTOR OF PHILOSOPHY DEGREE IN ELECTRICAL ENGINEERING: The Department of Electrical Engineering offers a Ph.D. in Electrical Engineering with an emphasis on computer systems.

COOPERATIVE MASTER OF SCIENCE IN SOCIAL WORK: The University of Texas at El Paso and The University of Texas at Austin cooperative M.S.S.W. degree program is intended to respond to expressed community and regional interests that will enhance social work practice and service and at the same time provide an opportunity for the development of research and knowledge related to the border region, its people, and its distinctive problems.

Students enrolled in the cooperative program will receive, upon graduation, an M.S.S.W. degree from UT Austin. Furthermore, most of the courses taken by students enrolled in the program will be taught by faculty members from Austin. However, some courses, particularly those which emphasize social work issues and concerns in a bicultural and borderlands environment, will be taught by UT El Paso faculty.

In addition to enrolling in 42 semester hours of classroom instruction, students will complete 18 hours of field placement instruction. The El Paso Program offers two nations and three states as possible settings for field practicums. El Paso, Texas, Cd. Juarez, Chihuahua, Mexico, and Las Cruces, New Mexico offer exciting field placement opportunities.

All of the classroom work will be held on the UT El Paso campus and courses are taught in the evenings and on weekends to accommodate students who are employed.

Further information about the program can be obtained from the Program Coordinator who is located in the Department of Sociology, Anthropology, Social Work and Criminal Justice on the UT El Paso Campus. That telephone number is (915) 747-5740.

COOPERATIVE DOCTORAL PROGRAM IN BORDER STUDIES: The University of Texas at El Paso and The University of Texas at Austin have long shared a vibrant interest in Latin America, Mexico, and the U.S.-Mexico borderlands.

Strong faculty, dynamic research centers, outstanding libraries, and exceptional field laboratories enable this program to offer unique opportunities for graduate study and research in these fields.

Through the Cooperative Doctoral Program in Border Studies, a graduate student may pursue studies focusing on the U.S.-Mexico borderlands within the following academic majors: sociology, geography, applied linguistics, history, economics, government (political science), anthropology, social work, community and regional planning, and Latin American Studies.

Since UT Austin is the degree-granting institution, the details of each student's program of studies must be developed within the context of departmental requirements and procedures currently in effect at UT Austin. Every student will be required to spend one full academic year at the Austin campus. At least six semester hours of course work and/or research must be completed at UT El Paso.

Admission to the program may be initiated at either institution. Students must qualify for admission to the Graduate Schools at UT El Paso and UT Austin and comply with all of the academic regulations of both campuses throughout the duration of the program. Students must also demonstrate oral and written competency in both English and Spanish to participate in the program.

Further information about the program may be obtained at the Center for Inter-American and Border Studies at UT El Paso, or the Graduate School or at the Institute for Latin American Studies at UT Austin.

Student Life Policies and Procedures

General Regulations

Detailed policies and procedures affecting student life are printed in the *Handbook of Operating Procedures*—Student Section. The handbook supplements the *Rules and Regulations* of the Board of Regents and covers student conduct and discipline, use of University facilities, student organizations, educational records and student publications. Copies of the Student Handbook may be obtained from the Student Affairs Office or the Student Association Office. The *Rules and Regulations* of the Board of Regents of The University of Texas System are also available in these offices.

While enrolled at the University a student neither loses the rights nor escapes the responsibilities of citizenship. A student who violates the law is subject to punishment by civil authorities or civil and campus authorities if the act is committed in conjunction with a campus activity. All students are expected and required to obey the law, to show respect for properly constituted authority and to observe correct standards of conduct.

Students are expected to maintain a high standard of honor in their scholastic work. Scholastic dishonesty (which includes the attempt of any student to present as his own the work of another, or any work which he has not honestly performed, or attempting to pass any examination by improper means) is a serious offense and will subject the student to disciplinary action. The aiding and abetting of a student in any dishonesty is held to be an equally serious offense.

The use, possession, or sale of any illegal drugs or narcotics including any amount of marijuana on the campus of the University is violation of *Regents' Rules and Regulations* and of University policies governing student conduct, as well as violation of State Law. In addition to possible criminal prosecution, student offenders will be subject to disciplinary action by the University. The minimum disciplinary penalty which will be imposed is suspension from the University for a specified period of time and/or suspension of rights and privileges, although permanent expulsion from the University could result.

Computer usage violations, use of alcoholic beverages, dishonesty, gambling, defacing of property, endangering the health or safety of others, use of abusive or vulgar language, altering of records, is prohibited at possession or use of firearms, failure to respond promptly to official notices, etc., will subject the student to disciplinary action.

The obstruction or disruption of any teaching, research, administrative, disciplinary, public service or other authorized activity on campus or on property owned or controlled by the University is prohibited and will subject the student or group of students to disciplinary action.

HAZING

Under the law, individuals or organizations engaging in hazing could be subject to fines and charged with a criminal offense.

According to the law, a person can commit a hazing offense not only by engaging in a hazing activity, but also by soliciting, directing, encouraging, aiding or attempting to aid another in hazing; by intentionally, knowingly or recklessly allowing hazing to occur; or by failing to report first-hand knowledge that a hazing incident is planned or has occurred in writing to the dean of students. The fact that a person consented to or acquiesced in a hazing activity is not a defense to prosecution for hazing under this law.

In an effort to encourage reporting of hazing incidents, the law grants immunity from civil or criminal liability to any person who reports a specific hazing event to the Dean of Students; and immunizes a person from participation in any judicial proceeding resulting from that report.

This law does not affect or in any way limit the right of the University to enforce its own rules against hazing. The University will pursue disciplinary action against any individual and/or registered student organization found participating in hazing activities.

The law defines hazing as any intentional, knowing, or reckless act, occurring on or off the campus of an educational institution, by one person alone or acting with others, directed against a student, that endangers the mental or physical health or safety of a student for the purpose of pledging, being initiated into, affiliating with, holding office in, or maintaining membership in any organization whose members are or include students at an educational institution. Hazing includes but is not limited to:

A. Any type of physical brutality, such as whipping, beating, striking, branding, electronic shocking, placing of a harmful substance on the body, or similar activity;
B. Any type of physical activity, such as sleep deprivation, exposure to the elements, confinement in a small space, calisthenics, or other activity that subjects the student to an unreasonable risk or harm or that adversely affects the mental or physical health or safety of the student;
C. Any activity involving consumption of food, liquid, alcoholic beverage, liquor, drug, or other substance which subjects the student to an unreasonable risk or harm or which adversely affects the mental or physical health of the student;
D. Any activity that intimidates or threatens the student with ostracism; that subjects the student to extreme mental stress, shame, or humiliation; or that adversely affects the mental health or dignity of the student or discourages the student from entering or remaining registered in an educational institution; or that may reasonably be expected to cause a student to leave the organization or the institution rather than submit to acts described in this subsection;
E. Any activity that induces, causes, or requires the student to perform a duty or task which involves a violation of the Penal Code.

PENALTIES

Penalties which may be imposed by the Dean of Students in conjunction with the approved disciplinary procedures include the following: admonition, disciplinary probation, withholding of grades, official transcript or degree, restitution, failing grade, denial of degree, suspension and expulsion, or revocation of degree and withdrawal of diploma or other penalty as deemed appropriate under the circumstances. In addition, certain privileges may be withdrawn consistent with the severity of the offense and the rehabilitation of the student. These penalties may be imposed singularly or in any combination upon individuals, groups or organizations.

DEBTS

The University is not responsible for any debts contracted by individual students or by student organizations. The University will not assume the role of collection agency for any organization, firm or individual to which students may owe money, nor will the University adjudicate disputes between students and creditors over the existence or amounts of debts.

DEBTS OWED TO THE UNIVERSITY

No student may refuse to pay or fail to pay a debt owed to the University. In the event of non-payment of debts owed to the University, one or more of the following actions may be taken by the University:

a. a bar against readmission,
b. withholding of the student's grades and official transcripts,
c. withholding of a degree to which the student might otherwise be entitled.

BAD CHECKS

A student who gives the University a check, draft or order which is not subsequently honored and the fault is not that of the bank, and who does not pay the University the amount due within five class days after the receipt of written notice that the bank has refused payment, may be subject to disciplinary action. A student who pays tuition and fees with a bad check, draft or order, the fault not being that of the bank, may be withdrawn from the University for non-payment of tuition and fees if the student fails to pay the University the amount due within five class days after receiving written notice.

IMMUNIZATION REQUIREMENT

In order to protect the health of the University community, all students are required to submit proof of immunization, or to be immunized, for Tetanus-Diphtheria, Measles, Mumps, and Rubella. In addition, international students must demonstrate freedom from Tuberculosis.

A form on which the required immunizations can be documented is available from the Office of Admission and Evaluation or the University Health Service. Since most secondary schools are required by law to maintain similar records, a copy of the high school immunization record may be submitted.

The University Health Service is responsible for assuring compliance by students with these requirements, and may deny registration if they have not been met. The Health Service provides the required immunizations free of charge, with the exception of X-ray screening for Tuberculosis for which there is a modest charge.

Student Educational Records

The University of Texas at El Paso has developed policies regarding educational records in accordance with the Family Educational Rights and Privacy Act of 1974 and legislation of the State of Texas. Full information regarding the University's policies and procedures is contained in the Student Section of the *Handbook of Operating Procedures*, which is published by the Office of Student Affairs, and is also available from the Office of the Registrar.

The University of Texas at El Paso defines educational records as those directly related to a student and maintained officially by the University. These will include: records relating to scholastic, disciplinary, and fiscal matters; records relating to services sought voluntarily by individual students; medical and counseling records; and personnel records of students which relate to jobs dependent on student status.

RELEASE OF INFORMATION FROM EDUCATIONAL RECORDS

Release of information from a student's educational records is governed by the provisions of the Family Educational Rights and Privacy Act of 1974. In general, educational records are *not* released to persons or agencies outside or inside the University except by explicit written request of the student. Exceptions to this include: appropriate University officials with legitimate educational interest, such as the student's dean or academic advisor; officials requesting information in connection with the student's application for financial aid, including scholarships and work-study grants, if such is necessary to the processing of the student's application or enforcement of conditions of such awards; state or federal agencies authorized by law or in compliance with a judicial order or subpoena; and persons requesting directory information as explained in the following section.

DIRECTORY INFORMATION

Directory information about a student is considered public information and is released without written consent. As defined by the Family Educational Rights and Privacy Act, directory information includes: student's name, telephone number, and address; dates of previous enrollments, number of currently enrolled hours and total completed semester hours; student's major and degree(s) awarded and date; degrees awarded; academic achievement, honors or other awards; high school(s) or most recent institution of higher learning which the student attended; participation in officially recognized activities and sports; and physical characteristics of members of the athletic teams.

Students have the right to restrict the release of the directory information as listed above. To do so, a written request must be filed with the Office of the Registrar. A restriction on the release of directory information will remain in effect until such time as a student so directs that the restriction be removed.

ACCESS TO RECORDS BY STUDENTS

Because of the importance of records to the student, not only while enrolled but for years afterward, the University encourages students to become familiar with the kinds of records maintained. Students have certain rights to review their records as outlined in the Student Section of the *Handbook of Operating Procedures*. Access to specific records should be made by written request to the University department maintaining that particular record. Access to records shall be granted to the student within a reasonable period of time. Students also have the right to challenge a perceived inaccuracy, misleading statement or perceived violation of privacy.

Financial Information

Tuition and Fees

The charges shown in these schedules must be paid by all students registering for credit. The amounts include the following:

Tuition

TEXAS RESIDENTS—$20 per semester hour with a minimum assessment of $100 for up to 5 semester hours. Effective Fall 1993, $22 per semester hour with a minimum assessment of $100 for up to 4 semester hours.

NON-RESIDENT/INTERNATIONAL STUDENTS—$128 per semester hour effective Fall 1991 through the 1992-1993 academic year. Non-resident/international students will be assessed the actual cost of education per semester hour as determined by the Texas Higher Education Coordinating Board.

CONCURRENT ENROLLMENT—Section 54.062 of the Texas Education Code provides for the following tuition procedure:

1. The student shall pay the full tuition charge to the first institution at which he or she is registered.
2. Generally, only the hourly rate is paid at the second institution. However, if the minimum amount is less at the first institution, then the student must pay the difference of the two minimums to the second institution but not less than the hourly rate. General fees, student service fees, union fees and optional fees are billed by each institution at its regularly authorized rate.

Mandatory Fees

GENERAL FEE—$6 per semester hour

STUDENT SERVICES FEE—$7.50 per semester hour, to a maximum of $90 (12 semester hours).

STUDENT GENERAL PROPERTY DEPOSIT—$10 fee assessed at *the time of the student's initial registration at the University.* This fee is refundable to the student at the end of his or her University enrollment less any loss, damage or breakage caused by the student. A property deposit which remains without call for refund for a period of four years from *the date of last attendance at the* University will be forfeited and will become the property of the Student General Property Deposit Endowment Fund. Such funds will be invested and the income will be used for scholarship purposes.

STUDENT UNION FEE—$15 per long semester. The Student Union Fee is compulsory. The Union Fee entitles the student free use of facilities, which includes *meeting rooms and lounge areas.* The purpose of this fee is for the maintenance and operation of the Union Building.

COURSE-RELATED FEES—assessment of varying amounts, based on courses for which the student is enrolled.

Tuition and Mandatory Fees Schedules for One Semester

Fall, Spring and Summer, per semester:*

Semester Hours	Resident Students (thru 1992-93 *academic year*)	Non Resident/ International Students (thru 1992-93 academic year)
1	$128.50	$ 156.50
2	142.00	298.00
3	155.50	439.50
4	169.00	581.00
5	182.50	722.50
6	216.00	864.00
7	249.50	1,005.50
8	283.00	1,147.00
9	316.50	1,288.50
10	350.00	1,430.00
11	383.50	1,571.50
12	417.00	1,713.00
13	443.00	1,847.00
14	469.00	1,981.00
15	495.00	2,115.00
16	521.00	2,249.00
17	547.00	2,383.00
18	573.00	2,517.00
19	599.00	2,651.00
20	625.00	2,785.00
21	651.00	2,919.00

Thesis/Dissertation—Students enrolling for courses 3598, 3599, 3620 or 3621 will be assessed as follows for tuition and mandatory fees:
Resident Students: $115.50
Non-Resident/International Students: $439.50

*Tuition and fees are subject to change due to legislative action

LAB AND FINE ARTS FEES

	LAB FEE	FINE ARTS FEE
AHS 3401, 3402	**$4.00**	
ART 3593		**$10.00**
ARTE 3311, 3312, 3321	**$4.00**	
ARTE 3501, 3511, 3522, 3597, 3598, 3599		**$10.00**
ARTF 3101, 3102, 3103, 3104	**$4.00**	
ARTG 3206, 3216, 3316, 3326, 3336, 3406, 3416, 3426	**$4.00**	
ARTG 3502, 3550		**$10.00**
ASTR 1107, 1108	**$10.00**	
BIOL 1107, 1108, 1212, 1498, 2498, 3426, 3505, 3518, 3520, 3521, 3524, 5502	**$8.00**	
BIOL 1215, 1217, 1319, 2423, 3498, 3502	**$30.00**	
BOT 2338	**$8.00**	
BOT 4210	**$10.00**	
CE 2396, 3313, 3314, 3105, 3488, 4390, 4456	**$8.00**	
CE 1336	**$10.00**	
CE 4448, 4509, 4539	**$20.00**	
CE 4537	**$28.00**	
CE 1453	**$30.00**	
CERM 3204, 3214, 3304, 3314, 3324	**$8.00**	
CERM 3404, 3414, 3424, 3502, 3550		**$10.00**
CHEM 1105, 1106	**$4.00**	
CHEM 1326, 1465, 1501	**$8.00**	
CHEM 1351, 1352, 1476, 3476, 4108	**$12.00**	
CHEM 4107	**$15.00**	
CHEM 1261, 1310, 1324, 1325, 2321, 2322, 2412	**$18.00**	
CIS 3315, 3235, 3335	**$2.00**	
DRAW 3208, 3218, 3308, 3318	**$8.00**	
DRAW 3410, 3420, 3430, 3502, 3550		**$10.00**
EE 3385	**$5.00**	
EE 3269	**$8.00**	
EE 1205, 1251, 2310, 2411, 2412, 4377	**$10.00**	
EE 1442, 1478, 4360	**$15.00**	
ESOL 2101, 2111, 2112	**$2.00**	
FREN 3201, 3202, 4101, 4102	**$2.00**	
GEOG 1106, 3208, 3308, 3310	**$8.00**	
GEOL 3533, 3355, 4505	**$5.00**	
GEOL 1101, 1102, 1455, 1457, 3103, 3104, 3321, 3355, 3462, 3567, 3575, 3579, 4111, 4112, 4458	**$8.00**	
GEOL 3380, 4320	**$10.00**	
GEOL 3213, 3305, 3315, 3325	**$12.00**	

GEOL 3214, 3541, 3542, 3594, 3595, 4323	**$15.00**
GEOL 2316, 3580	**$20.00**
GEOP 3330, 3557	**$10.00**
GEOP 3432, 3434, 3558	**$12.00**
GEOP 3333	**$15.00**
GERM 4101, 4102	**$2.00**
IE 3216, 3484	**$6.00**
IE 3236, 3377	**$12.00**
LATN 4101, 4102	**$2.00**
LING 4203, 4204	**$2.00**
MC 3201, 3302, 3305, 3406	**$5.00**
MC 1101, 3351	**$7.00**
MC 1220, 3307, 3321, 3407, 3454	**$10.00**
MC 1103, 3304, 3330	**$15.00**
MC 3353	**$17.00**
MECH 3443, 3501	**$6.00**
MECH 3305, 4354, 4451	**$12.00**
MEDT 1401, 1406, 2311, 3401, 3402, 3403	**$30.00**
MET 4305	**$6.00**
MET 4304, 4306, 4307, 4405, 4413, 4417	**$10.00**
MICR 1328, 1350, 1452, 2348	**$8.00**
MICR 1346	**$24.00**
MICR 1241, 1344, 1454, 1456	**$30.00**
MTLS 3203, 3213, 3303, 3313, 3323	**$8.00**
MTLS 3403, 3413, 3423, 3502, 3550	**$10.00**
MUSA 2181, 2191, 2391, 2581	**$20.00**
MUSA 3181, 3191, 3391, 3581, 3591, 4191, 4391	**$35.00**
NURS 6305, 6307	**$4.00**
NURS 3302, 6306, 7371, 7410, 7411, 7471, 7472	**$10.00**
NURS 7302, 7303, 7370	**$30.00**
PE 1101 (Swimming)	**$8.00**
PE 1101 (All Other Activities)	**$4.00**
PHYS 1217, 2217	**$8.00**
PHYS 1120, 1121, 1218, 2343, 2446, 4103, 4104	**$10.00**
PNTG 3201, 3231, 3301, 3331, 3341	**$4.00**
PNTG 3401	**$6.00**
PNTG 3431, 3441, 3502, 3550	**$10.00**
PRNT 3205, 3225, 3305, 3325, 3335	**$8.00**
PRNT 3405, 3425, 3435, 3502, 3550	**$10.00**
PSCI 3101	**$8.00**
PSCI 3101	**$15.00**
PSCI 3523	**$20.00**
PSYC 1301	**$8.00**
PSYC 3523	**$20.00**
RUSS 4101, 4102	**$2.00**
SCUL 3202, 3232, 3302, 3332, 3342	**$8.00**
SCUL 3402, 3432, 3442, 3502, 3550	**$10.00**
SPAN 3201, 4101, 4102, 4103, 4104	**$2.00**
ZOOL 1455, 1457, 1477, 1479	**$8.00**
ZOOL 4206	**$10.00**
ZOOL 1365	**$16.00**
ZOOL 4366	**$18.00**
ZOOL 1481	**$30.00**

INCIDENTAL FEES

ADD/DROP FEE—A fee of $5.00 is assessed each time a student makes a change in the initial registration.

AUDIT FEE—A fee of $5.00 per course will be assessed to a student who is currently enrolled at the University for auditing a course. For a person who is not enrolled at the University a fee of $25.00 per course will be assessed.

CATALOG FEE—A fee of $1 will be assessed to students that pick up the University catalog. A fee of $2.00 will be assessed to students that request a University catalog to be mailed.

COMPUTER USER CHARGE—A $10 assessment is made when a student enrolls for certain classes which include substantial use of University computing facilities. Such classes are identified in the semester class schedule.

DIPLOMA REPLACEMENT FEE—Diplomas are replaced at the student's request, if the student has lost the diploma or if the student's name has changed. A fee of $5.00 will be assessed to a student requesting a replacement diploma within one (1) year of the original order; a fee of $25.00 will be assessed to a student requesting a replacement diploma after the one (1) year period.

DISSERTATION MICROFILMING FEE—A fee of $45.00 is required of doctoral students who have presented the original and two bound copies of the dissertation to the Graduate School.

GEOLOGY FIELD COURSE TRANSPORTATION FEE of $200 will be assessed to students enrolled in Geology courses requiring extensive field trips during a semester.

GRADUATION APPLICATION LATE FEE—A fee of $15.00 will be assessed to all candidates for graduation who make application for graduation after the regular processing period has been completed. This fee is paid each time an application for degree is filed after the processing period deadline and under no circumstances is subject to refund. Veterans attending the University under an exemption as defined elsewhere in this section are not exempt from payment of this fee.

GRADUATION FEE—A fee of $15.00 is required of candidates for graduation. This fee must be paid each time an application for degree is filed and under no circumstances is subject to refund. Veterans attending the University under an exemption as defined elsewhere in this section are not exempt from payment of this fee.

IN ABSENTIA REGISTRATION FEE—A fee of $15.00 will be assessed to graduate students who have completed the degree requirements, including submission of the thesis or dissertation, after the semester deadline, but prior to registration for the following semester to register for the sole purpose of receiving the degree.

INSTRUMENT USERS FEE—A fee of $15.00 will be assessed to students per semester that wish to use musical instruments that are available through the Music Department.

INTERNATIONAL STUDENT APPLICATION FEE—A fee of $50.00 is assessed of all international students who apply for admission to UT El Paso. Applications not accompanied by a $50.00 check or money order, payable in U.S. funds, will not be considered. An individual who has applied, paid the fee, and been accepted but who does not enroll, will be considered for later admission only upon reapplication including payment of this fee again.

LATE REGISTRATION FEE—Any student who, with proper permission, registers after the appointed days for registering will be required to pay a special charge of $15.00 for the first late day and $5.00 for each additional late day to a maximum of $30.00 to defray the cost of the extra services required to effect the late registration.

LIBRARY FEES—The following fees will be assessed to students that fail to return library books when due in order to cover handling costs associated with inter-library loans, computer searches, media charges, coin-operated typewriters, photocopying, and processing lost books:

Overdue Charges	
Regular Check-Out	$0.25/day ($25.00 maximum)
Reserve Items	$0.50/hour ($25.00 maximum)
Inter-Library Loans	Varies by lending Library
Lost Books	Cost of book plus $10.00 processing fee and any fines accrued
Inter-Library Loans	All costs charged by suppliers
Computer Searches	115% of connect time plus any off-line print charges
Damaged Book Fee	$10.00
Recall Fee	$1.00/day ($25.00 maximum)
Media-Charges	Varies depending on type of equipment/service
	$0.25 for 15 minutes
Coin-Operated Typewriters	$0.05 to $0.50/copy
Photocopier	$1.15/microfilm or fiche

RETURNED CHECK FEE—A fee of $15.00 will be assessed to students that issue payment to the University with a check that is returned to the University for insufficient funds.

SPECIAL EXAMINATION FEE—A fee of $1.00 is required of persons who wish to take an advanced standing examination, an examination to remove a condition, or an examination to be given at a time other than that for which it is regularly scheduled. Permission of the academic dean must be secured before payment is made.

STUDENT HOUSING DEPOSIT—A $75.00 deposit will be assessed to all students applying for Residence Hall housing and a $150.00 deposit will be assessed to students applying for Student Family housing. A Student Housing Deposit will be forfeited under any of the following conditions.

a. A Housing Deposit which remains without call for refund for a period of four (4) years from the date of last attendance at the University;
b. For any reason of non-payment of rent and will be applied to the outstanding balance owed to the University and/or applied for repairs and damages (except for reasonable wear and tear) to the unit leased; or
c. Failure of a student to abide by the Terms and Conditions of Occupancy and/or the University and Student Family Housing Regulations or Residence Hall Regulations resulting in the University terminating a Student Family Housing Agreement or Residence Hall Agreement.

STUDENT IDENTIFICATION CARD REPLACEMENT FEE—A fee of $10 will be assessed students for reissuing a Student I.D. Card due to loss or destruction. Free I.D. Cards are issued to Freshman students and transfer students. Cards five (5) years or older are replaced free.

STUDENT TEACHING FEE—A fee of $50.00 will be assessed students approved for Student Teaching during the Fall and Spring semesters.

TEACHER CERTIFICATION CREDENTIALS FEE—A fee of $10.00 will be assessed to students enrolled in the Teacher Education Program who are having their academic credentials evaluated for meeting certification requirements set by the Texas Education Agency.

TEST FEES—Students requesting administration of graduate or undergraduate admission testing; professional certification testing; GED testing; or placement and credit testing will be assessed a fee ranging from $5.00 to $42.00 per test based on the test subscription costs.

TRANSCRIPT FEE—A fee of $1.00 will be assessed to students for an unofficial copy of their transcript. A fee of $2.00 will be assessed for an official copy.

TRANSPORTATION FEES (Field Trip Fees) will vary according to the destination of the trip involved in the course.

PARKING FEE

The Board of Regents has approved parking fees as follows for those students desiring to park on the campus.

CLASSES OF PERMITS AND ANNUAL FEES

Perimeter Parking Lots

Allows the holder to park in any perimeter area designated for their particular class of permit.

Class A-P	$20.00	All Students (including Graduates)
	$16.50	If purchased during the Spring Semester
	$10.00	If purchased during the Summer Session

Remote Parking Lots

Allows the holder to park in any remote area designated for their particular class of permit.

Class A-R	$10.00	All Students

Other Class Permits

Class H	$ -0-	No charge if vehicle is in compliance with Vernon's Annotated Texas Civil Statutes, Articles 6675a-5-e, and 6675a-5e and 5.e.1 for disabled persons.
	$20.00	If issued to disabled person not in compliance with above
	$12.00	If purchased during the Spring Semester
	$ 6.50	If purchased during the Summer Session
Class M	$10.00	All Student motorcycles
	$ 6.50	If purchased during the Spring Semester
	$ 4.00	If purchased during the Summer Session
Class D	$ -0-	No charge for residents of University Residence Halls
Class V	$ -0-	No charge for residents of UTEP Village
Class R	$ 1.00	A non-refundable $1.00 fee per person, per semester shall be collected, separate from the regular parking decal fee. A minimum of three (3), maximum of five (5) students per group are required in order to participate in the Share-a-ride program.
Replacement Decal	$ 1.00	
Temporary	$ 5.00	One month only as approved

Methods of Payment

Master Card, Visa and Discover will be accepted for payment of tuition and fees.

The University offers the following two payment options *during long semesters only.*

1. Full payment of tuition and all fees at the time of registration.
2. One half payment of tuition, mandatory and course-related fees at the time of registration, with the remaining two quarters due in equal installments by the sixth and eleventh week of classes.

Items for which payment CAN be deferred under option 2 include the following:

—Tuition
—Mandatory Fees (General Fee, Student Services Fee, Student Union Fee)
—Laboratory Fees
—Course-related Fees (such as Transportation Fees, Computer User Fees)
—Supplemental Fee for Fine Arts

Items for which payment MAY NOT be deferred include the following:

—Student General Property Deposit
—Optional Incidental Fees (such as Late registration, Add/Drop, Installment Tuition Handling Feees, etc.)
—Discretionary Fees (liability insurance, health insurance)
—Optional Fees (such as Parking Decal Fees)
—Amounts due for financial holds or from prior periods

The following additional policies will apply to deferral of payments:

1. All student account balances due from prior semesters, including items associated with payment deferred, must be paid in full before a student may begin registration for a subsequent semester.
2. A payment plan selected at the time of registration will be binding and will be applied in any subsequent add/drop activities; however, pre-payment of outstanding balances will be accepted. The University shall assess the Installment Tuition Handling Fee of $12.00 for those students choosing payment option 2; this charge is payable at the time of registration. An Installment Tuition Delinquency Fee of $10.00 will be assessed at the end of the sixth and eleventh week of classes if the payment due for that period is not paid in full.
3. The Bursar's Office of the University will send bills during the fourth and ninth week, as appropriate, to students paying tuition and fees under Option 2.
4. The courses for which a student is enrolled on the official census date—12th class day in a long semester—will be the basis for the student's tuition and fees assessment. Except for students who officially withdraw up to the end of the refund period as indicated in the Schedule of Classes, no reduction in amounts due will be made after this date; further, the student is obligated to pay the assessed amounts whether or not class attendance is subsequently interrupted or terminated.
5. Section 54.007 of the Texas Education Code, which authorizes the option of paying tuition and fees by installment, also provides for the following penalties for non-payment:

   A student who fails to provide full payment of tuition and fees, including any late fees assessed, to the University when the payments are due is subject to one or more of the following actions at the University's option:

   a. Bar against readmission at the institution;

b. Withholding of grades, degree and official transcript; and
c. All penalties and actions authorized by law.

Refund of Tuition and Fees

Refund policies are eslablished by, and are subject to change by, the Legislature of the State of Texas and are applicable to withdrawals and dropped courses. Refunds of tuition, laboratory fees, general fees and student services fees will be made under the following conditions.

WITHDRAWALS—Students withdrawing during a long semester will be refunded applicable tuition and fees as follows:

Prior to first class day	100% less $15.00
During first five class days	80%
During second five class days	70%
During third five class days	50%
During fourth five class days	25%
After fourth five class days	No Refund

DROPPED COURSES—Refunds of applicable tuition and fees will be made for courses from which students drop within the first twelve class days of a Long Session semester or an appropriately shorter period for a Summer Session term, provided the student remains enrolled for that semester or term. Refund of tuition for dropped courses will be made only if the original payment exceeds the established minimum amount.

Refunds of tuition and fees paid in the student's behalf by a sponsor, donor or scholarship will be made to the source rather than directly to the student who has withdrawn or dropped courses if the funds were made available through the University. Students who withdraw or drop courses must, in order to qualify for a refund, surrender all applicable privileges, including identification cards and athletic and cultural entertainment tickets. Refunds provided for above will be granted if applied for by the end of the semester in which the withdrawal or drop was appropriately completed. Refunds for students who owe balances in deferred payment of tuition/fees will be credited to the student's account.

Housing Expenses

Residence Hall room rates for 1990-91 are as follows:

Room Only

ONE SEMESTER CONTRACT—4 + months (110 days)	
Double Room	$1,005
Suite (double occupancy)	1,155
Private Room (when available)	1,305
Private Suite (when available)	1,455
LONG SESSION CONTRACT—9 months (220 days)	
Double Room	1,750
Suite (double occupancy)	2,050
Private Room (when available)	2,350
Private Suite (when available)	2,650

* A $75 per semester rate reduction will be offered to students who pay the entire semester charge for a long session in advance as opposed to the normal three (3) payments per semester plan.

Meal Plans

Optional meal plans and resident meal plans are available throughout the long session and Summer Session by the University Food Services.

Student Family Apartments

Monthly rent (includes utilities)	$ 300

Rates are subject to change by action of the Board of Regents, The University of Texas System. Further information about the UT El Paso student housing facilities, as well as application forms, can be obtained from:

Housing Business Office
Kelly Hall #105
UT El Paso
El Paso, TX 79968

RESIDENCY REGULATIONS FOR TUITION PURPOSES

The Texas Education Code authorizes the Texas Higher Education Coordinating Board to promulgate regulations governing residency status for tuition purposes in public institutions of higher education. These regulations are subject to change, and portions of the current regulations are reprinted below as a convenience to the student. The complete *Rules and Regulations: Residence Status* booklet prepared by the Texas Higher Education Coordinating Board can be obtained from the Office of Admission and Evaluation.

A student entering The University of Texas at El Paso for the first time or after an absence of more than one year should carefully review these residency regulations to make sure the correct tuition is paid.

INTRODUCTION

Under state statutes and Coordinating Board rules and regulations interpreting those statutes, a prospective student will be classified as a resident, nonresident, or foreign student. A person who has lived in the state under circumstances specified in these rules will be eligible for classification as a resident. A citizen, national or permanent resident of the United States who does not meet resident criteria will be classified as a nonresident. An alien who is not a permanent resident of the United States and who has not been permitted by Congress to adopt the United States as his or her domicile while in this country will be classified as a foreign student.

An individual classified as a nonresident or foreign student may qualify to pay resident tuition rates and other charges while continuing to be classified as a nonresident or foreign student under certain exceptions specified in these rules.

MINORS AND DEPENDENTS

STATUTE: SECTION 54.052(c) An individual who is 18 years of age or under or is a dependent and who is living away from his family and whose family resides in another state or has not resided in Texas for the 12-month period immediately preceding the date of registration shall be classified as a nonresident student.

STATUTE: SECTION 54.052(d) An individual who is 18 years of age or under or is a dependent and whose family has not resided in Texas for the 12-month period immediately preceding the date of registration shall be classified as a nonresident student, regardless of whether he has become the legal ward of residents of Texas or has been adopted by residents of Texas while he is attending an educational institution in Texas, or within a 12-month period before his attendance, or under circumstances indicating that the guardianship or adoption was for the purpose of obtaining status as a resident student.

STATUTE: SECTION 54.055 An individual who is 18 years of age or under or is a dependent and whose parents were formerly residents of Texas is entitled to pay the resident tuition fee following the parents' change of legal residence to another state, as long as the individual remains continuously enrolled in a regular session in a state-supported institution of higher education.

RESIDENCE OF A MINOR OR A DEPENDENT: DIVORCE OF PARENTS. The legal residence of a minor or dependent child is usually that of the parent with whom the individual spends the principal amount of time. Upon divorce of parents, residency of a minor is based on the residence of the parent who has legal custody or has claimed the minor for federal income tax purposes both at the time of enrollment and for the tax year preceding enrollment. For dependents over 18, residency is determined by the residence of the parent who claims the student for federal income tax purposes both at the time of enrollment and for the tax year preceding enrollment.

CUSTODY BY COURT ORDER. If the custody of the minor has been granted by court order (e.g., divorce decree, child custody action, guardianship or adoption proceedings) to some person other than the parent, the residence of that person shall control;

provided, however, that such grant of custody was not ordered during or within a year prior to the minor's enrollment in a public institution of higher education and was granted under circumstances indicating that such guardianship was not for the purpose of obtaining status as a resident student.

If the minor is not residing with either parent, and there is no court-appointed guardian, the residence of the parent with whom the minor last resided shall be presumed to control. If, however, the minor resided with and has been dependent upon a grandparent for more than a year prior to enrollment in an institution of higher education, the residence of that natural guardian will be regarded as the minor's residence. The residence of a person other than a parent or a natural or legal guardian who may furnish funds for payment of tuition, fees, or living expenses will in no way affect the residence classification of a minor.

INDIVIDUALS OVER 18

STATUTE: SECTION 54.052(e) An individual who is 18 years of age or over who has come from outside Texas and who is gainfully employed in Texas for a 12-month period immediately preceding registration in an educational institution shall be classified as a resident student as long as he continues to maintain a legal residence in Texas.

STATUTE: SECTION 54.052(f) An individual who is 18 years of age or over who resides out of the state or who has come from outside Texas and who registers in an educational institution before having resided in Texas for a 12-month period shall be classified as a nonresident student.

STATUTE: SECTION 54.052(g) An individual who would have been classified as a resident for the first five of the six years immediately preceding registration, but who resided in another state for all or part of the year immediately preceding registration, shall be classified as a resident student.

STATUTE: SECTION 54.054 A nonresident student classification is presumed to be correct as long as the residence of the individual in the state is primarily for the purpose of attending an educational institution. After residing in Texas for at least 12 months, a nonresident student may be reclassified as a resident student as provided in the rules and regulations adopted by the Texas Higher Education Coordinating Board. Any individual reclassified as a resident student is entitled to pay the tuition fee for a resident of Texas at any subsequent registration as long as he continues to maintain his legal residence in Texas.

STATUTE: SECTION 54.052(h) An individual who has come from outside Texas and registered in an educational institution before having resided in Texas for a 12-month period immediately preceding the date of registration is entitled to pay the tuition fee and other fees required of Texas residents if the individual or member of his family has located in Texas as an employee of a business or organization that became established in this state as part of the program of state economic development and diversification authorized by the constitution and laws of this state and if the individual files with the Texas institution of higher education at which he registers a letter of intent to establish residency in Texas.

ESTABLISHMENT OF RESIDENCE. Individuals 18 years of age or over who move into the state and who are gainfully employed within the state for a period of 12 months prior to enrolling in a public institution of higher education are entitled to classification as residents. If such 12 months residence, however, can be shown not to have been for the purpose of establishing legal residence in the state but to have been for some other purpose, the individuals are not entitled to be classified as residents. Students enrolling in an institution of higher education prior to having resided in the state for 12 months immediately preceding time of enrollment will be classified as nonresidents for tuition purposes.

DEPENDENTS OVER 18. For dependents over 18, residency is determined by the parent who claims the student for federal income tax purposes both at the time of enrollment and for the tax year prior to enrollment.

RE-ESTABLISHMENT OF RESIDENCE. Persons who resided in Texas for at least 5 years prior to moving from the state and who have returned to the state for residence purposes before having resided out of the state for a year, will be classified as residents. The parent(s) of dependents must return to the state to live in order for the minor or the dependent to be considered a resident.

RECLASSIFICATION. Persons classified as nonresident students upon first enrollment in a public institution of higher education are presumed to be nonresidents for the period during which they continue as students. If such nonresident students withdraw from school and reside in the state while gainfully employed for a period of 12 months, upon re-entry into an institution of higher education they will be entitled to be reclassified as residents for tuition purposes. Accumulations of summer and other vacation periods do not satisfy this requirement. Reclassification to resident status after residing in the state for 12 months cannot be based solely upon the student's or the student's spouse's employment, registration to vote, registration of a motor vehicle and payment of personal property taxes thereon, or the securing of a Texas driver's license. The presumption of "nonresident" is not a conclusive presumption, however, and other facts may be considered to determine if the presumption has been overcome. Material to this determination are business or personal facts or actions unequivocally indicative of a fixed intention to reside permanently in the state. Such facts may include, but are not limited to, the length of residence and full-time employment prior to enrolling in the institution, the fact of full-time employment and the nature of such employment while a student, purchase of a homestead with substantial down payment, or dependency upon a parent or guardian who has resided in Texas for at least 12 months immediately preceding the student's enrollment. All of these facts are weighed in the light of the fact that a student's residence while in school is primarily for the purpose of education and not to establish residence, and that decisions of an individual as to residence are generally made after the completion of an education and not before.

Students classified as nonresident students shall be considered to retain that status until they submit the Residence Questionnaire and it is approved in writing by the Office of Admission and Evaluation. Application for reclassification should be submitted before registration for the semester for which the change is sought.

LOSS OF RESIDENCE. Persons who have been attending Texas public institutions of higher education as residents and who move out of state will be classified as nonresidents immediately upon leaving the state, unless their move is temporary (generally less than 5 years) and residence has not been established elsewhere. Conclusive evidence must be provided by the individuals supporting their present intent to return to the state. Among other things, a certificate from the employer that the move outside the state is temporary and that a definite future date has been determined for return to Texas may qualify as proof of the temporary nature of the time spent out of the state. Internship programs as part of the academic curriculum that require the student to return to school may qualify as proof of the temporary nature of the time spent out of state.

MARRIED STUDENTS

STATUTE: SECTION 54.056 A student who is a resident of Texas who marries a nonresident is entitled to pay the resident tuition fee as long as the student does not adopt the legal residence of the spouse in another state.

Marriage of a Texas resident to a nonresident does not jeopardize the former's right to pay the resident tuition rate unless the resident has taken steps to claim the residence of his or her spouse. A nonresident who marries a resident must establish his or her own residency by meeting the standard requirements.

FOREIGN STUDENTS

STATUTE: SECTION 54.057 An alien who is living in this country under a visa permitting permanent residence or who has filed with the proper federal immigration authorities a declaration of intention to become a citizen has the same privilege for qualifying for resident status for fee purposes under this Act as has a citizen of the United States.

STATUTE: SECTION 54.057(b) A nonimmigrant alien who resides in this state in accordance with the Agreement between the Parties to the North Atlantic Treaty Regarding the Status of Their Forces (4

U.S.T. 1792) and the spouse or children of such an alien are residents for tuition purposes under this code.

NOTE: Only a permanent resident may file with the federal immigration authorities a declaration of intention to become a citizen. Generally, individuals who obtain permanent resident status while in Texas must wait a minimum of 12 months from the date of issue to request resident status for tuition purposes.

EXCEPTIONS

MILITARY PERSONNEL AND VETERANS

STATUTE: SECTION 54.058(a) Military personnel are classified as provided by this section.

STATUTE: SECTION 54.058(b) A person who is an officer, enlisted person, selectee, or draftee of the Army, Army Reserve, Army National Guard, Air National Guard, Air Force, Air Force Reserve, Navy, Navy Reserve, Marine Corps, Marine Corps Reserve, Coast Guard, or Coast Guard Reserve of the United States, who is assigned to duty in Texas and the spouse and children of such an officer, enlisted person, selectee, or draftee are entitled to register in a state institution of higher education by paying the tuition fee and other fees or charges required of Texas residents, without regard to the length of time the officer, enlisted person, selectee, or draftee has been assigned to duty or resided in the state. However, out-of-state Army National Guard or Air National Guard members attending training with Texas Army or Air National Guard units under National Guard Bureau regulations may not be exempted from nonresident tuition by virtue of that training status nor may out-of-state Army, Air Force, Navy, Marine Corps, or Coast Guard Reserves training with units in Texas under similar regulations be exempted from nonresident tuition by virtue of such training status. It is the intent of the legislature that those members of the Army or Air National Guard or other reserve forces mentioned above be exempted from the nonresident tuition fee and other fees and charges only when they become members of Texas units of the military organizations mentioned above.

STATUTE: SECTION 54.058(c) As long as they reside continuously in Texas, the spouse and children of a member of the Armed Forces of the United States who has been assigned to duty elsewhere immediately following assignment to duty in Texas are entitled to pay the tuition fees and other fees or charges provided for Texas residents.

STATUTE: SECTION 54.058(f) The spouse and children of a member of the Armed Forces of the United States who dies or is killed are entitled to pay the resident tuition fee if the wife and children become residents of Texas within 60 days of the date of death.

STATUTE: SECTION 54.058(g) If a member of the Armed Forces of the United States is stationed outside Texas and his spouse and children establish residence in Texas by residing in Texas and by filing with the Texas institution of higher education at which they plan to register a letter of intent to establish residence in Texas, the institution of higher education shall permit the spouse and children to pay the tuition, fees, and other charges provided for Texas residents without regard to length of time that they have resided within the State.

To be entitled to pay resident tuition, such military personnel shall submit at the time of each enrollment a statement from their commanding officer or personnel officer certifying that they are then assigned to duty in Texas and that same will be in effect at the time of such enrollment in a public institution of higher education.

LEGAL RESIDENCE OF PERSONS IN MILITARY SERVICE. Persons in military service are presumed to maintain during their entire period of active service the same legal residence which was in effect at the time of entering military service. Persons stationed in a state on military service are presumed not to establish a legal residence in the state because their presence is not voluntary but under military orders. It is possible for members of the military service to abandon the domicile of original entry into the service and to select another, but to show establishment of a new domicile during the term of active service, there must be clear and unequivocal proof of such intent. An extended period of service alone is not sufficient. The purchase of residential property is not conclusive evidence unless coupled with other facts indicating an intent to put down roots in the community and to reside there after termination of military service.

RESIDENCE CLASSIFICATION OF VETERANS UPON SEPARATION FROM MILITARY SERVICE. Persons who enroll in an institution of higher education following separation from military service must be classified as nonresident students unless: (1) they were legal residents of Texas at the time of entry into military service and have not relinquished that residence; (2) they can prove that during military service they have, in fact, established bona fide, legal residence in Texas at least 12 months prior to enrollment; or (3) they have resided in Texas other than as students for 12 months prior to enrollment and subsequent to discharge from service. The nonresident classification is a presumption, however, that can be overcome pursuant to the guidelines and standards for establishing Texas residence (see INDIVIDUALS OVER 18).

STUDENTS ENROLLED IN ROTC PROGRAMS. A nonresident student who is a member of an ROTC unit will be required to pay nonresident tuition rates until such time as the student has signed a contract which cannot be terminated by the student and which obligates the student to serve a period of active military duty.

TEACHERS AND PROFESSORS, AND THEIR DEPENDENTS

Teachers and professors employed at least half-time on a regular monthly salary basis (not an hourly employee) by any Texas public institution of higher education with an effective date of employment on the official census date of the relevant term(s), may pay the same tuition as a resident of Texas for themselves, their spouses, and their dependent children, regardless of the length of residence in the state. To be entitled to pay the resident tuition fee, such employees must submit, prior to the time of each enrollment, a statement certifying employment from the director of personnel of the institution of higher education by which he or she is employed.

TEACHING OR RESEARCH ASSISTANTS

Teaching or research assistants employed at least half-time by any public institution of higher education in a degree-program-related position, with an effective date of employment on or before the official census date of the relevant term(s), may pay the same tuition while attending the employing institution as a resident of Texas for themselves, their spouses, and their dependent children, regardless of the length of residence in the state. The institution which employs the students shall determine whether or not the students' jobs relate to their degree programs.

SCHOLARSHIP RECIPIENTS

To qualify for exemption from paying out-of-state tuition rates, a student must be awarded a competitive academic scholarship in the amount of $200 or more for the academic year, the summer session or both by an official scholarship committee or committees of the public institution of higher education he or she is attending.

SPECIAL PROGRAMS

CITIZENS OF MEXICO. A citizen of Mexico who registers for instruction offered by a general academic teaching institution in a county bordering Mexico is eligible to pay tuition equal to that charged Texas residents provided the student demonstrates a financial need after the resources of the student and the student's family have been considered.

RESPONSIBILITIES

STUDENTS

STATUTE: SECTION 54.0521 OATH OF RESIDENCY

STATUTE: SECTION 54.0521(a) Before an individual may register at an institution of higher education paying tuition at the rate provided for residents, the individual must affirm under oath to the appropriate official at the institution that the individual is entitled to be classified as a resident for purposes of tuition.

STATUTE: SECTION 54.0521(b) If the institution later determines that the individual was not entitled to be classified as a resident at the time of the individual's registration, the individual shall, not later than 30 days after the date the individual is notified of the determination,

pay to the institution the amount the individual should have paid as a nonresident.

STATUTE: SECTION 54.0521(c) If the individual fails to make a timely payment as required by this section, the individual is not entitled to receive a transcript or to receive credit for courses taken during the time the individual was falsely registered as a resident student.

OATH OF RESIDENCY. The student is responsible for registering under the proper residence classification and for providing documentation as required by the public institution of higher education. If there is any question as to right to classification as a resident of Texas, it is the student's obligation, prior to or at the time of enrollment, to raise the question for official determination by the Director of Admission and Evaluation. Students classified as Texas residents must affirm the correctness of that classification as a part of the admissions procedure. If the student's classification as a resident becomes inappropriate for any reason, it is the responsibility of the student to notify the Office of Admission and Evaluation. Failure to notify the institution constitutes a violation of the oath of residency and will result in disciplinary action.

INSTITUTIONS

REVIEW OF ENROLLMENT AND/OR REGISTRATION FORMS. Each public institution of higher education is responsible for reviewing enrollment and/or registration applications for errors, inconsistencies or misclassifications of residency status. Institutions should obtain written documentation to resolve any problems noted during the review of forms.

OATH OF RESIDENCY. Each public institution is responsible for incorporating an oath of residency into its student application for admission. Substantiating documentation may be required by the institution to affirm Texas residency.

RECLASSIFICATION

APPLICATION FOR RECLASSIFICATION. Students classified as nonresidents shall be considered to retain that status until they make written application for reclassification. This is done by filling out the residence questionnaire which is available in the Office of Admission and Evaluation. The Director of Admission and Evaluation notifies students in writing concerning official reclassification as a Texas resident.

RECLASSIFICATION AS A NONRESIDENT. Persons who have been classified as residents of Texas shall be reclassified as nonresident students whenever they shall report, or there is found to exist, circumstances indicating a change in legal residence to another state. If students who have been classified as residents of Texas are found to have been erroneously classified, those students shall be reclassified as nonresidents and shall be required to pay the difference between the resident and nonresident fees for those semesters in which they were so erroneously classified. In addition, the students shall be required to pay back all monies borrowed from the Hinson-Hazlewood College Student Loan Program.

RECLASSIFICATION AS A RESIDENT. If students have been erroneously classified as nonresident students and subsequently prove to the satisfaction of the Director of Admission and Evaluation that they should have been classified as resident students, they shall be reclassified as residents of Texas and may be entitled to a refund of the difference between the resident and nonresident fees for the semesters in which they were so erroneously classified. Normally the refunds must be requested and substantiated during the current term.

All students are expected to pay the tuition assessed on or before the payment date for each semester as established by the University. All residence questionnaires and forms verifying nonresident tuition exemption status must be submitted to the Office of Admission and Evaluation prior to the official census date of the term for which the change is sought. To prevent any delay in enrollment, students are encouraged to submit all forms at least two weeks prior to registration. Consult the Schedule of Classes for specific information concerning the submission of nonresident tuition exemption forms.

Financial Assistance

UT El Paso's graduate students can finance their education by working and/or by taking advantage of the University's readily-available financial assistance awards and programs.

Financial aid is divided into the following types: merit-based, need-based, and employment. Merit-based awards are granted on the basis of the student's previous academic performance. Need-based aid, as the name suggests, is awarded according to the level of the student's financial need, with some consideration of the student's past academic performance. Employment includes jobs both on- and off-campus.

Financial awards originate from both local and national sources. For local awards, the student should consult the *Financial Assistance Manual for Graduate Students at U.T. El Paso*. Local awards originate from UT El Paso's academic departments, academic colleges, the Office of Student Financial Aid, the Scholarship Office, Career Services, and the Graduate School Office.

Merit-Based Awards

Merit-based awards consist of scholarships and fellowships. Scholarships are primarily awarded on the basis of the student's previous academic work. Fellowships are generally awarded according to a student's exceptional academic work and/or previous or proposed research in the student's field of study.

To apply for all UT El Paso scholarships and fellowships, a student should use the Graduate Financial Assistance Application. This application is available at all academic departments and colleges, the Scholarship Office, the Office of Student Financial Aid, and the Graduate School Office, and should be returned upon completion to the Scholarship Office. Priority deadline for submitting applications for graduate scholarships and fellowships is March 1st to receive awards for the following year.

Need-Based Awards

There are a limited number of need-based scholarships available for Texas residents who demonstrate financial need and who meet certain academic requirements. To apply for this scholarship, the student must apply for financial aid through the Office of Student Financial Aid and must also submit an Application for Financial Assistance to the Scholarship Office.

The Office of Student Financial Aid coordinates the processing of need-based awards. The amount and type of financial assistance provided will be by means of educational loans, grants, need-based scholarships, and student employment (College Work-Study) programs. Certain emergency loan funds or fee exemptions may also be available. Students admitted into graduate programs are eligible if they have documented need, meet academic eligibility criteria, enroll on a full-time basis, and meet the March 15 financial aid application deadline. Financial aid recipients must make satisfactory academic progress in order to maintain award eligibility. Information about financial aid application procedures and standards for academic progress may be obtained from the Office of Student Financial Aid, 202 Union West, El Paso, TX 79968, (915) 747-5204.

Employment

Graduate Assistantships—Teaching and Research Assistantships may be available based on merit qualifications. Teaching assistants perform assigned teaching duties under the supervision of a faculty member. Research assistantships are highly variable and usually involve assisting a faculty member in the accomplishment of certain research projects. The Graduate Financial Assistance Application Form, available at academic departments and colleges, the Scholarship Office, the Office of Student Financial Aid, and the Graduate School should be completed by the student and submitted to the academic department of the student's major.

Other Employment Opportunities—Information about other forms of employment which may include the Cooperative Education Program, internships, summer employment or part-time employment may be obtained from the Career Services Office, Union West.

Facilities, Services and Student Life

Facilities and Services

The University of Texas at El Paso provides facilities and services in support of instruction and research, in support of cultural activities, and in support of the community at large.

The Library provides faculty, students, and community users with research and recreational materials, information services, and facilities for studying and meetings. As of August 31, 1990, Library holdings included 622,977 books; 133,133 serial volumes; 174,815 documents; 98,049 maps; over 1 million microforms; and almost 2,000 audiovisual titles. The Reference collection includes indexes on CD-ROM and librarians offer on-line database searching. Instruction in library use is available for both groups and individuals. Guides to the collection and shelving arrangements are available throughout the building.

The six-level central Library opened in October of 1984. In keeping with campus tradition, the building is Bhutanese in architectural style, and its 275,000 square feet will seat 2,305 users and can house 1.2 million volumes. Seventy-four individual study rooms provide private space for faculty engaged in library-related research, and a graduate student working on a thesis may reserve one of the 192 carrels available. Twenty-nine rooms of various sizes provide accommodations for meetings and group study. The building is designed to meet the needs of the handicapped, and specialized equipment, assistance, and materials are available to aid studying and projects.

The University Library, in addition to maintaining efforts to develop collections which strongly support the programs of the University, is an active participant in cooperative networks. Memberships in AMIGOS Bibliographic Network and OCLC provide additional materials and services through the sharing of bibliographic information and library resources. These memberships also facilitate interlibrary loan transactions with libraries throughout the United States for the borrowing of items not in the collection. The Interlibrary Loan Department has acquired a telefacsimile machine to speed the acquisition of articles and other research information.

The Library is fortunate to have several outstanding special collections of books and other materials, housed on the sixth floor. The Southwest Collection, established with materials donated by Professor John H. McNeely, contains materials on Texas, New Mexico, Arizona, and Mexico. The J. Carl Hertzog Collection of materials on printing and book design is located in the room named for Dr. Hertzog. Other special collections include the Judaica Collection, the S.L.A. Marshall Military History Collection, Chicano Studies, the Manuel Carrillo Photography Collection, rare books, and archival and other manuscript collections.

The NOTIS integrated library computer system was installed in 1986. The on-line catalog, LUIS (Library User Information Service), became available in 1988 and allows users to search for materials by author, title, and subject. Computer access to the Library's collections has contributed to greater use of materials. In addition to the terminals in the Library, users have dial-in capability from personal computers on campus and at home.

The Library staff includes 23 professional positions, 46 classified positions and approximately 100 student assistants. The building is open 98 hours per week, with some variations during holidays and intersessions. The fifth floor has been designated as a quiet study area. Departmental hours and schedule changes are posted for patron convenience.

The Center for Computing and Communications Services was established in 1974 and functions as a service agency for all academic and administrative units of the University. The Center provides on-line, interactive and batch services for both the administrative and academic areas; small system maintenance and repair; data communication and network services; administrative application development; computer system procurement planning and support; and voice telecommunications support.

Among the applications provided are on-line accounting; on-line budget, personnel and payroll; integrated on-line student services including student records, registration, course inventory, financial aid, admission, recruiting, and student accounts receivable; the NOTIS on-line Library Automation system; and on-line Development and Alumni records. In addition to these on-line applications, interactive program development environments are available which assist users in development, editing, testing and submitting batch programs using a number of software packages.

The Center operates an IBM 3081-K processor with the VM/HPO operating system. The two principal guest operating systems are MVS/SP and MUSIC. There are 25 Gbytes of on-line disk storage and there are 500 terminals which access 200 ports through a campus-wide ethernet. All of the departmental systems are connected to the central processor, and terminals in offices and laboratories can attach to any of the departmental systems or the central system through an ethernet. Dial-up is available for access from off campus to the ethernet.

Access to the U.T. System CRAY XMP-24 and CRAY SE/14 supercomputer systems is available through the Texas Higher Education Network (THENet). The University is a member of BITNET, Internet, and has access to the NSF network among others. This access provides researchers interactive access and file transfer capability with researchers around the world. There are many bulletin boards and user groups that share information through the various networks.

The Computer Center is housed in three buildings. The administrative offices and programming support staff are in Benedict Hall; computer operations and academic services are in Bell Hall; and there is a satellite terminal facility in Biology 113.

The Institute for Manufacturing and Materials Management has as its mission the joining of the resources of the University with those of the community to foster socioeconomic development within the U.S./Mexico Border Region. This mission is addressed by the Institute's efforts to initiate, coordinate and facilitate University outreach programs. These programs include providing technical assistance to businesses, database management for the border and research into border economic development issues. Projects in these areas have involved faculty and students in Mexico's maquiladora industry including its economic impacts, materials sourcing practices and productivities; in border infrastructure issues such as ports of entry, communications, water and waste treatment, U.S./Mexican Customs operations and transportation; in bi-national economic development programs and seminars; and in technology transfer among defense, maquiladora and other indigenous industries. Finally, the Institute has cooperated with government and business leaders to develop an economic plan that focuses on capturing regional competitive advantage within the global economy. Through projects like these, the University's goal of excellence in research, service and teaching has been enhanced.

The Bureau of Business and Economic Research was established on the campus in September 1963. The Bureau has the primary objective of supporting economic and industrial development of the El Paso and West Texas area, and the northern area of the State of Chihuahua, Mexico. The Bureau conducts extensive research and maintains a comprehensive data bank on the economic and industrial growth of the areas.

The Bureau is a State of Texas Census Data Affiliate. As such, it maintains census data on the Upper Rio Grande area of Texas.

The Bureau publishes *The El Paso Economic Review*. The *Review* is published bi-monthly, and contains articles of interest on the local area economy, as well as business barometers. The Bureau publishes several special reports each year based on research conducted by the staff of the Bureau or the faculty of the College of Business Administration.

Texas Western Press is an internationally known book publisher and university press. It issues hardback books as well as paperbacks (including the Southwestern Studies monographs) which are sold nationally. TW Press specializes in the history and culture of the Southwest, although some titles are broader in scope. Manuscripts may be submitted to the director for consideration by the Editorial Board. Offices are located at Rim Road and Wiggins, in the News Service building, phone 747-5688.

Four special facilities offer support for research in engineering and science. **The Schellenger Research Laboratories** (SRL), created in 1953 under the will of Mrs. Emma L. Schellenger as a memorial to her husband, Newton C. Schellenger, were founded to promote and encourage research in electricity.

Although administered by the Department of Electrical Engineering, the programs of SRL are interdisciplinary in nature and regularly involve faculty and students throughout the University. Funds from the trust are also used to support the Schellenger Research Professorship in Electrical Engineering.

SRL has specialized in atmospheric and acoustic research and instrumentation, and has investigated virtually every parameter of the atmosphere and has developed instruments for measuring and testing these parameters. SRL has also conducted studies in the life sciences including cardiac, dental, and orthopedic research. Recent activities include research in applications of artificial intelligence, computer vision, optical fiber communications, atmospheric pollution and advanced sensor development.

The Laboratory for Environmental Biology was established as the major research and teaching support unit for the field-oriented biological sciences. The Resource Collections division is a major regional center for collections of plants, modern vertebrates, modern mollusks, and late Cenozoic fossil vertebrates and mollusks of the Southwest and Mexico. These collections, initiated in 1965, form an internationally recognized base for teaching and research in systematics, ecology, biogeography, and paleontology, with some 100,000 curated specimens. Other laboratory facilities include specialized equipment and collections of research literature in selected fields. The university is a member of the Association of Systematics Collections and the mammal collection meets the criteria of the American Society of Mammalogists.

The J. W. Miller Memorial Geophysical Laboratory is a major research arm of the Department of Geological Sciences. This facility includes computer interfaced laboratory apparatus and a well-equipped computer graphics laboratory. A broad range of geophysical research projects which involve many students are supported through this facility.

The John W. Kidd Memorial Seismic Observatory is in continuous year-round operation and is part of the World-Wide Standardized Seismograph Network. The station is equipped with seismographs and recorders for study of both short and long-period seismic waves. The records are used for research on earthquakes and related phenomena and are made available to the scientific community through an international data center.

The location of UT El Paso on the border between the United States and Mexico provides a unique opportunity for research and outreach across cultures. **The Cross-Cultural Southwest Ethnic Study Center** was established at the UT El Paso campus in September 1971 under a Spencer Foundation Grant. The Center is devoted to investigating Southwest ethnic group relationships and conflicts. It aims at helping to prepare courses and self-contained units on the Southwest ethnic heritage for inclusion and integration in the regional liberal arts curricula. The Center is also coordinating activities aimed at creating a cultural data bank for illuminating various aspects of interethnic relationships.

The Center's Research Associates conducting projects in Humanities and Social Sciences represent a broad interdepartmental spectrum from various departments of the Colleges of Liberal Arts and Education, and from the Center for Inter-American Studies at UT El Paso. They utilize a variety of research techniques to collect, analyze, and interpret basic cultural data on ethnic groups.

The Center's projects have included: (1) research on socio-linguistics and communication problems funded by the Gulf Oil Foundation, (2) a four-year project funded by the National Endowment for the Humanities to develop courses for the Humanities Border Studies Program, (3) the Inter-Institutional Bicentennial Project of the El Paso Community College/UT El Paso, funded by the Texas Colleges Bicentennial Program, Inc., and (4) Bilingual/Bicultural Education Symposia project funded by the Excellence Fund.

Recently the Center has undertaken a project on international comparative ethnic studies (with Japan), as well as regional and national attitudes toward Hispanics and Hispanic immigration.

The Center for Inter-American and Border Studies promotes teaching, research and outreach programs that are designed to further the understanding of Latin America and its importance to the United States. Its particular interest is in Mexico and the nature of the special cultural, institutional, social, environmental, commercial and economic relationships that apply to the Mexico-U.S. border region.

The Center promotes and supports research by faculty and graduate students and sponsors the publication of scholarly material in its areas of special interest. Many academicians, scholars, artists and public personalities from Latin America are brought to the University each year by the Center to present lectures to students, faculty and the community at large.

The Center represents the University in a number of inter-institutional organizations that deal with inter-American and border issues. It also plays a prominent role in the special relationship between UT El Paso and Mexican educational institutions. Finally, the Center coordinates the Cooperative Doctoral Program in Border Studies between U.T. Austin and U.T. El Paso.

The Center is located in the Administration Building Room 320, UT El Paso, El Paso, Texas 79968-0002.

The University of Texas at El Paso recognizes its responsibility to serve the educational and cultural needs of the community of which it is a part. The University provides special facilities to enhance the cultural life of the El Paso area.

The Fox Fine Arts Center and Magoffin Auditorium are the University's two primary facilities for the visual and performing arts. The Department of Art, Department of Theatre Arts, and the Department of Music are all housed in the Fox Fine Arts Center. Plays are produced in the University Playhouse and the flexible Studio Theatre and include selections from theatre classics, contemporary plays, children's theatre, bilingual theatre, experimental theatre, and original playscripts. In addition, the Fox Fine Arts Center has over 30 art studios, a lecture room, a graphic design computer studio, and two art galleries making it one of the finest facilities in the Southwest. Music activities include over 100 recitals and concerts per year, most of which are free to the public. The Fox Fine Arts Center is the home of the University Symphony, the University Wind Ensemble, two other concert bands, the Percussion Ensemble, the Jazz Lab Bands, the University Jazz Singers, four University choirs, the Paso del Norte Woodwind Quintet, the Fox Trio, and various student chamber groups. The University Opera and the Ballet of the Americas perform in Magoffin Auditorium.

The El Paso Centennial Museum, the University Museum, opened in 1936 with funds allocated by the Commission for the Texas Centennial Celebration. It is devoted to the preservation, documentation, and exhibition of objects and ideas pertaining to the cultural and natural history of the El Paso del Norte region. Noteworthy collections include pottery, stone tools and shell jewelry from the prehistoric Mexican ruins of Casas Grandes, Chihuahua; mineral and rock specimens from regional and extraregional mines and localities; dinosaur bones from the Texas Big Bend area; and fossil elephant and other remains from local Ice Age deposits.

Traveling exhibits and additional educational programs, such as lectures and tours, are included as part of the museum experiences for visitors. The Museum is open to the public from 10 a.m. to 4:00 p.m., Tuesday through Saturday, except on National and University holidays.

Station KTEP-FM is owned and operated by the University. KTEP broadcasts in stereo with 100,000 watts of power providing daily service to the El Paso metropolitan area and Southern New Mexico. Qualified advanced students may serve operator shifts on KTEP.

The educational needs of the community are served by the Division of Professional and Continuing Education.

The Division of Professional and Continuing Education serves three purposes:

1. To offer non-credit short courses and programs to answer community needs for education or training outside the regular channels of instruction. Although college credit is not granted for such work, certificates are issued from the University upon completion. Continuing Education Units are awarded for courses meeting specific requirements.
2. To coordinate and administer conferences, seminars, symposia,

special educational programs, etc., initiated by academic units, faculty and other organizations primarily for non-university personnel and agencies. Activities may result in the award of academic credit or Continuing Education Units for programs meeting specified requirements.

3. To conduct intensive professional continuing education for executives, professionals, and their staff members through a variety of workshops, seminars, conferences, and short courses. These are designed to provide updating and new skills development and may be directed toward individual growth, organizational effectiveness, or licensing/certification needs.

   Sessions vary in length and are taught by instructors selected for their expertise in subject area, related work experience, and demonstrated ability to have successfully conducted similar sessions. They may be college or university faculty members, practitioners from the community, or nationally and internationally recognized talent.

   Many of the programs are available in Spanish, and most may be customized for a particular group. In-house presentations can be designed to meet special needs or situations, and may be held at the Institute or on-site.

The English Language Institute is a program of the Division of Professional and Continuing Education. It serves the following purpose: To offer intensive English courses and programs designed to meet the needs of non-English speakers to pass the TOEFL, gain academic experience in higher education and utilize English for professional and personal purposes. Certificates are issued upon satisfactory completion.

The Division is committed to life long learning. It serves to link the community to the educational resources needed to grow or keep current and updated.

Student Life

The life of a university student involves more than attending classes and studying. It should be a rich blend of new ideas, friendships and experiences. At UTEP, we want students to experience all we have to offer, and there's no better way to do that than through the programs of Student Affairs. The Division of Student Affairs coordinates 12 departments and 8 special interest programs which provide predominantly free services for students and ensure that student needs, concerns, and interests are addressed. Students can promote the successful completion of their studies and enhance their education, enjoyment, and personal and professional development by using the services and participating in the programs and activities available. This section of the catalog is designed to direct students around the campus in search of the support they may need.

Many of the programs targeted for students in general and for particular groups of students are located in ***The Union***. The Union itself is a service-oriented organization that provides, coordinates and houses beneficial co-curricular activities, student and faculty meetings, seminars and conferences; and through the Student Programs Office promotes recreational, cultural and educational development. The UT El Paso Union, as both a building and a concept, supports and augments the educational mission of the University by projecting classroom learning into the sphere of human experience.

The physical plant of the Union consists of the West and East wing; totaling 207,000 sq. ft.

The University Bookstore is located on the First Floor in the Union East Wing. At the Bookstore students may purchase textbooks, classroom supplies, calculators, sundries, clothing, tapes, and albums. Other services include typewriter rentals, special order book service, photo processing, VHS movie video tape and VCR rentals.

The University Dining Service on the 2nd Floor, East Union, offers convenient dining facilities, varied menu selection and an environment conducive to human interaction. The UDS also operates the Faculty and Professional Staff dining room and the Sundries Center, the University Commons, Campus Concessions and Vending, as well as catering meetings, receptions and banquets, on and off campus.

The East wing also houses The University Post Office, The Union Theatre, and The Union Exhibition Gallery. Located on the 2nd Floor, Union East, the Rec Center offers UT El Paso students a chance to relax by playing pool or foosball, spending time on a favorite video game or just enjoying a snack from the various vending machines.

The West wing houses the majority of the Student Affairs Offices. Also located on the West wing is the Union Ballroom where all the Union Dinner Theatre productions are presented.

The third floor, Union East, houses the Union and SPO Administrative Offices, The Union Dinner Theatre Office and the student organizations offices. Also found on the third floor are a majority of fifteen meeting rooms, including the 5,000 sq. ft. multipurpose Conference Center. For information on the Union's departments, programs and services, call the Union Director's Office at 747-5711.

The Office of Student Affairs is under the direction of the Vice President for Student Affairs, and supervises many services available to students. Its primary purposes, however, are to insure that students' rights are protected and to help students with problems or concerns. Students are encouraged to come to the Student Affairs Office whenever they are in need of assistance of any kind. This office is also responsible for disabled student services, cheerleaders, student discipline, registered student organizations, student health insurance, Men and Women of Mines, Who's Who Among Students in American Colleges and Universities, and liaison with the Student Association. The Office is located in The Union 102 West.

Counseling, Testing, and Psychological Services (CTPS) provides a variety of programs and individual services to meet the needs of students, staff, and faculty. The core of these services is the individual career and time-limited personal counseling provided to students. A second major service involves small groups, seminars, and classes in areas of concern to students, staff, and faculty ranging from career choice to stress management to coping with angry individuals. CTPS psychologists also consult with faculty and staff regarding student problems and the needs of individual students.

The office also serves as a national test administration center for graduate and undergraduate admission tests (GRE, SAT, LSAT, GMAT, MCAT, ACT, DAT, PPST) and numerous professional certification tests (NBRC, CEST, NTE, AART, etc.). Finally, CTPS serves as the campus testing center for almost every placement and credit by examination test (mathematics, English, history, business, psychology, etc.).

Career Services: Career Services, also known as **The Career Connection**, provides assistance to students in finding permanent employment after graduation and part-time employment while enrolled.

Career Services sponsors CIRCUS (Career Information Resource Center for UTEP Students), a resource library that houses information on employers, government agencies, school districts, graduate schools, career choices, internships, and job search preparation in print and on videotape. Materials of interest to women, minorities, and disabled students are included. Many publications on current job trends and careers are available.

The computerized career guidance program DISCOVER is located in CIRCUS (The Union 114 West, 747-5640 or 5468).

Career Services also provides career counseling and advises students on resume preparation, interviewing skills and future job opportunities. The office arranges interviews with agencies, organizations, or schools and counsels students on the best approach to identify and contact prospective employers. The office provides forms, applications and literature necessary for interviews.

Job Link, a database listing of nation-wide positions available in business and industry for all majors is housed in Career Services.

The Resume Review Drop-In Clinic whereby students can bring resumes in for review and assistance on a drop-in basis is another service offered.

For permanent employment, companies from all over the United States schedule interviews during the months of October, November, December, February, March and April. The office works with hundreds of applicants and thousands of job opportunities each year by arranging for on-campus interviews and referring resumes. This service can save time, minimize effort and in the final analysis, help students plan for the future. After having attended a Senior Career Orientation, seniors and alumni can participate in on-campus interviewing for the purpose of finding permanent employment in their chosen field. Seniors interested in permanent employment after graduation should register at least a full year prior to receiving their degree.

Part-time job opportunities are posted on the bulletin board outside the office. After filling out the proper application card, students are referred to the board to check on jobs and obtain a referral from the secretary. The requirements for consideration for part-time campus employment are met with an application along with proof of enrollment.

The University has a Cooperative Education Program (CO-OP) which has been established with industries and government agencies. Students who are in the program will usually attend school a semester and be on a work assignment one semester, alternating the school and work phase until graduation. Summers are considered a semester for CO-OP purposes. A parallel program, school part of a day and work part of the day, is available.

Summer internships, to include technical positions as well as non-technical, are offered.

Career Services is located in The Union 103 West.

Study Skills and Tutorial Services is designed to help students improve general competency and performance in their academic subjects, and does so through a variety of programs that are free to students enrolled at the University. The office is located in 105 West Union.

STUDY SKILLS I: Eight weeks, non-credit college study skills class, followed by six weekly lab sessions in the Learning Assistance Lab, that offers instruction in taking lecture notes, studying textbooks, preparing for and taking exams, using the library, and otherwise developing skills needed for academic success in college. Students may enroll for these free classes during registration. ESL students may enroll in designated sections with the approval of their advisors.

STUDY SKILLS II: Eight weeks, non-credit class that offers instruction in the skills and strategies necessary to complete college reading assignments. Instruction is given in study reading, critical reading, rapid reading, and vocabulary improvement. Students may enroll for these free classes during registration. ESL students may enroll in designated sections with the approval of their advisors.

NON-CREDIT CLASSES: Non-credit, short-term classes, workshops, subject reviews, and study groups are offered in study skills, math, science, writing and English, modern languages, business and accounting, computer literacy and word processing, nursing, and standardized test-taking techniques for the TASP and for graduate and professional exams. These non-credit classes are listed each semester in the Schedule of Classes. Others can be arranged upon request. Students may sign up for these in The Union 108 West or at registration.

TUTORING PROGRAM: Free tutoring is available for any enrolled student. The tutors are students who are successful in the subjects they tutor and who have also received special training in tutoring techniques. "Walk-in" tutoring (no appointment needed) is available in mathematics, engineering, chemistry, physics and other sciences, writing, liberal arts, accounting, business and nursing. Tutoring by appointment is available in modern languages

MICROCOMPUTER LEARNING LAB. Students may sign up for free time on IBM PC and Apple IIE microcomputers to type papers or do programming. Free classes in computer literacy and word processing are also available in the lab.

LEARNING ASSISTANCE LAB: Individual assistance is available for study skills, test preparation and other learning problems. Study skills workshops are also available in the Learning Assistance Lab.

The Office of the Students' Attorney provides legal representation and counsel in many areas, and these services are available free of charge to all currently registered attending UT El Paso students. The office is staffed by a licensed Texas attorney and is located in The Union 206 West.

International Student Services serves as a source of information for international students and scholars and for U.S. students considering work, study or travel abroad. The office provides international students with financial, immigration, cultural and personal advice and assistance. International scholars on short-term teaching or research programs also receive assistance with immigration matters. For U.S. students, the office provides counseling on Study Abroad opportunities, discount travel, and obtaining visas or work permission in foreign countries.

The office is located in 301 Union West, telephone (915) 747-5664.

Disabled Student Services office attempts to enable the disabled members of the student body, both permanently and temporarily disabled, to have an equal opportunity to pursue their education. Assistance is provided by arranging for note takers, sign language interpreters, and readers, as well as loaning of audio recording equipment and specialized equipment. The office also serves as liaison to faculty, and arranges to have classes moved from inaccessible to accessible locations.

The Women's Resource Center opened on September 1, 1984, to serve as a one-stop center for women. The Center is designed to provide resources specifically focused on the changing needs of women today as they enter or return to the University. It serves as a clearinghouse of information on services, departments, and community agencies.

The Center sponsors workshops, films, lectures and other programs related to women. Also available is the use of a book and audio library. The services are available to all currently enrolled students or individuals contemplating enrolling at the University. The Center is currently located in Room 412 of the Liberal Arts Building, across the street from The Union.

The Union is also the hub of student government and of extracurricular activities. **The Student Association** is the official voice of the student body through which student opinion may be expressed. Students participate in the decision-making process of the University directly through the elected officials of the Student Association or through students appointed by the Student Association to serve as members of policy-making University committees. The Student Association also acts as the representative of the students in several local, state, and national areas of interest. The range of activities of the Student Association, both on and off campus, is continually expanding as students take more of an interest in the political process that affects their everyday lives.

In the spring of each year, the election of Student Association officers and senators is held. Qualifications and duties for these offices are listed in the Student Association Constitution. Election requirements and regulations are set by an election commission appointed by the senate and copies may be obtained in the Student Association Office prior to election. Each member of the student body has the privilege of voting in the elections and should take advantage of the opportunity to express his or her views by voting.

The basic framework of the Student Association resembles the patterns established by the national government. Officially, there are 3 branches of government in the Student Association, the Executive, Legislative, and Judicial.

The executive branch consists of the President, Vice President of Internal Affairs, Vice President of External Affairs, and the Executive Assistant to the President. The President of the Student Association is the chief executive of the Student Association. The Internal Affairs Vice President presides over the Senate meetings, which are open to all students. The External Affairs Vice President is the liaison with areas or groups outside the University.

The legislative branch, the Student Senate, appropriates funds to student organizations and for student government projects, works for changes in campus policies and provides a means of organized student expression. The senate meets every week in the Student Union.

The Student Supreme Court, consisting of seven justices, is the highest student court in the Judicial branch of the student government. The Court has original jurisdiction over cases involving the Student Association Constitution and the Legislative branch. In addition to having appellate jurisdiction over all courts of the student government, the Supreme Court may hear cases referred to it by the Office of Student Affairs. The Court is also one of the most viable areas of student participation in determining and influencing future policies of concern to students. The Student Traffic Court convenes regularly each week and hears cases involving student traffic violations which have been appealed.

Registered Student Organizations—The University encourages and supports the efforts of students who have common goals and interests to meet together and form organizations.

Procedures for organizing a group and becoming a registered student organization are available in the Office of Student Affairs. Students are encouraged to come by to discuss their interests and concerns about student organizations.

At the beginning of each long semester, each organization must

submit up-to-date and correct information forms to the Office of Student Affairs. Organizations not returning the information forms will be considered inactive. Requests for reactivation must be submitted before an organization can use University facilities. If an organization is inactive for one full semester, it must apply for reinstatement before the Student Organizations and Activities Committee. Lists of registered student organizations are available each semester at the Office of Student Affairs.

There are almost one hundred registered organizations at the present time, including twenty-nine professional academic groups, twenty-four honoraries and thirteen social fraternities and sororities. In addition, there are a number of service, religious, special interest, international, and political groups.

Student development is a major university goal. Training, developmental, and experiential opportunities are provided through the Student Programs Office and the Student Leadership Development Programs.

The hub of student activity is centered in The Union with extensive event planning done by the **Student Programs Office**. The volunteer committee members, who select, plan and implement these programs, develop personal and professional skills in a unique atmosphere which promotes learning experiences through entertainment programming. Activities offered by SPO include the University film series, fine arts exhibits, comedy and variety acts, performing arts presentations, local, national and international speakers, and traditional campus-wide programs such as Homecoming and College Bowl. These programs are generally offered free or for a minimal charge to students, staff and faculty of the University. Program selections are made by committees composed of students, faculty and staff. There are five standing committees: Arts, Films, Issues and Ideas, Entertainment, and Special Programs and Activities.

Students, faculty and staff interested in serving on any of these committees can apply at the Student Programs Office, Room 302, Union East, or call at 747-5481.

Another program that is part of the Student Programs Office is **Student Leadership Development**, which is designed to develop leadership qualities of UT El Paso students. The program uses a variety of workshops, retreats and seminars to enhance essential leadership skills. The leadership program has a number of approaches to learning, each with special aims and procedures. A resource center is also available for students to use for self-paced learning. The program utilizes the expertise of campus leaders—student, faculty and staff—as well as local, state and national leaders. Some of the services which Student Leadership Development offers are the Freshman Leadership Development Program, free noon workshops every Tuesday and personal consultation services for individuals and student organizations. The Leadership Development Program is located in the Student Programs Office, Room 302, Union East. Call at 747-5670 or come by for more information.

Student Publications provides administrative support and professional guidance for *The Prospector*, UT El Paso's student newspaper; *Rio Grande Review*, a literary magazine; and other publications sanctioned by the University.

To insure free, responsible expression, the University delegates publishing responsibilities and authority to a democratically selected Student Publications Board composed of faculty and students. The Board in turn delegates to student editors and staff members sufficient autonomy for student publications to maintain their integrity of purpose as vehicles for free inquiry and free expression in an academic community. Student staff members are appointed by the Student Publications Board.

It is not necessary to be a journalism major to become a staff member of student publications; a student need only discuss with the editor or the advertising manager his or her interest in reporting, editing, photography, advertising, etc., and request to work on a publication.

State-of-the-art mini-disk terminals, phototypesetters and related equipment provide students with the opportunity to gain the experience needed to work on today's modern newspapers.

Just a few blocks south of The Union, on Hawthorne Street, is the ***Academic Services Building***, where students can find additional support. The **Office of Admission and Evaluation** evaluates applications for undergraduate and graduate admission to the University. The **Office of the Bursar** has cashiers to process student payment and financial transactions.

The **Office of the Registrar** is responsible for the maintenance of student records and all registration transactions. This office also processes enrollment certifications, transcript requests, graduation applications and diplomas, and student identification cards as well as publishing the *Schedule of Classes* and the University *Catalog*.

Veterans Affairs is a part of the Registrar's office and serves the needs of students who are veterans or dependents of veterans. The office is responsible for creating and maintaining records which are used in support of certification of a student's status to the Veterans Administration.

Applicants for admission who are entitled to receive veterans benefits during University enrollment are encouraged to contact the Veterans Affairs office as early as possible in the process, to obtain information on current regulations and to initiate appropriate paperwork.

By heading toward the southwest edge of the campus, students can find two more facilities to meet specific needs: The Student Health Center on Wiggins Drive and The Housing Office located in Kelly Hall just off Sunbowl Drive.

The Student Health Center offers to all students a wide range of health care services and activities. The staff includes a full-time physician, nurse practitioner, registered nurses, and half-time medical technologist and pharmacist. Most services are provided without charge, but there are minimal fees for laboratory tests and pharmacy services. Referrals outside the Health Center, including X-ray referrals, are at the student's own expense.

Student insurance is available and is highly recommended for every student not already covered by some hospitalization policy. Information may be obtained by calling ECA Associates at (915) 533-9891.

Services include health promotion with emphasis on physical fitness, smoking cessation, counseling and education related to alcohol and drug abuse and cholesterol-nutrition monitoring.

Preventive health care includes immunizations and screening for tuberculosis. Health education is always available to students who seek care at the Health Center.

Major emergencies are referred to adjacent hospitals, and University police are always available to administer first aid. Minor illness, injury or health concerns are treated by the professional staff.

The facility is located at 2001 Wiggins, directly across from the University Library and hours of service are Monday through Friday, 7 a.m. to 5 p.m.

Student On-Campus Housing is provided in the University's high-rise co-educational residence hall. Special living environments include 24-hour quiet floors. Suites and private rooms can be acquired if available. All rooms are air-conditioned and equipped with a telephone, sink, desk, bed, and overhead storage. Laundry rooms, a fitness room, sundeck, music room, TV lounges, and storage rooms are available in the residence halls. The residence halls are conveniently located on campus adjacent to the Library, the Student Health Center, the Commons, the swimming pool, tennis courts, basketball courts, and many other recreational facilities.

The student family apartment complex consists of sixty units with two bedrooms, living room, kitchenette and full bathroom. All apartments are unfurnished except for a stove and refrigerator. Reservations are handled on a first-come first-served basis.

Applications for admission to UT El Paso and application for the residence halls or the student family apartments are separate transactions. A housing application will be mailed upon request when a student applies for admission to the University, or an application may be obtained from:

Housing Business Office
Kelly Hall #105
UT El Paso
El Paso, TX 79968
(915) 747-5352

Finally, by heading up the hill from The Union and past the Education Building, students can reach Memorial Gymnasium, the home of the Recreational Sports Department and the facilities serving the Department of Intercollegiate Athletics.

Recreational Sports Department seeks to provide the opportunity

for each member of the University community to voluntarily participate in a wide variety of sports and recreational activities.

The Intramural Sports Program includes approximately forty activities for men and women. There are team sports such as flag football, volleyball, basketball, and indoor soccer, as well as individual and dual sports such as tennis, handball, racquetball, golf, and wallyball. Many activities include "Co-rec" leagues for teams comprised of equal numbers of men and women participants. Activity schedules are printed each semester and are available at Memorial Gym Room 40.

Drop-in Recreation involves leisure time use of recreational facilities. These include basketball, volleyball, indoor racquetball, outdoor racquetball, tennis, and grass fields available for use. Sports equipment is also available for checkout. Reservations for the fields must be made by registered student organizations in Memorial Gym Room 40. Racquetball reservations must be made on a daily basis Monday through Friday between the hours of 8:00 a.m. and 3:00 p.m. Validated UTEP ID's must be carried at all times.

Recreational extramural/team sports are interest-group teams that are open to all students. Many teams compete against other schools, while others exist for instruction and recreation. Current clubs are: badminton, fencing, karate, racquetball, soccer, squash, and wrestling.

The Outdoor Adventure Program is the newest of the offerings. Over twenty-five different backpack, bicycle, rafting, or ski trips are offered each year. With destinations including the Grand Canyon, Big Bend and Steamboat Springs, OAP has become a very popular addition to campus life.

The department maintains an Outdoor Equipment Center which offers bicycling and camping equipment for a minimal rental fee. The department is located in room 40 Memorial Gymnasium. Phone 747-5103 for information or court reservations.

The UT El Paso **Department of Intercollegiate Athletics** is responsible for the University's participation as an NCAA Division I-A school and as a member of the Western Athletic Conference. The Department sponsors the following sports: men's football, basketball, cross country, indoor track, outdoor track, tennis, golf, and rifle and women's basketball, volleyball, cross country, indoor track, outdoor track, golf and tennis.

Football is played in the 52,000-seat Sun Bowl Stadium, which is located on campus and nestled in the southern tip of the Rocky Mountains, and basketball in the 12,222-seat Special Events Center. The men's basketball team won the WAC Championship in 1983, 1984, 1985, 1986, and 1987, won the WAC Post-Season Basketball Tournament in 1989 and 1990, and has participated in the NCAA Tournament in each of the last eight years. The men's golf team has been nationally ranked in each of the last five years and placed 2nd at the NCAA Tourney in 1988. Other recent nationally ranked teams are rifle, and men's and women's track.

PROGRAMS OF STUDY

College of Business Administration
College of Education
College of Engineering
College of Liberal Arts
College of Nursing and Allied Health
College of Science

The College of Business Administration

The primary mission of the College of Business Administration Graduate Program is to provide a curriculum designed to prepare students for leadership positions in business and administrative careers. The College meets these needs through specialized education leading to the Master of Accountancy, the Master of Business Administration, and the Master of Science in Economics. Graduate programs in Business and Accounting are accredited by the American Assembly of Collegiate Schools of Business.

The Master of Accountancy is a professional graduate degree designed to prepare students for careers in public, private and governmental accounting. While the Program provides in-depth study in all the basic areas of accounting, it permits specialization in three fields—Managerial Accounting, Tax Accounting, and Financial Accounting/Auditing.

The Master of Science in Economics degree is designed to prepare graduates for positions in industry, finance, and government which require strong research/analytical backgrounds, and for further graduate work in Economics. In addition to the standard theory courses, the curriculum strongly emphasizes application of quantitative techniques to problem solving. The program also permits the student to minor in a related discipline.

The objective of the MBA program is to give students an opportunity to prepare for executive careers in business or in institutions that use business techniques and policies in management and administration. The program is broad; it draws from all the traditional business disciplines—Accounting, Computer Information Systems, Economics, Finance, Management and Marketing.

Graduate programs in the College of Business are designed with the working professional in mind. All graduate courses are taught in the evening or on weekends. At the heart of these programs is a distinguished faculty committed to teaching, research and community service.

The faculty of the College contribute research and public service efforts through the Bureau of Business and Economic Research. The Bureau serves as both collector and clearinghouse for research on the border.

The College of Business Administration serves as headquarters for the El Paso Small Business Institute (SBI). Established in 1976, the SBI's goal is to improve the small business management skills of CBA students and of community small business owners through cooperative projects.

The work of the faculty, as well as that of their students, is supported by the superb facilities of the College of Business Administration. This 80,000 square foot, $7 million building opened in 1983 and includes four micro-computer laboratories and an HP3000 mainframe.

Accounting

260 Business Administration Building
(915) 747-5192

CHAIRPERSON: Richard G. Schroeder
GRADUATE FACULTY: Austin, Hoffmans, Mann, Mayne, Omundson, Putnam, Schroeder, Tunnell, Winkler, Zlatkovich

The Department of Accounting offers an AACSB accredited Master of Accountancy degree. The objective of the Master of Accountancy studies is to provide education for students interested in careers in professional accounting fields. The program permits students to tailor their curriculum to meet their career objectives, allowing either general studies in accounting or specialization in taxation, managerial accounting, or financial accounting and auditing.

MASTER OF ACCOUNTANCY PROGRAM

The MAcc program consists of a 12-hour accounting core, 6 hours of accounting electives, and 18 hours of common body of knowledge courses or approved electives. Students must complete a minimum of 36 hours and take a final examination. Students may earn three hours credit writing a professional report. If they write a professional report, their defense of the document will serve as their final examination. Two other options for satisfying the final examination requirement are: revise and defend major research papers prepared in ACCT 3510, ACCT 3522, and one other graduate-level accounting course; or complete an examination over all courses in the candidate's plan of study. The thesis or professional report may be used to augment any of the options described below or to focus on specific issues of interest to the candidate.

REQUIREMENTS FOR ADMISSION TO THE MASTER OF ACCOUNTANCY PROGRAM

1. A Bachelor's degree from an accredited institution in the United States (or proof of equivalent training in a foreign institution).
2. General competency in quantitative methods.
3. A satisfactory score on the Graduate Management Admissions Test, the GMAT. The GMAT score plus 200 times the grade-point average on all work previously completed must equal 950 or more or the GMAT score plus 200 times the upper level GPA must equal 1000 or more.
4. A grade-point average of at least 2.7 on all undergraduate and graduate level work already completed is required for unconditional admission. Students with less than a 2.7 GPA but meeting requirement three above may be conditionally admitted.

Specific Requirements for the Master of Accountancy Degree

All students must complete the Common Body of Knowledge, the Professional Core and all Required Graduate Courses as described below. **Courses in the Common body of knowledge and the professional core will be waived** if the student has (a) already taken these courses or their equivalents, or (b) demonstrates proficiency in the related topics through challenge examinations approved by the Graduate Studies Committee in the Department of Accounting.

1. **Common Body of Knowledge**

ACCT 3501 (3309) or ACCT 3201-3202	Survey of Accounting Principles or Accounting Principles I and II
ECON 3504 or ECON 3203-3204	Business Economics or Principles of Economics I and II
QMB 3511 or QMB 3201, 3301 and MATH 3201	Quantitative Methods in Business
BLAW 3506 (3301)	Business Law and Ethics

Students in the Tax Option, the Managerial Option and the Financial/Auditing Option must also complete:

MKT 3503 (3300)	Principles of Marketing
FIN 3505 (3310)	Financial Concepts & Analysis

2. **Professional Core**

ACCT 3320	Accounting Systems
ACCT 3321	Intermediate Accounting I
ACCT 3322	Intermediate Accounting II
ACCT 3323	Cost Accounting
ACCT 3327	Federal Income Tax for Individuals
ACCT 3404	Auditing Principles and Procedures

3. **Required Graduate Accounting Core** (12 Graduate Credit Hours)

ACCT 3510	Contemporary Accounting Issues
ACCT 3512	Controllership
ACCT 3522	Tax Concepts: Research & Procedures
ACCT 3524	Computer Applications in Accounting and Auditing

4. **Completion of *one* of the following options:**

(1) The General Option:

a. Accounting Electives (6 Graduate Credit Hours)

ACCT 3500	Graduate Accounting Elective
ACCT 3550 or	Graduate Accounting Elective or
ACCT 3597	Professional Report

b. Graduate Credit CBK or Approved Electives (18 hours)

ELEC 3500	(Must be 3500 level-Accounting or Non-Accounting Approved Elective)

*FIN 3505 or Approved Elective
*MKT 3503 or Approved Elective

*MGMT 3508 or Approved Elective
*MGMT 3511 or Approved Elective
*MGMT 3525 or Approved Elective

(2) The Tax Option:

a. Required Tax Courses (15 graduate credit hours)
ACCT 3428 Federal Income Tax—Partnership & Corp.
ACCT 3525 Estate and Gift Taxation
ACCT 3526 Advanced Corporate Taxation
ACCT 3520 Taxation of Partnerships & Sub S Corp.
ACCT 3523 Advanced Topics in Federal Taxation

b. Graduate Credit CBK *or* Approved Electives (9 hours)
*MGMT 3508 or Approved Elective
*MGMT 3511 or Approved Elective
*MGMT 3525 or Approved Elective

(3) The Financial Accounting/Auditing Option:

a. Required ACCOUNTING Courses (12 graduate credit hours)
ACCT 3405 Not-for-Profit Accounting
ACCT 3423 Issues in Accounting
ACCT 3523 Advanced Accounting
ACCT 3500 Graduate level Accounting Elective

b. Graduate Credit CBK *or* Approved Electives (9 hours)
ELEC 3500 (Must be 3500 level Accounting or Non-Accounting Approved Elective)
*MGMT 3508 or Approved Elective
*MGMT 3511 or Approved Elective
*MGMT 3525 or Approved Elective

(4) The Managerial Accounting Option:

a. Required ACCOUNTING courses (12 Graduate Credit Hours)
ACCT 3405 Not-for-Profit Accounting
ACCT 3421 Advanced Cost Accounting
ACCT 3591 Seminar in Managerial Accounting
ACCT 3500 Graduate level Accounting Elective

b. Graduate Credit CBK *or* Approved Electives (9 hours)
ELEC 3500 (Must be 3500 level Accounting or Non-Accounting Approved Elective)
*MGMT 3508 or Approved Elective
*MGMT 3511 or Approved Elective
*MGMT 3525 or Approved Elective

* Students who have completed undergraduate work in business with sufficient coverage of the topics in these specific courses may select electives from any appropriate discipline. Three hours of these electives may be non-accounting undergraduate courses given for graduate credit.

Total Graduate Credit Hours for the Master of Accountancy = 36 Hours

Accounting Courses Approved for Graduate Credit

The following accounting courses are approved for either undergraduate or graduate students. Refer to the undergraduate catalog for course descriptions.

3405 Not-for-profit Accounting

3421 Advanced Cost Accounting

3423 Issues in Auditing

3425 International Accounting

3428 Federal Income Tax—Partnerships and Corporations

The following accounting courses are approved for graduate students only:

3501 Financial Accounting (3-0)
An introductory study of accounting procedures involved in recording transactions producing financial statements, and interpreting financial data prepared primarily for external users. This course examines the theory and practices related to recording assets, liabilities, owners' equities, revenues and expenses in accordance with current accounting theory. *Prerequisite*: Admission to a graduate program in business. May not be counted for credit toward any graduate degree in business or economics.

3510 Contemporary Accounting Issues (3-0)
Development of accounting theory; controversial issues involved in the measurement and reporting of enterprise periodic income. Study of authoritative pronouncements. *Prerequisite*: ACCT 3322.

3511 Accounting for Management (3-0)
A study of accounting as related to making business decisions. Readings, cases, and problems dealing with accounting concepts, budgeting and cost control, use of accounting data in planning operations and policy formulation, and tax planning in business policies. *Prerequisite*: ACCT 3309 or ACCT 3501.

3512 Controllership (3-0)
A study of the major phases of controllership practice, including organizational status, objectives, functions, duties, and responsibilities and the managerial utilization of accounting and statistical data for planning and control. *Prerequisite*: ACCT 3511 or ACCT 3314, or ACCT 3323.

3520 Taxation of Partners, Partnerships and Sub S Corporations (3-0)
The intensive study of federal income tax principles applicable to the formation, operation, sale and liquidation of partnerships. Special attention will be paid to the issues of distributions, basis and tax minimization opportunities. *Prerequisites*: ACCT 3428 and 3522 or equivalent.

3521 Advanced Topics in Federal Taxation (3-0)
Topics will vary depending on current developments, e.g., taxation of foreign persons and multinational operations, consolidated tax returns, state and local taxation, pension plans, charitable organizations, and tax reform proposals. *Prerequisite*: ACCT 3327 or equivalent.

3522 Tax Concepts, Research and Procedure (3-0)
The goal is to develop skill in tax issue identification and development of documentary support and arguments for tax problems. To be combined with analysis of concepts germane to all areas of taxation. Emphasis on written communication skills. Also, tax procedure will be covered. *Prerequisites*: ACCT 3327 and approved computer science (or concurrent registration) or equivalent.

3523 Advanced Auditing (3-0)
Provides intensive coverage of technical and professional aspects of public accounting. It provides a structure for effective research and current auditing issues. *Prerequisite*: ACCT 3423.

3524 Computer Applications in Accounting and Auditing (3-0)
Design and control of computerized accounting; use of computers in accounting and their applications to the auditing functions; stress is placed on E.D.P. control; internal auditing considerations. *Prerequisite*: ACCT 3404.

3525 Estate and Gift Taxation (3-0)
A comprehensive survey of principles involved in determining the federal estate tax and federal gift tax including the taxability and valuation of property and analysis of deductions, including the federal marital deduction. *Prerequisite*: ACCT 3327 or equivalent.

3526 Advanced Corporate Taxation (3-0)
Reorganizations, net operating losses, and other advanced areas in the field of corporate taxation. *Prerequisite*: ACCT 3428.

3590 Accounting Seminar (3-0)
A study of the development of accounting thought as a background for its application to current accounting problems. Influences of government and organizations of accountants. *Prerequisite*: Twenty-one semester hours of accounting or consent of instructor.

3591 Seminar in Managerial Accounting (3-0)
Advanced topics in managerial accounting including applications of stochastic processes to accounting and cost variance investigation models. Topics will vary to reflect current literature. *Prerequisite*: ACCT 3323.

1592-3592 Directed Individual Study in Accounting
This course may be repeated, but no more than three semester credit hours may be applied to satisfy the requirements for the master's degree. *Prerequisite:* Consent of Instructor.

3594 Current Issues in Accounting (3-0)
A course organized to investigate special topics and current issues in accounting. May be repeated for credit when content varies. *Prerequisite:* Consent of Instructor.

3597 Professional Report in Accounting
May be taken only once for credit. Consent of instructor required.

Busin ss Administration

MASTER OF BUSINESS ADMINISTRATION

The College of Business, through the departments of Accounting, Economics and Finance, Management, and Marketing, offers a Master of Business Administration degree. The M.B.A. degree program is accredited by the American Assembly of Collegiate Schools of Business. The objective of the M.B.A. program is to give students the opportunity to prepare for executive careers in business or in institutions that use business techniques and policies in management and administration. The program meets this objective by being broad in nature and aimed at general competence in overall management and administration. The majority of the course work is devoted to a broad understanding of the environment, controls, and practices which are common to most institutions. The remaining courses are determined by the student's special area of interest or concern.

Enrollment in Graduate Courses without Admission to the M.B.A. Program

Any student who has not been admitted to the MBA, the MACC or the M.S. in Economics degree programs *must* have written permission of the Graduate Advisor in the College of Business Administration in order to enroll in graduate business courses.

Requirements for Admission to the M.B.A. Program

1. A bachelor's degree from an accredited institution in the United States (or proof of equivalent training in a foreign institution).
2. General competency in quantitative methods.
3. A satisfactory score on the Graduate Management Admissions Test, the GMAT. The GMAT score plus 200 times the grade-point average on all work previously completed must equal 950 or more *or* the GMAT score plus 200 times the upper level GPA must equal 1000 or more.
4. A grade-point average of at least 2.7 on all undergraduate and graduate level work already completed is required for unconditional admission. Students with less than a 2.7 GPA but meeting requirement three above may be conditionally admitted.

Specific Requirements for the M.B.A. Degree

All students must complete the Common Body of Knowledge and the Required Graduate Courses described below. **Courses in the Common Body Of Knowledge will be waived** if the student has (a) already taken these courses or their equivalents, or (b) demonstrates proficiency in the related topics through challenge examinations approved by the M.B.A. Graduate Studies Committee.

Common Body of Knowledge

ACCT 3501 (3309 or 3201 & 3202)	Financial Accounting
ECON 3504 (3203 & 3204)	Business Economics
BLAW 3506 (3301)	Business Law and Ethics
FIN 3505 (3310)	Financial Concepts and Analysis
MKT 3503 (3300)	Marketing Systems and Principles
QMB 3511 (3201, 3301 & MATH 3201)	Quantitative Methods in Business

Required Graduate Courses

ACCT 3511	Accounting for Management
ECON 3511	Managerial Economics
ECON 3512	The Economic Environment
FIN 3511	Financial Management
*MGMT 3511	Organizational Management Seminar
*MGMT 3508	Production Operations Management
MKT 3511	Marketing Management
BUSN 3511	International Business
*CIS 3511	Management Information Systems
*MGMT 3525	Management Strategy & Policy (taken last semester)

Electives or Professional Report Courses

Elective 3500	Graduate Level Elective
Elective 3500 or 3597**	Graduate Level Elective or Professional Report

* Common Body of Knowledge Courses included in the Required Graduate Credit Courses.
** Students must enroll in 3597 every semester they are working on their professional report.

Total Graduate Credit Hours Required - 36 hours

Students with the appropriate undergraduate background may elect to make certain substitutions in the MBA program, subject to the following provisions:

a. Students must substitute only courses in the same general field as the course being replaced, e.g., Accounting for Accounting or Marketing for Marketing, except for substitutions being made for these Common Body of Knowledge Courses included in the Required Graduate Credit Courses—MGMT 3511, MGMT 3508 and CIS 3511. Specifically, the following substitutions are permitted at the student's discretion:

If a student has taken this course (or its equivalent),	in lieu of this MBA Course,	We will substitute one of the following Courses:
ACCT 3323 or 3314	ACCT 3511	ACCT 3512
ECON 3303	ECON 3511	ECON 3502 or 3550
ECON 3302	ECON 3512	ECON 3503, 3520 or 3560
FIN 3410	FIN 3511	Any 3500 level FIN
MKT 3495	MKT 3511	Any 3500 level MKT

b. A student may substitute a 3500 level course or a 3400 level course approved for graduate credit in any business discipline for any of the following undergraduate courses:

If a student has taken this course (or its equivalent),	we will substitute any 3400 for graduate credit or 3500 level course in business in lieu of this course:
MGMT 3310	MGMT 3511
MGMT 3321	MGMT 3508
CIS 3345	CIS 3511

TWO DEGREE OPTION—MBA/MPA

Students may also apply for a two-degree option MBA-MPA program. The objective of this program is to permit students with broad interest in both the public and private sectors to double register in both the MBA and MPA programs. With the increasing interdependence of the public and private sectors, this option is attractive to those students wishing to pursue careers in positions responsible for working with their counterparts in private or public organizations. In order to be admitted into the two-degree option, the applicant must specify the option *at the time of application to the Graduate School.* Students who wish to enter the MBA-MPA program should consult with the Graduate advisor for the College of Business Administration with regard to admission requirements and required courses.

Specific Requirements for the MBA-MPA Two-Degree Option

1. Students must meet all admission requirements of both programs.
2. The same leveling work required of an M.B.A. student without a B.B.A. will be required, subject to the waiver procedures currently operative in the M.B.A. program.
3. The program consists of 27 hours of core M.B.A. courses, 27 hours of core M.P.A. courses, POSC 3594 and a comprehensive written exam in the core subject areas of public administration, plus any additional required courses. The number of hours

necessary to complete the two-degree option will vary depending upon each student's background and previous academic work, but will in any case involve a minimum of 60 hours and a maximum of 78 hours.
4. The core curriculum in each of the separate degree programs must be satisfactorily completed.
5. Electives must be approved by the academic advisors of both programs; upon such approval, the core courses of one program may be used to meet the elective requirements of the other.
6. Admission and continuance decisions are handled separately by the M.B.A. and M.P.A. graduate committees and by the Graduate School.

Economics and Finance

236 Business Administration Building
(915) 747-5245

CHAIRPERSON: Timothy P. Roth
GRADUATE FACULTY: Brannon, Brown-Collier, Herbst, Holcomb, James, Johnson, Roth, Schauer, Smith, Sprinkle, Tollen

MASTER OF SCIENCE DEGREE IN ECONOMICS

The Department of Economics and Finance offers a Master of Science degree in economics with the opportunity for specialization in areas within economics and for course work in areas outside economics. Some suggested areas for specialization within economics are regulation, international economics, applied business economics, and border economics. Some suggested areas for the minor or for interdisciplinary work are border studies, finance, and computer information. All proposed degree plans must be approved by the Graduate Advisor and the Dean of the Graduate School.

Thesis and non-thesis programs are available. Students enrolled in the thesis program must take 24 hours of course work in addition to completion of the thesis for which six hours credit are given. The non-thesis option requires a total of 36 hours of course work including completion of Economics 3595 and submission of two bound research papers which may be drawn from previous graduate courses in economics. Both the thesis and the reports must be presented to a committee charged with the responsibility of conducting a final examination.

The ability to take course work in areas outside economics is available either through completion of a minor, with as many as 12 hours and a minimum of six, or through the interdisciplinary program. The interdisciplinary program is a 36-hour program with a minimum of 18 hours in economics. The student may elect to write a thesis for 6 hours credit or may enroll in Economics 3595 for 3 hours credit and submit two bound research papers which may be drawn from previous graduate courses in economics. A representative from the minor or interdisciplinary area must be a member of the thesis or report committee.

Requirements for Admission to the M.S. Degree in Economics

1. A bachelor's degree from an accredited institution in the United States (or proof of equivalent training in a foreign institution).
2. General competency in quantitative methods.
3. A satisfactory score on the Graduate Record Examination (GRE) and a satisfactory GPA on all work attempted prior to applying to the MSEC.
4. Completion of the following courses or their equivalents:

ECON 3504	Principles of Economics
ECON 3302 or 3512	Intermediate Macroeconomics
ECON 3303 or 3511	Intermediate Microeconomics
QMB 3511	Quantitative Methods

Specific Requirements for the M.S. Degree in Economics

1. All Candidates must complete the following courses:

ECON 3501	Research Methodology
ECON 3502	Microeconomic Theory
ECON 3503	Macroeconomic Theory
ECON 3570	Advanced Quantitative Methods in Economics

2. All Candidates must complete **one** of the following options:
   a. Thesis Option (30 hour program)
      12 hours of graduate credit in Economics or an approved minor.
      ECON 3598 Thesis
      ECON 3599 Thesis
   b. Non-Thesis Option (36 hour program)
      9 hours of graduate credit courses in Economics and 12 hours of graduate credit courses in Economics or an approved minor.
      ECON 3595
   c. Interdisciplinary Option (36 hour program)
      18 hours of graduate credit in an approved minor.
      ECON elective or ECON 3598
      ECON 3595 or ECON 3599

The Department of Economics and Finance also participates in the Master of Business Administration and the Master of Accountancy degrees, the requirements for which are found under Business Administration and Accounting in this catalog.

For Undergraduate and Graduate Students

ECONOMICS

3430 Public Sector Economics (3-0)
3435 Urban Economics (3-0)
3440 Economics of Labor (3-0)
3468 Economy of Mexico (3-0)

FINANCE

3411 Commercial Bank Management (3-0)
3412 Current Issues in Banking (3-0)
3418 Financial Statement Analysis (3-0)
3428 Central Banking (3-0)

For Graduate Students Only

ECONOMICS

Prerequisite: Twelve semester hours of economics or consent of the instructor.

3501 Research Methodology (3-0)
Concentrated study of data gathering methods, research design and analytical and statistical techniques used in economics research. The purpose of the course is to master the quantitative methods necessary to understand current economics literature. *Prerequisites*: ECON 3302 and 3303; or ECON 3511 and ECON 3512.

3502 Microeconomic Theory (3-0)
The determination of prices and output. The theory of markets ranging from perfect competition through monopolistic competition and oligopoly to monopoly. The theory of the firm and the industry. Welfare implications of price determination. *Prerequisite*: ECON 3303; or ECON 3511.

3503 Macroeconomic Theory (3-0)
The analysis of the determination of total income in the economy and related problems. Strong emphasis is given the theory of income determination, studies in the demand and supply of money, and the relationship between government policy and economic activity. *Prerequisites*: ECON 3302 or ECON 3512 and MATH 3201 or the equivalent.

3504 Business Economics (3-0)
An intensive, in-depth study of economics with emphasis upon the theory of the static profit maximizing firm and upon the effects of the economic environment upon the firm. *Prerequisite*: Admission to a graduate program in business. May not be counted for credit toward any graduate degree in business or economics.

3511 Managerial Economics (3-0)
An evaluative study of the theory of economic decision making in individual firms, groups of firms, and industries under market conditions ranging from competition to monopoly. (This course may

not be counted for graduate credit by students in the MS program in economics.) *Prerequisite*: ECON 3204 or ECON 3504.

3512 The Economic Environment (3-0)
An evaluative study of the determinants of levels of national income, employment, and prices. (This course may not be counted for graduate credit by students in the MS program in economics.) *Prerequisite*: ECON 3203 or ECON 3504.

3520 Monetary and Fiscal Policies and Problems (3-0)
An analysis and critique of monetary and fiscal policies and practices designed to facilitate economic stability and economic progress. Emphasis is given development and application of techniques used for analysis of economic activity, in-depth studies of stabilization policies and their effects, and analysis of problems inherent in the economic system. *Prerequisite*: ECON 3302 or ECON 3512 or consent of instructor.

3550 Industrial Organization and Policy (3-0)
Selected topics in the structure, conduct, regulation of business and public policy toward business. *Prerequisite*: ECON 3303 or ECON 3511.

3560 International Economics (3-0)
Economic principles of the flow of goods, services, and capital funds across international borders. Analysis of existing national and international economic institutions influencing international trade and capital flow. *Prerequisite*: ECON 3302 or ECON 3512 or consent of instructor.

3565 Economic Development (3-0)
A critical analysis of policies designed to achieve economic growth in less developed countries. Topics include monetary and fiscal measures, development of human resources, capital formation, investment allocation, introduction of new technologies and coordination of domestic policies with the international economy. *Prerequisite*: ECON 3302 or ECON 3512.

3566 Latin American Economics (3-0)
A study of the existing economic institutions in Latin America. Application of economics principles to Latin American economic problems and policy. The emphasis is institutional rather than analytical. *Prerequisite*: ECON 3302 or ECON 3512 or consent of instructor.

3570 Advanced Quantitative Methods in Economics (3-0)
Correlation and regression analysis, autocorrelation, elements of linear algebra and other current quantitative topics will be treated. The course is designed to provide basic expertise in the application of quantitative techniques to economic problems. *Prerequisite*: ECON 3501 or consent of instructor.

3580 Development of Economic Thought (3-0)
An interpretative survey of principal doctrines in the field of economic theory and policy since the middle of the 19th century. *Prerequisites*: ECON 3302 and ECON 3303 or ECON 3512 and ECON 3511 or consent of instructor.

6590 Free Enterprise (6-0)
Class is designed generally for public elementary and secondary school teachers. Cannot be used for graduate credit toward degrees in the College of Business.

3592 Directed Individual Study in Economics
This course may be repeated, but no more than three semester credit hours may be applied to satisfy the requirements for the master's degree. *Prerequisite*: Consent of instructor or approval of Graduate Advisor.

3594 Current Issues in Economics (3-0)
A course organized to investigate special topics and current issues in economics. May be repeated for credit when content varies. *Prerequisite*: Consent of Instructor.

3595 Seminar in Applied Economic Research
Performance of supervised research studies on selected economic problems. Reports are bound and submitted to the Graduate Office for completion of the non-thesis degree requirements for the Masters in Economics. May be taken only once for credit. *Prerequisite*: Approval of the Graduate Advisor.

3597 Professional Report in Economics
May be taken only once for credit. Approval of the Graduate Advisor required.

3598 Thesis
Prerequisite: Approval of Graduate Advisor.

3599 Thesis
Prerequisite: Approval of Graduate Advisor.

FINANCE

3505 Financial Concepts and Analysis (3-0)
An intensive, in-depth study of finance with emphasis on the managerial implications of financial concepts. *Prerequisites*: Admission to a graduate program in business; ACCT 3501. May not be counted for graduate credit in the MBA and M.S. in Economics degrees.

3511 Financial Management (3-0)
A study of the financial manager in executive decision making, involving financial planning and analysis in the allocation of the financial resources of a firm; investment decision making, capital budgeting, and financial problems of growth. *Prerequisite*: FIN 3310 or FIN 3505 or consent of instructor.

3515 Securities Analysis (3-0)
An in-depth study of the techniques of market and security analysis. Special emphasis is placed on the development of portfolio theory, application of the theory to real-world situations, and the evaluation of portfolio management. *Prerequisite*: FIN 3410 or FIN 3511 or consent of instructor.

3518 Capital Formation, Analysis, and Budgeting (3-0)
This course is designed to provide an in-depth study of the cost capital and arguments concerning the appropriate specification of capital costs; analysis of the capitalization package of the firm; study of cash flows as they relate to the investment decision; risk analysis in the capital budgeting process and a study of techniques of capital budgeting under various constraints. *Prerequisite*: FIN 3410 or FIN 3511 or consent of instructor.

3522 International Finance (3-0)
An in-depth study of theoretical principles involved in the financing of the flow of goods and services among nations, balance of payments considerations, and international monetary problems. Subject matter may vary at the discretion of the instructor. *Prerequisite*: ECON 3512 or ECON 3302 or consent of instructor.

3525 International Financial Management (3-0)
An in-depth study of foreign exchange risk management as it relates to the protection of future investment decisions, the cost of capital, and the firm's financial structure. Subject matter may vary at the discretion of the instructor. *Prerequisite*: FIN 3410 or FIN 3511 or consent of the instructor.

3592 Directed Individual Study in Finance
This course may be repeated, but no more than three semester credit hours may be applied to satisfy the requirements for the master's degree. *Prerequisite*: Consent of Instructor and approval of Graduate Advisor.

3594 Current Issues in Finance (3-0)
A course organized to investigate special topics and current issues in finance. May be repeated for credit when content varies. *Prerequisite*: Consent of Instructor.

3597 Professional Report in Finance
May be taken only once for credit. Approval of Graduate Advisor required.

Management

205 Business Administration Building
(915) 747-5496

CHAIRPERSON: Bruce Woodworth
PROFESSOR EMERITUS: Edward Y. George
GRADUATE FACULTY: Gemoets, Hoffman, Ibarreche, Mahmood, Martin, Trevino, Wilhelm, Woodworth

The Management Department participates in the Master of Business Administration, the Master of Accountancy, and the Master of Science in Economics degrees, the requirements of which are found under Business Administration, Accounting, and Economcis in this catalog.

The following areas are included under Management
Business
Business Law
Computer Information Systems
Management
Quantitative Methods

BUSINESS

For Graduate Students Only

3511 International Business (3-0)
This course explores the nature of international business, as well as global strategies. It also introduces students to the legal and financial frameworks for international business, and the manner in which nation/states interact with multinational enterprises. Operationally, the areas of marketing, accounting, management information, finance, human resources, technology transfer, and logistics are examined.

BUSINESS LAW

For Undergraduate and Graduate Students

3425 International Business Law (3-0)

For Graduate Students Only

3506 Business Law and Ethics (3-0)
A broad-based course covering legal, social and ethical considerations as they affect business. *Prerequisite*: Admission to a graduate program in business. May not be counted for credit toward any graduate degree in business or economics.

COMPUTER INFORMATION SYSTEMS

For Undergraduate and Graduate Students

3445 Business Systems Design (3-0)
3465 Advanced Data Base Management

For Graduate Students Only

3511 Management Information Systems Theory and Practice (3-0)
A broad study of Management Information Systems, Decision Support Systems, and Expert Systems. MIS will be studied in-depth from the standpoint of structures, technology and requirements. Problems and issues related to the design, implementation and management of MIS will be covered.

3517 Information Resource Policy and Management (3-0)
A study of the information systems management function with particular emphasis on planning, organizing, and controlling information resources including MIS personnel. Coverage of various methodologies for assessing and evaluating the MIS function. Also covered are various strategies and procedures for managing MIS development.

1592-3592 Directed Individual Study in CIS
This course may be repeated for credit when the subject matter differs. *Prerequisite*: Consent of Instructor.

3594 Current Issues in CIS (3-0)
A course organized to investigate special topics and current issues in Computer Information Systems. *Prerequisite*: Consent of Instructor.

MANAGEMENT

For Undergraduate and Graduate Students

3333 Production Control
3425 International Management (3-0)

For Graduate Students Only

3508 Concepts of Production Management (3-0)
The production or operations function is concerned with the planning and decision-making activities of managers directly responsible for the conversion of resources into products and services. The operations manager plans production, schedules work and controls inventories. This course is a study of the issues underlying the management of operations, and introduces the student to a variety of tools and techniques used by operations managers exploring alternative means of implementing decisions.

3511 Organizational Management Seminar (3-0)
An experiential study of management processes and problems associated with the social system of organizations including individual and group behavior, behavior among groups, and behavior of organizations in an international context interacting with external and internal environments.

3521 Micro-Organizational Behavior (3-0)
An experiential study of individual and group processes in organizations to improve skills as group members or leaders. Integrates group theory, research and applied methods for group work. Students will have an opportunity to experience in class many issues associated with organizational life to include team development, project management, staff meetings, organizational leadership, planned change, decision-making processes, interpersonal relations, and organizational communication. *Prerequisite*: MGMT 3511.

3524 Business and Society (3-0)
A seminar devoted to examining the ideology and the socio-economic position of private business enterprise in America and the world. The influence of corporate management on society and public policy will be stressed.

3525 Management Strategy and Policy (3-0)
A seminar devoted to an investigation, analysis, and discussion of American business problems, trends, policies, and major issues. (To be taken in the last semester.)

1592-3592 Directed Individual Study in Management
This course may be repeated, but no more than three semester credit hours may be applied to satisfy the requirements for the master's degree. *Prerequisite*: Consent of Instructor.

3594 Current Issues in Management (3-0)
May be taken only once for credit. Consent of instructor required.

3497 Professional Report in Management
May be taken only once for credit. Consent of instructor required.

QUANTITATIVE METHODS

For Graduate Students Only

3511 Quantitative Methods in Business (3-0)
Basic mathematical techniques employed in the solution of management problems, including probability theory and tests of hypotheses. May not be counted for graduate credit in the Master of Accountancy, MBA, or M.S. in Economics degree programs.

Marketing

230 Business Administration Building
(915) 747-5185

CHAIRPERSON: J. Robert Foster
ASSOCIATE PROFESSOR EMERITUS: Glenn L. Palmore
GRADUATE FACULTY: English, Hasty, Sullivan

The Marketing Department participates in the Master of Business Administration, the Master of Accountancy, and the Master of Science in Economics degrees, the requirements of which are found under Business Administration, Accounting, and Economics in this catalog.

The following areas are included under Marketing:
Marketing
Real Estate

MARKETING

For Undergraduate and Graduate Students

3425 International Marketing (3-0)
3492 Product and Price Management (3-0)

For Graduate Students Only

3503 Marketing Systems (3-0)
An intensive study of the concepts and analytical techniques employed in marketing, including assessment of the marketing environment and of market potential, the selection of target markets, and the design and implementation of marketing activities. *Prerequisite*: Admission to a graduate program in business. May not be counted for graduate credit in the MBA and M.S. in Economics degree programs.

3511 Marketing Management (3-0)
Analysis of policy formulation by marketing management with special emphasis on the influence of internal and external environment factors that affect the competitive strategies of a marketing firm.

***3521* Marketing Analysis (3-0)**
A study of research designs, methods and analytical techniques applicable to those business activities involved in moving goods from producer to consumer.

3522 Current Marketing Problems Seminar (3-0)
A study of current marketing problems. Special emphasis on delineating the problems and the practices relevant to the solutions, including the contribution and interrelationships with other disciplines.

3530 Industrial Sales and Buying Behavior (3-0)
Examines key factors affecting buyer and seller behavior in industrial, institutional, and governmental organizations. Focuses on how sellers adapt their marketing strategies and sales tactics to stages in the industrial buying process, types of buying situations, multiple buying influences, and the purchase motives of industrial buyers. *Prerequisite*: MKT 3511 or consent of instructor.

3540 Industrial Marketing Strategy (3-0)
Delineates the process by which industrial marketing firms assess market opportunities, formulate marketing strategies, allocate resources to marketing programs, and evaluate market performance. Attention is given to the role of product development, pricing, promotional strategies, and distribution planning. *Prerequisite*: MKT 3511 or consent of the instructor.

1592-3592 Directed Individual Study in Marketing
This course may be repeated, but no more than three semester credit hours may be applied to satisfy the requirements for the master's degree. *Prerequisite*: Consent of Instructor.

***3594* Current Issues in Marketing (3-0)**
A course organized to investigate special topics and current issues in Marketing. May be repeated for credit when content varies. *Prerequisite*: Consent of Instructor.

3597 Professional Report in Marketing
May be taken only once for credit. Consent of instructor required.

REAL ESTATE

For Undergraduate and Graduate Students

3405 Real Estate Finance (3-0)

For Graduate Students Only

3520 Real Estate Process (3-0)
The course concentrates on the overall real estate process of planning, production, acquisition, operation and transfer. In addressing these areas, the course will focus on the need to balance the production function with the consumption function. The dynamics of the urban system as explored in urban land economics will anchor the course.

The College of Education

The College of Education has as its mission the preparation of education professionals and the investigation of problems and opportunities associated with schools and other youth serving agencies, especially those in multicultural communities. Graduate programs in Education are based on established educational research and essential knowledge of sound professional practice. All programs in the College are approved by the Texas Higher Education Coordinating Board.

Graduate courses are offered through four Program Units: Teacher Education, Educational Psychology and Special Services, Educational Leadership and Foundations, and Kinesiology and Sports Studies.

Graduate degree programs offered by the College of Education include a Master of Arts degree in Education and the Master of Education degree with majors in Education, Educational Administration, Educational Diagnostician, Educational Supervision, Guidance and Counseling, Curriculum Specialist, Instructional Specialist, Reading Education, and Special Education. A Master of Science degree in Health and Physical Education is also available.

It is also possible for students to take post-baccalaureate coursework leading to certification by the Texas Education Agency as Professional School Counselor, Special Education Counselor, Professional School Supervisor, Professional Mid-Management School Administrator, and Professional School Superintendent. Professional certification for classroom teachers can also be earned.

The College of Education, in partnership with local area school districts, offers an Alternative Certification Program. In this program, candidates teach full-time in an elementary or secondary public school and complete summer and evening course work toward initial (provisional) teacher certification in Texas. For students separately admitted to the Master of Education degree, Instructional Specialist major, some course work may apply toward the graduate degree. (For more information, contact the Director of Alternative Certification.)

Persons seeking information about teacher certification in Texas should contact the Education Advising Office (Education 410).

Teach r Education

601 Education Building
(915) 747-5426

UNIT HEAD AND GRADUATE ADVISOR: James L. Milson
PROFESSORS EMERITI: Lou Ella Burmeister, Richard W. Burns
ASSOCIATE PROFESSOR EMERITA: Mary Louise Zander Aho
GRADUATE FACULTY: Ainsa, Barker, Bixler-Marquez, Descamps, Engelhardt, Gonzalez, Hernandez, Kies, Klingstedt, Merritt, Milson, Rodriguez, Seda, Tinajero

The Teacher Education Unit offers graduate programs of interest to teachers and to others who desire to acquire advanced professional education skills for application in school and non-school settings.

Students who wish to pursue graduate degrees in Teacher Education may select from two programs. The Master of Arts in Education is designed for students wishing to pursue research and to continue studies beyond the master's degree level. The Master of Education degree is directed toward mastery of professional education practice.

MASTER OF ARTS IN EDUCATION

The Master of Arts degree with a major in Education is designed for students who wish to pursue research and who may wish to continue studies beyond the master's degree level in the future.

Prerequisites: At least 12 semester hours of upper-division coursework in education, satisfactory undergraduate G.P.A., a satisfactory score on the Graduate Record Examination (or TOEFL for international students), and admission to the thesis program by the Graduate Studies Committee of the Unit.

Program: Thirty semester hours of coursework, including at least 21 semester hours at the 0500 level and a thesis (with oral defense). Besides the thesis, students complete a core of coursework plus electives.

Thesis: A thesis, satisfactory to the Graduate Faculty of the Unit, must be completed before the degree will be awarded.

Students in Teacher Education wishing to pursue the Master of Arts degree in Education, in addition to the above general requirements, must complete EDRS 3505-3506.

MASTER OF EDUCATION

Admission Requirements: At least 12 semester hours of 0300 and/or 0400 level education courses, a satisfactory score on the Graduate Record Examination, and admission to the M.Ed. program by the Graduate Studies Committee of the Unit.

Program: Thirty-six semester hours, including at least 27 semester hours at the 0500 level. All 0300 and/or 0400 level work proposed for inclusion in this graduate degree must be recommended for approval by the Graduate Advisor of the Unit.

Students wishing to pursue the Master of Education degree may do so through majors in Curriculum Specialist, Instructional Specialist or Reading Education. Students whose professional needs are not met by these majors may major in Education and plan a special program around those needs; students should contact the Unit Graduate Advisor for information and assistance. Specific information on the other two majors is presented below.

Final Comprehensive Examination and Scholarly Paper: A written comprehensive examination, satisfactory to the Graduate Faculty of the Unit, must be completed before the degree will be awarded. All M.Ed. degree candidates will be expected to write several scholarly papers, one of which must be presented to the Graduate Advisor for inclusion in the student's file.

Curriculum Specialist

Specialization Area	—TED 3501, 3503; ELED 3521 or SCED 3526, and 3 semester hours of 0500 level in courses offered by the Teacher Education Unit.
Professional Development	—EDRS 3505-06 (or TED 3500 with approval), EDAD 3555 or TED 3504. ENGL 3512.
Resource Area	—Six semester hours of computer applications.
Electives	—Six to nine semester hours in courses approved for graduate credit.

Instructional Specialist

In this major, students may choose to concentrate coursework in the areas of elementary education, secondary education, early childhood education, bilingual education, or health and physical education. Subject matter emphases, e.g., mathematics or history, may occur within elementary or secondary concentrations.

Concentration	—At least twelve semester hours of graduate level courses in a subject area for which the candidate has prior certification or in a subject area approved by the Graduate Advisor of the Unit.
Professional Development	—TED 3500, TED 3501, TED 3502, and TED 3503.
Resource Area	—Six semester hours in courses approved for graduate credit which provide support for the academic specialization area or for professional development.
Electives	—Six semester hours in courses approved for graduate credit.

At least 12 semester hours must apply to one of the specified concentrations.

READING EDUCATION

This program major leads to an All-Levels Reading Certificate. Students interested in a concentration in reading but not at all levels should pursue the Instructional Specialist major with an elementary concentration and stress reading.

Specialization Area	—At least twelve semester hours of graduate level courses in reading.
Professional Development	—TED 3500, TED 3501, TED 3502, and TED 3503
Resource Area	—Sociology 3575 and three semester hours of Linguistics

Students holding a Provisional Secondary Certificate also will need TED 3521 and EDPC 3518.

Students holding a Provisional Elementary Certificate also will need TED 3526 and EDPC 3518.

PROGRAM ADVISING

It is the responsibility of the student to consult the Graduate Advisor of the Unit regarding admission and degree requirements. The student is expected to maintain a continuing advising relationship which includes preparing a degree plan, submitting a Preliminary Program of Study and a Final Program of Study, and requesting a comprehensive examination or thesis defense. The Unit cannot assure that courses taken before admission and/or before degree plan preparation will apply to degree requirements.

TEACHER CERTIFICATION

This catalog does not cover teacher certification requirements. The College of Education Certification Office and the Graduate Advisor of the Unit can provide more information in this area.

A degree program is not the same as a certificate program. Courses included in a program for a first teaching certificate typically are not creditable toward a graduate degree. Courses included in a program for advanced certificates and certain endorsement programs are creditable toward a graduate degree, and most can be combined with a graduate degree program. However, a perfect match between state certification and degree requirements is not likely.

TEACHER EDUCATION (TED)

3500 Research for the Classroom Teacher (3-0)
Research methodology relating to the problems and needs of classroom teachers with major emphasis on interpreting professional literature and conducting classroom-based action research. A scholarly paper will be required. *Prerequisite*: Admission to, or completion of, a Master's degree program.

3501 Curriculum Theory and Design (3-0)
Theoretical foundations and principles of curriculum design. *Prerequisite*: Admission to, or completion of, a Master's degree program.

3502 Instructional Strategies and Classroom Management (3-0)
Decision-making methodologies and human interactions as they relate to classroom management.

3503 Construction and Use of Classroom Evaluation Instruments (3-0)
Construction and use of norm-referenced and criterion-referenced achievement measures for summative and formative evaluation. *Prerequisite*: Admission to, or completion of, a Master's degree program.

3504 Educational Trends—Seminar (3-0)
Critical consideration of selected trends in education.

3505 Practicum in Instruction in Elementary and Secondary Schools (1.5-10)
Observation by the University instructor of the student's classroom teaching and seminars designed to relate the classroom instructional situation to corresponding educational theory. Designed to be concurrent with public school teaching. May be repeated once for credit. *Prerequisites*: A grade point average of at least 2.5 in each teaching field and in all education courses, and permission of the instructor.

1511-3511 Current Topics in Language Arts Education (1-0, 2-0, 3-0)
Opportunity to develop competencies necessary to deal effectively with language arts instruction; includes curriculum concepts, teaching strategies, and skills necessary to integrate content and teaching strategies. May be repeated for credit when topic varies.

1512-3512 Current Topics in Social Studies Education (1-0, 2-0, 3-0)
Opportunity to develop competencies necessary to deal effectively with social studies instruction; includes curriculum, concepts, teaching strategies, and skills necessary to integrate content and teaching strategies. May be repeated for credit when topic varies.

1513-3513 Current Topics in Multicultural Education (1-0, 2-0, 3-0)
Opportunity to develop competencies necessary to deal effectively with multicultural education instruction; includes curriculum, concepts, teaching strategies, and skills necessary to integrate content and teaching strategies. May be repeated for credit when topic varies.

1514-3514 Current Topics in Science Education (1-0, 2-0, 3-0)
Opportunity to develop competencies necessary to deal effectively with science instruction; includes curriculum, concepts, teaching strategies, and skills necessary to integrate content and teaching strategies. May be repeated for credit when topic varies.

1518-3518 Current Topics in Mathematics Education (1-0, 2-0, 3-0)
Opportunity to develop competencies necessary to deal effectively with mathematics instruction; includes curriculum, concepts, teaching strategies, and skills necessary to integrate content and teaching strategies. May be repeated for credit when topic varies.

1519-3519 Graduate Workshop in Education (1-0, 2-0, 3-0)
Studies in a designated area. May be repeated for credit when topic varies.

3520 Multicultural Education (3-0)
Survey of multicultural education theories, issues, and methods in elementary, middle, and secondary schools. This course fulfills the multicultural education requirements for teacher certification.

3521 Museum and Field Resources in Social Studies Education (3-0)
Directed observation and study of museum exhibits, historical sites, and selected field resources. Particular emphasis will be placed on the acquisition of knowledge that directly relates to the essential elements in the elementary, middle, and high school social studies curricula in Texas.

3522 Field Resources in Science Education (3-0)
Directed observation of selected field resources. Particular emphasis will be placed on the acquisition of knowledge that directly relates to the essential elements in the elementary, middle, and high school science curricula in Texas.

3523 Energy Education (3-0)
Offers the opportunity for experience with the content, materials, and teaching strategies used in energy education.

3596 Independent Graduate Studies (3-0)
Studies in an area of the student's choice that have been approved by the sponsoring professor. May be repeated for credit when topic varies.

3597 Practicum for Master Teachers (1.5-10)
Assessment and verification of the competencies in a practicum situation as required for the Master Teacher Certificate. *Prerequisites*: Admission to Master's Degree program and possession of an initial teaching certificate.

3598 Thesis
Prerequisite: Permission of Graduate Advisor of Program.

3599 Thesis
Prerequisite: Permission of Graduate Advisor of Program.

ELEMENTARY EDUCATION (ELED)

3520 Instructional Problems (Elementary)—Seminar (3-0)
Identification of problems affecting instruction in the elementary schools. Examination of literature for solutions to these problems. May be repeated for credit when topic varies.

SECONDARY EDUCATION (SCED)

3525 Instructional Problems (Secondary)—Seminar (3-0)
Identification of problems affecting instruction in the secondary schools. Examination of literature for solutions to these problems. May be repeated for credit when topic varies.

3526 Curriculum in the Secondary School (3-0)
Curriculum in subject areas in the secondary school, and the development of plans and procedures for instruction. *Prerequisite*: TED 3501.

MATHEMATICS EDUCATION (MTED)

3520 Mathematics Problem-Solving Skills for Primary Grade Teachers (3-0)
Focus of course will be on the teaching skills of mathematics that form the basis for the elementary school mathematics curriculum. Research related to strategies children use in learning mathematics, and implications for teaching will be reviewed. Topics will include Sets, Logic, Relations and Functions, Whole numbers, and Integers.

3521 Mathematics Education Research for Primary Grades Teachers (3-0)
Focus of course will be on the teaching skills of mathematics topics forming the basis for the primary grades mathematics curriculum. Research related to teaching/learning associated with young children will be reviewed. Topics will include Rationals, Real Numbers, Probability, and Geometry. This course is a continuation of MTED 3520.

BILINGUAL EDUCATION (BED)

1530-3530 Current Topics in Bilingual Education (1-0, 2-0, 3-0)
Opportunity to develop competencies necessary to deal effectively with bilingual education instruction; includes curriculum, concepts, teaching strategies, and skills necessary to integrate content and teaching strategies. May be repeated for credit when topic varies.

3531 Bilingual/Bicultural Curriculum Design and Development (3-0)
Identification of principles, problems, and issues affecting bilingual curriculum. Examination of rationale and philosophies of various models of bilingual education programs. *Prerequisites:* ELED 3302 and BED 3435.

3532 Teaching Reading in Spanish (3-0)
Fundamental principles for teaching reading in Spanish to Spanish-dominant children. Examination of classroom reading materials representative of various bilingual reading programs and development of criteria for the selection of materials appropriate for various types of bilingual reading classes. *Prerequisites*: RED 3340 and BED 3434.

3533 Oral Language Assessment (3-0)
Analysis of oral language tests and procedures, and their application to the bilingual classroom. *Prerequisite*: Six hours from the following: LING 3471 (Language acquisition); LING 3471 (Bilingualism); LING 3472.

3534 Teaching Content in Spanish (3-0)
Analysis and evaluation of Spanish curriculum materials in the content areas. Emphasis on the development of methods for teaching content in Spanish using specialized language at various levels. *Prerequisite*: BED 3434, SPAN 3402, or Language Proficiency.

3535 Microcomputers in Bilingual Education/ESL (3-3)
Applications of microcomputers to bilingual education/ESL instruction. Included in the course is a review of Basic/Logo, instruction on Co-PILOT 1 and 2; Super PILOT; criteria for software evaluation; and research on software. *Prerequisite*: CS 3110.

EARLY CHILDHOOD EDUCATION (ECED)

1550-3550 Current Topics in Early Childhood Education (1-0, 2-0, 3-0)
Development of competencies necessary to deal effectively with early childhood instruction; includes curriculum, concepts, teaching strategies, and skills necessary to integrate content and teaching strategies. May be repeated for credit when topic varies.

3551 Trends in Early Childhood Education (3-0)
Research related to philosophies, objectives, and practices in early childhood education, including analysis through comparison and contrast of pre-school programs, plus implications for designing such programs based on research and evaluation. *Prerequisite*: Texas Kindergarten Endorsement or equivalent, as approved by instructor.

3552 Seminar in Early Childhood Curriculum (3-0)
Curriculum development for the early childhood teacher which includes program design, activity planning, examination and construction of materials, and teaching and evaluation techniques. *Prerequisite*: Texas Kindergarten Endorsement or equivalent, as approved by instructor.

3553 Development of Literacy Skills, Preschool to Grade 3 (3-0)
Emergent reading and writing behaviors in preschoolers; growth of reading and writing, kindergarten to grade three; attention to linguistically different and second-language learners, review of relevant research. *Prerequisite*: Texas Kindergarten Endorsement or equivalent, as approved by instructor.

3554 Development of Mathematics and Science Foundations, Preschool to Grade 3 (3-0)
Preschool awareness of quantitative and scientific principles in the environment as a foundation for concept growth. *Prerequisite*: Texas Kindergarten Endorsement or equivalent, as approved by instructor.

READING EDUCATION (RED)

1540-3540 Current Topics in Reading Education (3-0)
Opportunity to develop competencies necessary to deal effectively with reading instruction; includes curriculum, concepts, teaching strategies, and skills necessary to integrate content and teaching strategies. May be repeated for credit when topic varies.

3541 The Diagnostic Teaching of Reading (3-0)
Standardized and informal materials and techniques of diagnosing the reading strengths and weaknesses of individuals and groups, techniques and materials for building specific reading abilities, and methods of individualizing instruction and grouping according to student needs and interests. *Prerequisite*: RED 3340 or 3342; may not be taken by those who have taken CURR 3441 or RED 3441 after 1982.

3543 Psychology of Reading (3-0)
Psychological and linguistic foundations of the reading processes of beginning and skilled readers; special emphasis on problems of culturally different children, comprehension skills, and analysis of relevant research. *Prerequisite*: RED 3340 or 3342.

3544 Seminar in Reading (3-0)
In-depth exploration of ways of developing higher level cognitive, affective, psychomotor, and psycholinguistic abilities of students through the use of printed materials and other media. Individual and/or group creative projects and research findings will be shared. *Prerequisite*: RED 3340 or 3342.

3545 Remedial Reading (3-0)
Operation and administration of remedial reading programs, including the screening procedures for selection of students as well as criteria for selecting and designing materials suitable for use in remedial reading. Strategies for counseling and teaching disabled readers are also emphasized. *Prerequisite*: RED 3340 or 3342.

3546 Clinical Diagnosis of Reading Difficulties (3-0)
Comprehensive study of and clinical practice in the diagnosis of specific, limiting, and complex cases of reading disability. Offers the opportunity for experience in administering and interpreting batteries of diagnostic tests and in the analysis and synthesis of findings for case studies. *Prerequisite*: RED 3340 or 3342.

3547 Clinical Reading Laboratory Experience (1.5-3)
Actual laboratory experience for application of concepts, media, and evaluation to meet the needs of disabled readers. May be repeated for credit when topic varies. *Prerequisite*: RED 3441 or 3541 or 3546.

Educational Psychology and Special Services

701 Education Building
(915) 747-5221

UNIT HEAD: Sharon R. Morgan
GRADUATE ADVISOR: Sharon R. Morgan
PROFESSOR EMERITUS: James F. Day
GRADUATE FACULTY: Calderon, Combs, Lloyd, Mayer, Morgan, Whitley

GRADUATE PROGRAMS AND PLANS

The Educational Psychology and Special Services Unit offers two graduate degrees. The Master of Arts in Education degree is designed for students wishing to pursue research and to continue studies beyond the master's degree level. The Master of Education degree is directed toward the professional educator who wishes to prepare for specialized professional practice as a counselor, educational diagnostician, or special educator.

In addition to these degree programs, the Unit offers coursework leading to Professional School Counselor and Educational Diagnostician certification by the Texas Education Agency and the Special Education Counseling Endorsement.

MASTER OF ARTS IN EDUCATION

The Master of Arts degree with a major in Education is designed for students who wish to pursue research and who may wish to continue studies beyond the master's degree level in the future.

Prerequisites: At least 12 semester hours of upper-division coursework, satisfactory undergraduate G.P.A., a satisfactory score on the Graduate Record Examination (or TOEFL for international students), and admission to the thesis program by the Graduate Studies Committee of the Unit.

Program: Thirty semester hours, including at least 21 semester hours at the 0500 level and a thesis (with oral defense). Besides the thesis, students complete a core of coursework plus electives.

Thesis: A thesis, satisfactory to the Graduate Faculty of the Unit, must be completed before the degree will be awarded.

MASTER OF EDUCATION

The Educational Psychology and Special Services Unit offers the M.Ed. degree with the following majors:

Education
Educational Diagnostician
Guidance and Counseling (School or Agency)
Special Education

Admission Requirements:

Students seeking admission to a graduate program in the Unit must:

1. Complete application form and qualify for admission to the Graduate School;
2. Achieve a satisfactory score on the Graduate Record Examination;
3. Schedule an appointment with the Graduate Advisor.

Additional admission requirements may be specified (see below).

School Counseling

This plan is intended primarily for students who have concentrated their previous academic work in the area of Professional Education. A teaching certificate is required. The student should confer with the Graduate Advisor to determine additional requirements for T.E.A. certification as a Professional School Counselor, or licensure by the Texas State Board of Examiners for Professional Counselors.

Additional Admission Requirements:

A minimum of 12 semester hours of upper division work in the behavioral sciences and Professional Education to include:

SPED 3520 Special Education: Historical and Legal Basis
BED 3430 Principles of Bilingual Education/ESL

The above courses must be completed with a grade of B or better.

Core Requirements (12 semester hours):

EDRS 3505 Educational Research and Statistics I
EDRS 3506 Educational Research and Statistics II
EDPC 3517 Human Growth and Development
EDPC 3518 Introduction to Counseling

Specialization (18 semester hours):

EDPC 3519 Organization & Administration of Special Services
EDPC 3520 Socio-Economic Information in Counseling
EDPC 3535 Principles of Appraisal and Assessment
EDPC 3536 Advanced Appraisal and Assessment
EDPC 3538 Advanced Techniques of Counseling
EDPC 3539 Group Counseling Theory and Practice

Practicum (6 semester hours):

EDPC 3572 Practicum in Counseling
EDPC 3573 Advanced Practicum in Counseling

Comprehensive Examination:

Written comprehensive examination. *Prerequisite*: completion of all required EDPC courses, or permission of Unit.

Total: 36 semester hours.

Agency Counseling

This plan is intended primarily for students who have concentrated their previous academic work in one of the behavioral sciences and who are not interested in meeting the requirements for T.E.A. certification as a Professional School Counselor. The student should confer with the Graduate Advisor to determine additional requirements for licensure by the Texas State Board of Examiners for Professional Counselors.

Additional Admission Requirements:

12 semester hours of upper division course work in the behavioral sciences or Professional Education with a grade of B or better.

Core Requirements (12 semester hours):

EDRS 3505 Educational Research and Statistics I
EDRS 3506 Educational Research and Statistics II
EDPC 3517 Human Growth and Development
EDPC 3518 Introduction to Counseling

Specialization (12 semester hours):

EDPC 3538 Advanced Techniques of Counseling
EDPC 3539 Group Counseling Theory and Practice

Plus six semester hours of approved graduate course work in Educational Psychology.

Practicum and Internship (12 semester hours):

EDPC 3572 Practicum in Counseling
EDPC 3573 Advanced Practicum in Counseling
EDPC 6580 Internship in Counseling

Comprehensive Examination:

Written comprehensive examination. *Prerequisite*: completion of all required EDPC courses, or permission of Unit.

Total: 36 semester hours.

Educational Diagnostician

This plan is intended primarily for students who have concentrated their previous academic work in Elementary or Special Education. Texas Provisional Teaching Certificate (with TECAT or equivalent) is required. The student should confer with the Graduate Advisor to determine additional requirements for T.E.A. certification as a Professional Educational Diagnostician.

Additional Admission Requirements:

Completion of a minimum of 12 semester hours of upper division work in advanced Professional Education with a grade of B or better (to include 3 semester hours of Human Growth and Development). Three years of classroom teaching experience is also required.

Program (36 hours of coursework):

SPED 3520 Special Education: Historical and Legal Basis
SPED 3545 Remediating Students with Learning Disabilities
EDPC 3519 Organization & Administration of Special Services
EDPC 3535 Principles of Appraisal and Assessment
EDPC 3536 Advanced Appraisal and Assessment
EDPC 3540 Theories of Learning
EDPC 3544 Use and Interpretation of Standardized Tests
SPED 3548 Differential Diagnosis of Handicapping Conditions
PSYC 35— Three semester hours of 3500 Psychology
3 semester hours in SPED, EDPC, PSYC, or RED
EDPC 6523 Internship: Educational Diagnostics

Comprehensive Examination:
Written comprehensive examination. *Prerequisite:* completion of all required courses, or permission of Unit. ExCET (Exam for the Certification of Educators in Texas) also required.
Certification:
ExCET (Exam for the Certification of Educators in Texas)
Total: 36 semester hours

Special Education

This plan is intended primarily for students who have concentrated their previous academic work in any area of education. The student should confer with the Graduate Advisor to determine which specialization he or she will pursue.
Additional Admission Requirements:
Valid Texas Teaching Certificate with TECAT or equivalent; three years of teaching experience; Option 1 requires a valid Texas Teaching Certificate in Generic Special Education.
Core Requirements: (18 semester hours)

EDRS 3505	Educational Research & Statistics I
EDRS 3506	Educational Research & Statistics II
SPED 3520	Special Education: Historical and Legal Basis
SPED 3522	The Bilingual Exceptional Child
PSYC 3547	Advanced Behavior Technology
SPED 3547	Parents of Exceptional Children

Specialization: (18 semester hours in only one of the following options):
*Learning Disabled (Option 1)

SPED 3545	Remediating Students with Learning Disabilities
SPED 3563	Intervention for the Severely Emotionally Disturbed
SPED 3567	Characteristics of Students with Learning Disabilities
SPED 3569	Teaching the Learning Disabled in Reading
SPED 3570	Teaching Secondary Students with Mild Handicaps
PSYC 3523	Psychometrics

*Severely Emotionally Disturbed/Austism (Option 2)

SPED 3561	Nature and Needs of the Severely Disturbed
SPED 3563	Interventions for the Severely Emotionally Disturbed
PSYC 3545	Psychophysiological and Behavior Disorders
SPED 3567	Characteristics of Students with Learning Disabilities
SPED 3569	Teaching the Learning Disabled in Reading
SPED 3573	Teaching Students with Autism

Severely, Profoundly, Multiply Handicapped (Option 3)

SPED 3568	Vocational Habilitation of the Severely Handicapped
SPED 3571	Teaching the Severely Handicapped Child
SPED 3573	Teaching Students with Autism
SPLP 3562	Disorders of Language
SPED 3577	Language Intervention for the Severely Handicapped
*SPED 3579	Practicum: Severely Handicapped

*Practicum will be required also in Options 1 and 2 if the student has no teaching experience in Special Education.
Comprehensive Examination:
Written comprehensive examination. *Prerequisite*: Completion of all required courses, or permission of the Unit.
Total: 36 semester hours

ENDORSEMENT

Special Education Counseling Endorsement

This plan is primarily for students who have completed the School Counselor's program and wish to obtain the additional endorsement as a counselor for exceptional children.
Admission Requirements:
Completion of all requirements in the School Counseling program and three years of teaching experience, at least one of which is in special education.
Program (12 semester hours):

SPED 3545	Remediating Students with Learning Disabilities
SPED 3547	Parents of Exceptional Children
SPED 3561	Nature and Needs of the Severely Emotionally Disturbed
SPED 3563	Interventions for the Severely Emotionally Disturbed

Total: 12 semester hours
A special certification plan must be on file and fee paid to the Certification Office.

EDUCATIONAL PSYCHOLOGY AND COUNSELING (EDPC)

3517 Human Growth and Development (3-0)
Descriptive analysis of the typical patterns of human physical, social, emotional, and intellectual growth, including cognitive and moral development, emphasizes major descriptive theories.

3518 Introduction to Counseling (3-1)
An introduction to counseling theory and techniques available to individuals and groups; includes socio-cultural foundations of counseling and counseling in multicultural and special education settings; requires involvement in laboratory group. *Prerequisite*: 12 semester hours of upper division or graduate courses in the behavioral sciences including professional education.

3519 Organization and Administration of Special Services (3-0)
Identification and analysis of problems of organization and administration of guidance services including staffing, finances, effective interpersonal relationships, community participation, in-service education, and evaluation of programs. Strategies to improve group work with special emphasis on interpersonal relations and human variables in groups and organizations.

3520 Socio-Economic Information in Counseling (3-0)
Educational, occupational, and social information, and its use in counseling and guidance; includes life planning and career development. *Prerequisite*: EDPC 3518 or permission of department.

3535 Principles of Appraisal and Assessment (3-0)
Principles of psychological testing, including purposes, methods, and procedures; analysis, evaluation, and administration of educational and psychological instruments.

3536 Advanced Appraisal and Assessment (3-0)
Analysis, evaluation, and administration of individual instruments such as Stanford-Binet Intelligence Scale, and two of the Wechsler Tests (WAIS, WISC-R, WPPSI); includes preparation of individualized professional reports. *Prerequisite*: EDPC 3535.

3538 Advanced Techniques of Counseling (3-0)
Advanced counseling theory and techniques applicable to individual, family, school, and community mental health problems; includes analysis of social implications of mental health/mental illness. *Prerequisite*: completion of 15 semester hour core in educational counseling, or permission of department.

3539 Group Counseling Theory and Process (3-0)
History, principles, theory, and techniques of group counseling applicable to multicultural and special education settings; emphasizes acquisition of technical knowledge and specialized skills facilitating personal growth and therapeutic groups. *Prerequisite*: completion of 15 semester hour core in educational counseling, or permission of department.

3540 Theories of Learning (3-0)
Analysis of behavioristic, field, cognitive, and functional theories of learning from primary sources; includes Thorndike, Tolman, Watson, Skinner, Guthrie, Robinson, Ausubel, Piaget, Bruner, and Gagne. Intensive study of the learning process.

3541 Theories of Counseling (3-0)
Analysis of psychoanalytic, phenomenologic, gestalt, and third force psychologies of counseling from primary sources; includes application to counseling process, relationship to learning theory and various definitions of mental health. *Prerequisite*: completion of 15 semester hour core in educational counseling, or permission of department.

3542 Psychology of Individual Differences (3-0)
Analysis of individual differences in intelligence, personality, interests, and attitudes, and their effects on achievement and educational, vocational choices; includes group differences and techniques of studying individual differences. *Prerequisite*: completion of 15

semester hour core in educational counseling, or permission of department.

3543 Construction and Use of Classroom Tests (3-0)
Application of the theory of testing to provide practical experience in the construction and evaluation of tests for typical classroom use; student selects focus on elementary school, middle school, or high school level.

3544 Use and Interpretation of Standardized Tests (3-0)
Identifies techniques and procedures to interpret results of various commonly used standardized tests and other procedures to diagnose learning problems; emphasis on the use of data to treat disabilities and develop potentialities. *Prerequisite*: EDPC 3535 and 3536.

1570-3570 Graduate Workshop in Educational Psychology and Counseling (1-6)
Selected topics for graduate students, teachers, school counselors, and agency counselors in special areas; may be repeated when topic varies. *Prerequisite*: completion of 15 semester hour core in counseling, or permission of department.

3565 Directed Individual Study (3-0)
Area of study will be designated; may be repeated for credit when topic varies. *Prerequisite*: completion of 15 semester hour core in educational psychology and counseling, or permission of department.

3572 Practicum in Counseling (0-6)
Supervised experience in the application of principles, tools, and techniques of counseling and guidance; provides practice in clinical setting with selected clients supported by qualified counselor educator. *Prerequisite*: EDPC 3538, EDPC 3539, or permission of department.

3573 Advanced Practicum in Counseling (0-6)
Advanced supervised experience in the application of counseling principles and techniques to work with clients. *Prerequisite*: completion of EDPC 3572 with a grade of B or better.

6523 Internship in Educational Diagnostician
Supervised experience in public schools working with educational diagnosticians. Includes comprehensive assessments, preparation of written reports of assessment and other required paperwork, attendance at ARDs and presentation of test data and interpretation. Comprehensive assessments cover a variety of handicapping conditions. *Prerequisite*: Completion of all core and specialization requirements with a grade of B or better.

1580-6580 Internship in Counseling and Guidance (Credit Varies)
Supervised experience in selected schools, agencies, and institutions. *Prerequisites*: completion of EDPC 3573 with a grade of B or better, and permission of department.

3598 Thesis

3599 Thesis

SPECIAL EDUCATION (SPED)

3520 Special Education: Historical and Legal Basis (3-0)
Emphasis on litigation, legislation, and laws pertaining to assessment and placement of handicapped students. Focus on the characteristics and definitions of exceptional children including learning disabilities, emotional disturbance, autism, orthopedic handicaps, visual handicaps, auditory handicaps, giftedness, and mental retardation.

3545 Remediating Students with Learning Disabilities (3-0)
Focuses on learning disabled student; provides information on how to teach learning disabled students in reading, writing, spelling, and the language arts; includes assessment of content area achievement of students with learning difficulties. *Prerequisite*: SPED 3520.

3547 Parents of Exceptional Children (3-0)
Relevant approaches and techniques for teachers to work with parents of exceptional children; includes strategies for developing knowledge and skills associated with facilitating child growth by cooperative home-school planning. *Prerequisite*: SPED 3520.

3548 Differential Diagnosis of Handicapping Conditions (3-0)
Diagnosis of and state eligibility criteria for all handicapping conditions with emphasis on the learning disabled, mentally retarded, and emotionally disturbed student. Focus on factors affecting diagnosis and eligibility including language, culture, lifestyle, and educational background. *Prerequisite*: SPED 3520, EDPC 3535 and 3536.

3563 Intervention for the Severely Emotionally Disturbed (3-0)
Focus on methods for promoting behavior change and facilitating affective development of children who are emotionally impaired/behaviorally disordered; provides a wide variety of intervention strategies. *Prerequisite*: SPED 3520, or permission of instructor.

3568 Vocational Habilitation of the Severely Handicapped (3-0)
Analysis of procedures and procedural research in vocational habilitation of severely handicapped adolescents and adults; task analysis, direct instruction of vocational skills, and procedures for supervising production in non-sheltered employment. *Prerequisite*: SPED 3520.

Educational Leadership and Foundations

501 Education Building
(915) 747-5300

UNIT HEAD AND GRADUATE ADVISOR: Ronald Lindahl
GRADUATE FACULTY: Brooks, Heger, Lindahl, Pacheco, Peper

The Educational Leadership and Foundations Unit offers an M.A. degree with a major in Education and the M.Ed. degree with the following majors:
Educational Supervision
Educational Administration
Education
In addition to these degree programs, the Unit offers course work leading to certification by the Texas Education Agency in the following areas:
Professional School Supervisor
Professional Mid-Management School Administrator
Professional School Superintendent

Admission Requirements:
Students seeking admission to any of the graduate degree programs in the Unit must complete the following prior to the semester in which they first plan to enroll:
1. Complete the application for admission to the Graduate School and qualify for admission to the Graduate School;
2. Achieve a satisfactory score on the Graduate Record Examination;
3. Schedule an appointment with a Unit Faculty Advisor (915) 747-5300.

MASTER OF EDUCATION
Students who wish to pursue graduate study directed toward developing leadership skills and their knowledge base may pursue one of three majors in the Master of Education degree.

Educational Supervision
This plan is intended primarily for students who wish to complete requirements for certification as a Professional School Supervisor. The student should confer with a Unit Faculty Advisor to delermine additional requirements for T.E.A. certification as a Professional School Supervisor.
Additional Admission Requirements:
12 semester hours of upper division course work in Professional Education.
Core Requirements (15 semester hours):

EDRS 3505	Educational Research and Statistics I
EDRS 3506	Educational Research and Statistics II
EDAD 3510	Introduction to Educational Administration
EDAD 3512	Instructional Leadership and Supervision I
TED 3501	Curriculum Theory and Design

Subject Concentration (6 semester hours):
A minimum of 6 semester hours of approved upper division or graduate credit in the candidate's teaching endorsement; may include reading, special education, or bilingual education.
Specialization (15 semester hours):
EDAD 3540 Human Factors in Education
EDAD 3542 Educational Law
EDAD 3544 Instructional Leadership and Supervision II
EDAD 3546 Educational Program Planning & Evaluation
EDPC 3542 Psychology of Individual Differences
or
EDPC 3540 Theories of Learning
Comprehensive Examination:
Written comprehensive examination. *Prerequisite*: completion of all required EDAD courses, or permission of Unit.
Total: 36 semester hours

Educational Administration

This plan is intended primarily for students who wish to complete requirements for certification as a Professional Mid-Management School Administrator. The student should confer with a Unit Faculty Advisor to determine additional requirements for T.E.A. certification as a Professional Mid-Management School Administrator.
Additional Admission Requirements:
A minimum of 12 semester hours of upper division course work in Professional Education.
Core Requirements (15 semester hours):
EDRS 3505 Educational Research and Statistics I
EDRS 3506 Educational Research and Statistics II
EDAD 3510 Introduction to Educational Administration
EDAD 3512 Instructional Leadership and Supervision I
TED 3501 Curriculum Theory and Design
Academic Area (6 semester hours):
SOCI 3575 Seminar: Southwestern Cultures, or other approved upper division or graduate course in multi-cultural studies; and 3 semester hours of approved upper division or graduate course work from social science fields.
Specialization (15 semester hours):
EDAD 3540 Human Factors in Education
EDAD 3542 Educational Law
EDAD 3544 Instructional Leadership and Supervision II
EDAD 3546 Educational Program Planning & Evaluation
EDAD 3548 Administration of School Personnel & Services
Comprehensive Examination:
Written comprehensive examination. *Prerequisite*: completion of all required EDAD courses, or permission of Unit.
Total: 36 semester hours.

Education

Students whose professional needs are not met by any of the above M.Ed. programs may plan a special program. Please see the Graduate Advisor for information and assistance.

MASTER OF ARTS IN EDUCATION

The Master of Arts degree with a major in Education is designed for students who wish to pursue research and who may wish to continue studies beyond the master's degree level in the future.

Additional Admission Requirements: At least 12 semester hours of upper-division coursework in education, satisfactory undergraduate G.P.A., and admission to the thesis program by the Graduate Studies Committee of the Unit.

Program: Thirty semester hours of coursework, including at least 21 semester hours at the 0500 level and a thesis (with oral defense). Besides the thesis, students complete a core of coursework plus electives.

Thesis: A thesis, satisfactory to the Graduate Faculty of the Unit, must be completed before the degree will be awarded.

Total: 30 semester hours

Students in Educational Leadership and Foundations wishing to pursue the Master of Arts degree in Education choose from one of two plans for graduate study:

Plan I (no minor)

A major consisting of the Thesis (6 semester hours) plus 24 semester hours of supporting coursework in Educational Administration; a minimum of 21 semester hours of coursework, including the Thesis, must be graduate level (3500 and above).

Plan II (minor)

A major consisting of the Thesis (6 semester hours) plus 12 to 18 semester hours of supporting coursework in Educational Administration; a minimum of 21 semester hours of the major, including the Thesis, must be graduate level (3500 and above); a minor of 6 to 12 semester hours in a related discipline; a minimum of 3 semester hours of the minor must be taken in residence.

EDUCATIONAL ADMINISTRATION (EDAD)

3510 Introduction to Educational Administration (3-0)
An introduction to the roles and functions of the school administrator emphasizing administrative and organizational theory and practice; identifies the primary knowledge, skills and competencies required to be an effective school administrator. *Prerequisite*: permission of department.

3512 Instructional Leadership and Supervision I (3-0)
An introduction to the roles and responsibilities of the supervisor or school administrator as an instructional leader; emphasizes systematic classroom observation, evaluation of teaching, and clinical supervision. *Prerequisite*: EDAD 3510, or permission of department.

3540 Human Factors in Education (3-0)
Treats interpersonal relations and human variables in groups and formal organizations with special emphasis on schools and organization; identifies strategies for the school principal to improve work group effectiveness. *Prerequisite*: completion of 15 semester hour core in school administration or permission of department.

3542 Educational Law (3-0)
An introduction to the federal and state legal systems including constitutional provisions, federal and state regulations, and court decisions affecting public education; includes student and employee rights and responsibilities, statutory and assumed authority of school boards, relations with employee organizations, civil liability of school personnel and elements of due process. *Prerequisite*: Completion of 15 semester hour core in school administration or permission of department.

3544 Instructional Leadership and Supervision II (3-0)
Opportunity to develop the knowledge, skills, and competencies required by the supervisor or school administrator to direct instructional improvement programs; emphasis on instructional management, staff development, in-service workshops, working with groups. *Prerequisite*: EDAD 3512.

3546 Educational Program Planning and Evaluation (2-2)
Opportunity to develop the knowledge, skills, and competencies required to plan and manage regular and special school programs; includes policy formulation, goal setting, and evaluation emphasizing data-based management systems; requires field-based component. *Prerequisite*: completion of 15 semester hour core in school administration, or permission of department.

3548 Administration of School Personnel and Services (3-0)
Emphasizes school management tasks and responsibilities related to certified and non-certified staff including position descriptions, recruitment, selection, assignment, and compensation; treats E.E.O. regulations, due process, grievance handling, and other legal requirements including collective bargaining. *Prerequisite*: completion of 15 semester hour core in school administration, or permission of department.

3565 Directed Individual Study (3-0)
Area of study will be designated; may be repeated for credit when topic varies. *Prerequisite*: Permission of the department.

1570-3570 Graduate Workshop In Educational Administration and Supervision (1-6)
Selected topics for graduate students, supervisors, and school administrators in such areas as grant writing, school discipline,

computer utilization, and other special problems; may be repeated for credit when topic varies. *Prerequisite*: completion of 15 semester hour core in school administration, or permission of department.

3573 School Supervision Internship I (1-4)
First half of a two course sequence including planned field experience and seminars for the Professional Instructional Supervisor Certificate candidate; field experience includes working with a fully certified cooperating administrator under the supervision of a university professor; includes consideration of problems relating to assessment techniques, teacher review, consulting skills, and planning and evaluation of programs and materials. *Prerequisites*: completion of all other course work required for the supervision certificate and permission of department.

3574 School Supervision Internship II (1-4)
Continuation of EDAD 3573. *Prerequisites*: EDAD 3573 and permission of department.

3575 School Management Internship I (1-4)
First half of a two-semester sequence including planned field experience and seminars for the professional Mid-Management School Administrator Certification candidate; field experience includes working with a fully certified cooperating administrator in elementary, middle, and high school setting under the supervision of a university professor; includes administration of special programs, community education programs, student services, discipline management, scheduling, budgeting, and school business management; offered Fall Semester only. *Prerequisites*: completion of all other course work required for the mid-management certificate and permission of department.

3576 School Management Internship II (1-4)
Continuation of EDAD 3575; offered Spring Semester only. *Prerequisites*: EDAD 3575 and permission of department.

3580 Organizational Development in Education (3-0)
Describes the systems approach to the renewal of educational organizations; emphasizes institutionalization of organization development in school districts and essential competencies for organization renewal. *Prerequisite*: Permission of the department.

3582 Educational Finance (3-0)
Basic concepts of the economics of education; uses the systems approach to analyze the issues of equity and equality in educational resource allocation and distribution; includes current Texas state funding policies. *Prerequisite*: Permission of the Department.

3584 Educational Facilities Management (3-0)
Identifies the knowledge, skills, and competencies required of the school administrator to manage educational facilities; includes population projections and needs assessments, planning, developing educational specifications, site selection, capital outlay, and costs; covers rehabilitating existing buildings, maintenance and operations, and equipment management. *Prerequisite*: Permission of the Department.

3586 Educational Policy Development (3-0)
Treats the techniques of describing and selecting among alternative problem solutions based on quantifiable prediction; application to both general and specific educational issues including socio-political factors. *Prerequisite*: Permission of the Department.

3588 Central Office Administration (2-2)
Critical aspects of central office administration including personnel, programs, budget, planning, evaluation, school board relations, state and federal influences, and general administration of a school district; field experience required. *Prerequisite*: Permission of the Department.

3589 School Superintendent Internship (1-4)
Planned field experience and seminars for the Professional School Superintendent Certificate candidate; field experience includes working with a fully certified cooperating administrator in school and central office settings under the supervision of a university professor; includes consideration of problems relating to overall school district operations. *Prerequisites*: completion of all other course work required for the superintendent certificate and permission of department.

EDUCATIONAL RESEARCH AND STATISTICS (EDRS)

3502 Research Methods In Education (3-0)
An in-depth analysis of research design including identification of the problem to be researched, review of research literature, formulation of the hypothesis or hypotheses to be tested, selection of research procedures, collection of data, the analysis of findings, and drawing of warranted conclusions; requires the development of a formal research proposal. *Prerequisite*: EDRS 3400, or EDRS 3500.

3505 Educational Research and Statistics I
First of a two-course sequence to develop interrelated concepts and skills of research methods, experimental design in education, and statistical methods; includes computer applications and required computer laboratory; requires development of a formal research proposal.

3506 Educational Research and Statistics II
Second course in a two-course sequence; includes survey research methods, computer application and required computer laboratory; requires preparation of a formal research report. *Prerequisite*: EDRS 3505 with grade of C or better.

3510 Computer Applications for Teachers and Administrators (2-2)
A structured introduction to computer programming using BASIC language to develop instructional courseware; intended for people with little or no experience with computers; involves hands-on experience on microcomputers in a laboratory setting.

3511 Advanced Computer Applications for Teachers and Administrators (2-2)
Advanced computer programming and courseware development for computer-assisted and computer-managed instruction; includes high resolution graphics, hardware and software evaluation, the design and planning of instructional computing laboratories for elementary and secondary schools; tutorials in LOGO and PILOT provided; requires hands-on experience on microcomputers in a laboratory setting. *Prerequisite*: EDRS 3510, or permission of department.

3540 Advanced Statistics (3-0)
Review of experimental design and computer applications; includes linear regression, multivariate analysis; with an introduction to nonparametric techniques. *Prerequisite*: EDRS 3500, or EDRS 3506.

Kinesiology and Sports Studies

701 Education Building
(915) 747-5221

UNIT HEAD: Noeline L. Kelly
GRADUATE ADVISOR: Donald H. Hardin
PROFESSORS EMERITI: William H. Harris, James Gordon Mason
ASSOCIATE PROFESSOR EMERITUS: Benny W. Collins
GRADUATE FACULTY: Hardin, B. Kelly, N. Kelly

Prospective graduate students in Health and Physical Education may select either the M.S. (Health and Physical Education major) or the M.Ed. (Instructional Specialist major) with a concentration in Health and Physical Education.

The M.S. in Health and Physical Education is directed toward students who wish to go beyond the Master's degree or to work as a professional in related fields in the private sector. The M.Ed. with an emphasis in Health and Physical Education is designed for the person teaching in the schools.

MASTER OF SCIENCE IN HEALTH AND PHYSICAL EDUCATION

Prerequisites: At least 12 semester hours of 0300 and/or 0400 level courses in Health and Physical Education, a satisfactory score on the Graduate Record Examination, and admission to the thesis program by the Graduate Studies Committee of the Kinesiology and Sports Studies Unit. Program options offered for the M.S. in Health and Physical Education are Exercise Science, Physical Education, and Health Education.

Program: Thirty semester hours, including at least 21 semester hours at the 0500 level, EDRS 3505-3506, PE 3560, and six semester hours of thesis (TED 3598-99).

Thesis: A thesis, satisfactory to the Graduate Faculty of the Unit, must be completed and orally defended before the degree will be awarded.

MASTER OF EDUCATION

Individuals wishing to pursue a master's degree in order to improve classroom competence as a professional health or physical education teacher may do so through the Health and Physical Education Concentration in the Master of Education degree, Instructional Specialist major. See the degree description under Teacher Education.

Note: See College of Nursing and Allied Health, below, for information concerning Health Education courses.

KINESIOLOGY (KIN)

3560 History, Philosophy, and Professional Literature in Health and Physical Education (3-0)
Historical development of physical and health education with the philosophical viewpoints and literature which have had the greatest influence on current health and physical education.

3561 Scientific Basis of Physical Education (3-0)
Advanced level kinesiological, mechanical, physiological, and psychological aspects as a basis for physical education.

3562 Administration and Supervision of Health and Physical Education (3-0)
Administration problems and supervisory techniques in health and physical education.

3563 Sociological and Psychological Foundations of Physical Activity and Sports (3-0)
Socio-psychological processes, principles, and factors affecting the behavior of humans in physical activity and sport. Investigation of current socio-psychological problems with implications for physical education and athletic coaching.

3564 Advanced Topics in Health and Physical Education (3-0)
Individual problems in the field of health and physical education. May be repeated once for credit.

3565 Curriculum in Physical Education (3-0)
Analysis of criteria and procedures for curriculum construction in physical education; development of written guides for programs in elementary and secondary schools, colleges, and universities.

3566 Facilities Planning in Health, Physical Education, and Recreation (3-0)
Principles, standards, and designs utilized in planning, construction, and maintenance of indoor and outdoor facilities to prepare students to serve as members of planning committees.

3569 Physical Education in the Elementary School (3-0)
Organization, administration, and curricular content of elementary school physical education with emphasis on the various teaching approaches involved.

3570 Practicum in Exercise Science (0-6)
Assignment to professionals in the field of exercise or therapy in the community for a minimum of 100 clock hours. A daily log of experience will be required.

3571 Measurement Techniques in Kinesiology and Sports Studies (3-0)
Techniques and equipment used in assessing strength, cardiovascular efficiency and other components of physical fitness. Guidelines for exercise prescription will be examined.

The College of Engineering

The University of Texas at El Paso has had a long-standing commitment to quality education in engineering. Today the College of Engineering strives to educate engineers who have the desire to learn and the breadth of vision to formulate and solve the problems of today and tomorrow.

At the graduate level, the College fulfills its mission by offering graduate degree programs in all of its departments. Master of Science degrees are available in Civil Engineering, Computer Engineering, Computer Science, Electrical Engineering Industrial Engineering, Manufacturing Engineering, Mechanical Engineering, and Metallurgical and Materials Engineering. In addition to these programs, students may pursue an undesignated Master of Science in Engineering, with concentrations in a number of areas. A Ph.D. degree is awarded in Electrical Engineering with an emphasis on computer systems.

Civil Engineering

201B Engineering Science
(915) 747-5464

CHAIRPERSON: Charles D. Turner
GRADUATE FACULTY: Ferregut, Fuentes, Grieves, Nazarian, Oey, Osegueda, Picornell-Darder, Rozendal, Tarquin

The Civil Engineering Department offers an undesignated Master of Science with a major in Engineering and a Master of Science with a major in Civil Engineering. Specific programs of study in the Civil Engineering major include structural, geotechnical and environmental engineering. Thesis and non-thesis programs are available under this degree. Students enrolled in a thesis program normally take 24 hours of coursework plus 6 hours of Civil Engineering 3598-99, Thesis. Non-thesis students follow a 33 hour program which includes credit for Civil Engineering 3596-97, Graduate Design Projects. Under exceptional circumstances the department graduate faculty may recommend a non-thesis/non-design project program consisting of a minimum of 36 hours of coursework.

A student holding a Bachelor of Science with a major in Civil Engineering may work toward a 33 hour undesignated Engineering degree without a thesis, leading to a sub-specialization in an area outside of the major. The coursework includes 18 hours in Civil Engineering, and at least 12 hours in the particular area of sub-specialization. The work in the major field includes credit for Civil Engineering 3596-97, Graduate Design Projects. Possible areas of sub-specialization may consist of Business Management, Computer Science, Microbiology, Geology, Industrial Engineering or others, as approved by the student's graduate committee.

For Undergraduate and Graduate Students

2425 Construction Equipment, Methods and Project Control (2-0)
3435 Structural Design I (3-0)
3438 Traffic Engineering Fundamentals (3-0)
3440 Transportation Engineering (3-0)
3441 Water Supply Engineering (3-0)
3442 Wastewater Engineering (3-0)
3446 Engineering Law (3-0)
3447 Ethics in Engineering (3-0)
4448 Soil Mechanics (3-3)
3449 Foundation Engineering (3-0)
1453 Water and Waste Laboratory (0-3)
4456 Hydraulic Engineering (3-3)
4460 Structural Analysis II (3-0)
3461 Structural Design II (3-0)
4470 Mechanics of Materials II (3-3)
3471 Engineering Problems—Seminar (3-0)

For Graduate Students Only

3502 Groundwater Hydrology (3-0)
A general course in groundwater hydrology, emphasizing fundamental principles and their applications to practical problems. Topics included are hydrologic cycles, geologic environments and controls, unsaturated and saturated zones, Darcy's law, continuity and energy principles, Navier-Stokes equations, flow equations, steady and unsteady hydraulics, aquifer tests, analytical and numerical models and computer codes. *Prerequisite*: Permission of instructor.

3503 Engineering Analysis (3-0)
Formulation and solution of initial and boundary value problems arising in structural mechanics. *Prerequisites*: MATH 3226, and permission of instructor.

3505 Advanced Structural Analysis (3-0)
Theory of finite element approximation, numerical solutions of a variety of problems in structural mechanics including beam-columns, grid beams and plates on linear and nonlinear foundations, matrix structural analysis. May be repeated for credit. *Prerequisite*: CE 3343 and permission of instructor.

4509 Analysis of Water and Wastes (2-6)
Analysis of physical, chemical and biological properties of water and wastes, evaluation of processes involved in complex pollution problems. *Prerequisite*: Permission of instructor. Laboratory Fee: $20.

3512 Environmental Processes (3-0)
Critical study of fundamental theories and modeling approaches for physical, chemical and biological processes that affect the fate of chemicals in the environment. Mass flow and diffusion, kinetics and equilibrium, solubility and precipitation, volatilization, oxidation-reduction, types of sorption, complexation, radiodecay and biotransformation. Applications focus on waste disposal, soil and groundwater reclamation, and advanced water and wastewater treatment operations. *Prerequisite*: Permission of instructor.

3517 Similitude and Statistical Methods (3-0)
Dimension and model theory and its use in analyzing physical experiments. Applications of probability and statistical analysis. *Prerequisite*: Permission of instructor.

3520 Advanced Soil Mechanics (3-0)
Shear strength, earth pressure calculation on retaining structures, soil bearing capacity theories, stress on shaft and tunnel linings, introduction to bearing capacity on permafrosts, slope stability. *Prerequisites*: CE 4448, and permission of instructor.

3521 Industrial Hygiene and Toxicology (3-0)
Techniques of industrial toxicology, mechanisms by which toxic gases, vapors, and dusts produce disease in experimental animals and in man. *Prerequisite*: Permission of instructor.

3522 Hazardous and Special Wastes Management (3-0)
A study of waste management from cradle to grave: generation, storage, transportation, treatment, disposal, exchanges and minimization. The program emphasizes legislative and technical aspects with focus on treatment and disposal technologies. Analysis and design covers physical, chemical, thermal or biological processes with general applications to the industrial and energy-producing sectors. Special wastes, such as high-technology, infectious and radioactive, are addressed as case studies. *Preequisites*: A B.S. degree in engineering or chemistry, graduate standing in engineering or chemistry, or instructor's approval.

3525 Design of Structures for Dynamic Loads (3-0)
Behavior of structural members under dynamic loads. Vibration theory, particular reference to structures, design of structural systems for dynamic loads, wind loads, and earthquakes. *Prerequisite*: Permission of instructor.

3526 Air Pollution Control (3-0)
Effect of air pollution, classification of wastes, meteorological factors, sampling and analysis, abatement, statistical analysis. *Prerequisite*: Permission of instructor.

3532 Modern Methods of Engineering Computations (3-0)
Methods of iterations, approximations, and numerical procedures used in solution of complex problems and optimizations such as occur in Engineering Design and Scientific Analysis. *Prerequisite*: Permission of instructor.

3533 Plates and Shells (3-0)
The theory and design of plates and shell structures by the membrane and bending stress theories. *Prerequisite*: Permission of instructor.

3535 Soil Dynamics (3-0)
Fundamentals of vibration, wave propagation in elastic homogeneous medium, shear modulus of soil, geophysical exploration, foundation vibration—half space theory, lumped parameter systems, dynamic lateral earth pressure, soil liquefaction. *Prerequisites*: CE 4448, and permission of instructor.

3536 Rock Mechanics (3-0)
Classification and index properties, rock strength and failure criteria, initial stresses and their measurements, planes of weakness, deformability, underground openings, slope stability, application to foundation engineering. *Prerequisites*: Graduate standing, CE 4448, and permission of instructor.

4537 Properties of Unconsolidated Sediments (2-6)
Introduction to physico-chemical properties of soils; soil structure; soil classification; soil permeability; principle of effective stress; shear strength of soils; partially saturated soils; laboratory testing procedures. *Prerequisite*. Permission of instructor. Laboratory Fee: $28.

3538 Slope Stability (3-0)
Properties of soils relevant to slope stability. Site investigation, instrumentation and monitoring of slopes. Methods of stability analysis for embankments, dams, natural and manmade cut slopes, rockfalls, debris flow, mud slides, and submarine slopes. Stability of slopes under earthquake loading conditions. *Prerequisite*: Permission of instructor.

4539 Foundations on Expansive Soils (3-3)
Fundamentals of the behavior of unsaturated soils. Volume change and strength properties. Environmental indicators that affect their behavior. Design of footings, slabs and beams on grade, and drilled piers. Soil improvement techniques and foundation rehabilitation methods. *Prerequisite*: Permission of instructor. Laboratory Fee: $28.

3540 Numerical Methods in Earth Sciences (2-3)
Formulation of finite difference, finite element, boundary element method, and mixed algorithms. Stability and convergence. Applications to problems related to seepage, diffusion, consolidation, subsidence, stability and deformation of soil masses. Use of computer codes in working actual engineering applications. *Prerequisite*: Permission of instructor.

3542 Groundwater Contamination and Reclamation (3-0)
Groundwater pollution sources and typical cases in hazardous and radioactive waste management. Fundamentals of flow and transport of chemicals in porous media. Modeling phase distribution of chemicals in subsurface environments. Use of state-of-the-art computer codes (mainframe- and micro-computers). Applications to either planning, case evaluation, remedial action or clean-up technologies. *Prerequisite*: Permission of instructor.

3590 Special Topics in Civil Engineering
Advanced topics of contemporary interest in civil engineering. May be repeated for credit when topic varies. *Prerequisite*: Permission of instructor.

1591-3591 Individual Studies
Individual variable-credit research, design or analysis on advanced phases of Civil Engineering problems conducted under the direct supervision of a faculty member. A maximum of 3 credit hours may be applied towards the M.S. degree. *Prerequisite*. Permission of departmental graduate advisor.

1594-6594 Graduate Research
Individual variable-credit research of contemporary topics in civil engineering. *Prerequisite*: Permission of departmental graduate advisor.

1595 Graduate Seminar
Conferences and discussions of various topics in civil engineering by faculty, graduate students, and speakers from industry and other institutions. Attendance required of all full-time graduate students during each semester of enrollment.

3596 Graduate Design Projects
Individual research, design or analysis on advanced phases of civil engineering problems conducted under the direct supervision of a faculty member. The course, including a written report, is required of all students in the non-thesis option. *Prerequisite*: Permission of instructor.

3597 Graduate Design Projects

3598 Thesis

3599 Thesis

Computer Science

301B Engineering Science Complex
(915) 747-5470

CHAIRPERSON: Andrew Bernat
GRADUATE FACULTY: Bell, Bernat, Cooke, Gelfond, Kreinovich, Patterson

The Computer Science Department offers a Master of Science with a major in Computer Science. Specific courses of study include computer information systems, computer software systems, computer systems organization, theory of computation, data communications, and computing applications. All students are required to take at least 12 hours of coursework chosen from Computer Science 3511, 3515, 3522, 3530, 3577 and Electrical Engineering 3573. Thesis and non-thesis programs are available under this degree. Students enrolled in a thesis program normally take 27 hours of coursework plus Computer Science 3598-99, Thesis. Non-thesis students normally follow a 30 hour program plus credit for Computer Science 3596-97, Graduate Projects.

Electrical Engineering and Computer Science graduate students may substitute EE 3596 and EE 3597 for CS 3596 and CS 3597 and vice versa with the permission of the graduate advisors from each Department.

Prerequisite for the degree is a baccalaureate degree in Computer Science, or at least 13 hours of undergraduate credit in Computer Science, consisting of CS 3330 (or CS 3333), CS 4332, CS 3335, and CS 3452, and a first course in calculus (MATH 4111 or equivalent), or permission of the graduate advisor.

For Undergraduate and Graduate Students

Courses marked with an asterisk (*) may not be applied toward the degree of Master of Science in Computer Science.

*3330 Problem Oriented Programming Languages (3-0)
*4332 Assembler Language Programming (3-0)
*3333 Basic Concepts in Computer Science (3-0)
*3335 Systems Programming (3-0)
*3350 Automata, Computability and Formal Language (3-0)
*3360 Design and Implementation of Programming Languages (3-0)
3370 Computer Graphics (3-0)
*3410 Software Engineering I (3-0)
*3411 Software Engineering II (3-0)
3416 Computer Networks (3-0)
3420 Artificial Intelligence (3-0)
3442 Data Base Management (3-0)
3450 Systems Simulation (3-0)
3452 Translation of Programming Languages (3-0)
1471, 3471 Computer Science Problems (1-0, 3-0)
3475 Theory of Operating Systems (3-0)
3490 Special Topics in Computer Science (3-0)

For Graduate Students Only

3510 Computer Graphics (3-0)
Computer representation and display of graphical information including line, character, and curve generation, two and three dimensional graphical techniques, interactive methods, and advanced topics. *Prerequisite*: CS 3370.

3511 Survey of Programming Languages (3-0)
Comparative study of a variety of current programming languages and the effects of their features on language applications.

3514 Artificial Intelligence (3-0)
Advanced treatment of selected topics from Artificial Intelligence, such as production systems, search strategies, learning and inference, understanding natural language, vision, automatic programming, and current research topics of interest. *Prerequisite*: CS 3420 or permission of instructor.

3515 Theory of Computation (3-0)
Finite state automata, regular expressions, context free languages, Turing machines, recursive and recursively enumerable sets, unsolvable problems.

3522 Advanced Information Storage and Retrieval Systems (3-0)
A survey of advanced concepts in data management. Topical coverage includes B-trees, extendable hashing, field level sensitivity, multiple PCBs, advanced topics in data base management, file directory design, data dictionary systems, and context addressed disk systems.

3530 Data Communications (3-0)
Study of modern techniques for data transmission including modulation methods, coding theory, transmission techniques, and switching theory. *Prerequisite*: CS 3416.

3540 Expert Systems in Computer Science (3-0)
Study of topics from artificial intelligence which form the basis for expert systems design, including: knowledge representation, search techniques, user (language) interfaces, inference control methods, and knowledge acquisition. Applications and building tools for expert systems are also studied, with one important tool covered in detail. *Prerequisites*: Graduate standing and permission of the instructor.

3560 Computer Vision (3-0)
Fundamental concepts associated with the construction of meaningful descriptions of physical objects from images; including image segmentation, two-dimensional and three-dimensional representations, knowledge representation, matching and inference. *Prerequisite*: Permission of instructor. May be taken as IE 3560 or EE 3560.

3577 Distributed Processing (2-3)
Interprocess communication, use of semaphores, bus design and handshaking, resource protection, process synchronization, resource management, and multiprocessor hardware requirements. Laboratory experiments on memory management, bus connections and interfacing and interprocess communication. *Prerequisite*: A knowledge of microprocessors, and assembler programming.

3590 Special Topics
Advanced topics of contemporary interest in Computer Science. May be repeated for credit when topic varies. *Prerequisite*: Permission of the instructor.

1591-3591 Individual Studies
Individual variable-credit research, design or analysis on advanced phases of Computer Science problems conducted under the direct supervision of a faculty member. A maximum of 3 credit hours may be applied towards the M.S. degree. *Prerequisite*: Permission of departmental graduate advisor.

1594, 2594, 3594, 6594 Graduate Research
Individual variable-credit research of contemporary topics in Computer Science. *Prerequisite*: Permission of departmental graduate advisor.

1595 Graduate Seminar
Conferences and discussions of various topics in Computer Science by faculty, graduate students, and speakers from industry and other institutions. Required of all graduate students during each semester of full-time enrollment.

3596-97 Graduate Projects
Individual research, design, or analysis on advanced phases of Computer Science conducted under the direct supervision of a faculty member. The courses, including a written report, are required of all students in the non-thesis option. *Prerequisite*: Permission of the instructor.

3598 Thesis

3599 Thesis

Electrical Engineering

301B Engineering Science Complex
(915) 747-5470

CHAIRPERSON: Michael Austin
GRADUATE FACULTY: Austin, Cabrero, Chang, Flores, Gibson, Liu, Manoli, McDonald, Nemir, Pierluissi, Riter, Schroder, Shadaram, Singh, Smith, Starks, Williams

The Electrical Engineering Department offers a Master of Science Degree with a major in either Electrical Engineering, Computer Engineering or Engineering and a Ph.D. degree with a major in Electrical Engineering.

MASTER OF SCIENCE DEGREES

Specific courses of study in the Electrical Engineering major include electromagnetics, control systems, power systems, communications, bioengineering and instrumentation. All students are required to take EE 3500 and at least 12 hours of graduate coursework in Electrical Engineering. No more than six semester hours of advanced undergraduate coursework may be used to satisfy degree requirements. Thesis and non-thesis programs are available. Students enrolled in a thesis program normally take 24 hours of coursework plus EE 3598-99, Thesis. Non-thesis students follow a 36 hour program which includes credit for EE 3596-97 Graduate Projects.

All students enrolled in the program in Computer Engineering will be required to take at least 15 hours of graduate coursework in areas with a strong emphasis in or applicability to Computer Engineering. These must include EE 3500 and either CS/EE 3530, EE 3573 or EE 3575. No more than six semester hours of advanced undergraduate coursework may be used to satisfy degree requirements. Thesis and non-thesis degree programs are available. Students enrolled in a thesis program normally take 24 hours of coursework plus EE 3598-99 Thesis. Non-thesis students follow a 36 hour program which includes credit for EE 3596-97 Graduate Projects. The Thesis or project work should be in a computer related area.

Students holding a Bachelor of Science degree with a major in Electrical Engineering may work toward a 33 hour undesignated Master of Science Degree in Engineering, which will lead to a sub-specialization in an area outside of the major field. All students are required to take at least 15 hours of graduate coursework in the major, and at least 12 hours of coursework in an area outside of their major leading to a sub-specialization. In lieu of a thesis the program must include EE 3596, Graduate Projects, in which a written report is required not necessarily involving results of research conducted by the student. Possible areas of sub-specialization may include Business Management, Operations Research, Industrial Engineering, Computer Science, Mathematics, and others approved by the student's Graduate Committee. The Graduate Committee must include a member from the sub-specialization.

DOCTOR OF PHILOSOPHY DEGREE

Requirements for Admission—Students entering the program must have an undergraduate degree in electrical engineering or a closely related field. Students must apply for admission to the program through the Graduate School. Ph.D. applicants must meet standard master's degree admission requirements and have a GPA of at least 3.50 in their master's degree program. Normally, a student must hold

a master's degree before being granted admission to the Ph.D. degree program. Some exceptional students may enter the Ph.D. program immediately upon completion of their bachelor's degree. Minimum requirements for special admission are a 3.60 or better GPA from an ABET or CSAB accredited program and scores of at least 700 and 500, respectively, on the quantitative and verbal sections of the Graduate Record Exam.

Course Requirements—The specific course work required of each student will be determined by his/her Advisory Committee. However, each student must complete at least 90 credit hours beyond the bachelor's degree or at least 60 hours beyond the master's degree. Thirty semester credit hours are devoted to research required for the dissertation, the primary requirement of the degree.

At least 30 credit hours of the course work in a student's program must be in the areas of computer engineering and/or computer science. These 30 credit hours will be selected from the list of Ph.D. Core Courses shown below. An additional 30 credit hours of supporting work will be required of each student. These courses will be selected from advanced offerings in engineering, physical science and mathematics but must include EE 3500, EE 3501, and EE 3502. The remaining 30 credit hours will be earned in dissertation research as stated above.

Ph.D. Core Courses (Students must select at least 30 hours):

EE/CS 3510	Computer Graphics
EE/CS 3530	Data Communications
EE 3570	Operating Systems
EE 3571	Digital Signal Processing
EE 3572	Image Processing
EE 3573	Computer Architecture
EE 3574	Digital Computer Design
EE 3575	Digital System Design
EE/CS 3577	Distributed Processing
CS 3511	Programming Languages
CS 3514	Artificial Intelligence
CS 3515	Theory of Computation
CS 3522	Advanced Information Storage and Retrieval Systems
CS 3531	Software Engineering
CS 3532	Compiler Construction
CS 3533	Logic Programming
CS 3540	Expert Systems
EE/CS 3560	Computer Vision

Foreign Language Requirement—Under exceptional circumstances the candidate may be required to demonstrate reading proficiency in a foreign language, if the Doctoral Advisory Committee considers it necessary for his/her dissertation research.

Committees—For each degree candidate, a Doctoral Advisory Committee will be formed consisting of a dissertation advisor and at least three additional faculty with expertise in areas related to his/her program of study and research. At least one committee member must be from a department other than Computer Science or Electrical Engineering. The Doctoral Advisory Committee will be appointed in consultation with the candidate after completion of 9-12 hours of course work applicable to the doctoral degree. The appointment will be made by the Dean of the Graduate School upon recommendation by the Graduate Advisor of the Department of Electrical Engineering. The Doctoral Advisory Committee will administer the candidate's Comprehensive Examination and, together with an additional faculty member from outside the College of Engineering, appointed by and representing the Dean of the Graduate School, will conduct the Final Dissertation Examination.

Examinations—Upon entering the program each student will be required to complete a Qualifying Examination. To pass this examination a student must demonstrate competency in the fundamentals of computer engineering, computer science and electrical engineering. Upon completion of all course work each student will take a Comprehensive Examination administered by his/her Doctoral Advisory Committee. Upon completion of the dissertation research each student will be examined with regard to the outcome of the research project.

Dissertation—The dissertation must demonstrate both the ability to do independent research and competence in scholarly exposition. It should present original investigations at an advanced level of a significant problem in computer systems engineering and should provide the basis for a publishable contribution to the research literature in the field.

Dissertation topics will deal with the structure, function and application of computer systems and/or digital information processing. Problems may emphasize digital architecture, hardware structures, functions, system design and analysis, or software.

Draft copies of the dissertation must be submitted to the Doctoral Committee at least six days before the defense and any suggested corrections must be made. Prior to commencement, two copies of the final bound dissertation, and the unbound original, must be submitted to the Graduate School Office. Two bound copies must also be submitted to the Graduate Advisor.

Microfilming of the Dissertation—The doctoral candidate who has successfully completed all requirements for the degree is required to pay the cost of microfilm reproduction of the complete dissertation. The signed original copy (unbound) of the doctoral dissertation is sent from the Office of the Graduate School to University Microfilms, Ann Arbor, Michigan, for reproduction.

With the dissertation the student must also submit to the Dean of the Graduate School two copies of an abstract, not to exceed 350 words in length (double-spaced) which has been approved in final form by the supervising committee. This will be published in "Dissertation Abstracts International."

Publication by microfilm does not preclude subsequent publication of the dissertation, in whole or in part, as a monograph or in a journal. Copyright at the author's expense may be arranged, if desired, by completing a special form to be secured in the Graduate School Office. In order to protect patent or any other rights, the Graduate Dean may be requested to delay publication by microfilm for a period of one year. This request must be supported by a written recommendation of the supervising professor.

Time Limits and Catalog Changes—All requirements for the degree must be completed within one eight-year period. Work more than eight years old is lost and can be reinstated only by special permission of the Graduate Dean upon recommendation of the Departmental Committee on Graduate Studies. Further, all requirements for the doctorate must be completed within five years after passing the Comprehensive Examination.

General and specific requirements for degrees in the Graduate School may be altered in successive catalogs. Provided the requisite course continues to be offered, the student is bound only by the course requirements of the catalog in force at the time of admission or readmission within an eight-year limit, unless, with the approval of the Graduate Dean, the student elects to be bound by the course requirements of a subsequent catalog. This regulation applies to course requirements only.

For Undergraduates and Graduates

3441	Communication Systems (3-0)
3442	Digital Systems Design II (3-0)
1442	Laboratory for Electrical Engineering 3442 (0-3)
3443	Design with Linear Integrated Circuits
3447	Electromagnetic Energy Transmission and Radiation (3-0)
3450	Solid State Physical Electronics (3-0)
3464	Systems and Controls (3-0)
3472	Microcontroller Applications (3-0)
3474	Operating System Design (3-0)
3477	Hardware/Software Interfacing (3-0)
3478	Microprocessors Systems II (3-0)
1478	Laboratory for Electrical Engineering 3478 (0-3)
3479	Advanced Computer Architecture (3-0)
3480	Microwave Communications (3-0)
3481	Electro-Optical Engineering (3-0)
3482	Antenna Engineering (3-0)
3483	Digital Signal Processing (3-0)
3484	Probabilistic Methods in Engineering and Science (3-0)
3485	Biomedical Instrumentation (3-0)
3486	Power Systems Analysis (3-0)

3487 Computation Techniques for Power Systems Analysis (3-0)
3488 Digital Communications (3-0)
3495 Special Topics in Electrical Engineering (3-0)

Normally, required undergraduate electrical engineering courses may not be applied toward the M.S. in electrical engineering or computer engineering.

For Graduate Students Only

3500 Advanced Mathematics for Engineers I (3-0)
Probability, random variables, basic random processes, spectral analysis, applications. *Prerequisite*: EE 3484 or MATH 3300 or equivalent.

3501 Advanced Mathematics for Engineering II (3-0)
Fundamentals of mathematical concepts of linear differential equations, linear transformations, vector analysis, Fourier series and integrals, partial differential equations and complex variables. *Prerequisite*: MATH 3335 or 3436 or equivalent.

3502 Linear Systems Analysis (3-0)
Analysis of generalized linear systems through a state space approach. Topics include linear algebra, continuous and discrete operational calculus, solution methods, controllability and observability and an introduction to non-linear solutions and stability methods.

3506 Antenna Theory (3-0)
Fundamental theory of point sources; the antenna as an aperture; methods of analyzing and calculating characteristics of various types of antennas; self and mutual impedances of antennas; array of linear antennas; antenna measurement techniques. *Prerequisite*: EE 3347.

3507 Modern Control Theory (3-0)
State space techniques (continuous case); controllability and observability. Lyapunov's second method of steepest descent; and other optimization techniques. *Prerequisite*: EE 3502.

3510 Computer Graphics (3-0)
Computer representation and display of graphical information including line, character, and curve generation, two and three-dimensional graphical techniques, interactive methods, and advanced topics. *Prerequisite*: CS 3370.

3511 Semiconductor Devices (3-0)
Theory and application of advanced semiconductor devices including heterostructures, integrated circuits, semiconductor memories, charge transfer devices, thyristors, and microwave devices. *Prerequisite*: EE 3450 or equivalent.

3512 Advanced Optoelectronic Devices (3-0)
Theory and application of advanced photonic devices including injection lasers, photodiodes, infra-red detectors, solar cells, electroluminescent displays. *Prerequisite*: EE 3511 or equivalent.

3514 Ultrafast Electron Devices for Super Computers (3-0)
Theory and applications of electron devices used in fast computers including high electron mobility transistors, optical logic gates, quantum well lasers, Josephson junction logic gates and hetero-junction bipolar transistors. *Prerequisite*: EE 3450 or equivalent.

3515 Advanced Electromagnetic Theory (3-0)
Theorems and concepts of uniqueness, equivalence, induction, reciprocity and Green's functions. Application of plane, cylindrical, and spherical wave functions to resonators, waveguide, radiators, apertures, and scatterers. *Prerequisite*: EE 3347.

3516 Active Circuits Analysis (3-0)
Analysis of active networks, network sensitivity. Filter synthesis and design, immittance simulation. *Prerequisites*: EE 3340 and EE 3441.

3517 Linear Integrated Circuit Application (3-0)
Techniques of analysis and design of electronic circuits, using operational amplifiers, and linear integrated circuits such as multipliers, logarithmic amplifiers and RC active filters. *Prerequisite*: EE 3340.

3519 RF Circuit Design (3-0)
Resonant circuits and impedance transformation. Small signal High-Frequency amplifiers. Sine Wave oscillators and phase lock loops. Mixers, AM, FM, and PM receivers and transmitters. Tuned power amplifiers. *Prerequisites*: EE 3340 and EE 3441.

3523 Communication Theory (3-0)
Transmission of information over noisy channels, coding for reliable transmission, error-detecting and error-correcting codes, modulation schemes. *Prerequisite*: EE 3500.

3524 Statistical Detection and Estimation Theory (3-0)
Application of statistical decision theory and estimation theory to problems of modern communication systems, radar and sonar systems, etc. Random signal representations, detection of signals with known and unknown parameters, estimation of signal parameters. *Prerequisite*: EE 3500.

3527 Optimal Control Theory (3-0)
Properties of optimal systems, the minimum time, minimum fuel, and minimum energy problems, applications of optimization techniques to system design. *Prerequisites*: EE 3500 and EE 3502.

3530 Data Communications (3-0)
Study of modern techniques for data transmission including modulation methods, coding theory, transmission techniques and switching theory.

3536 Fiber Optic Communication Systems (3-0)
Theory of light propagation in optical fibers, bandwidth and attenuation of fiber optic systems, principles of semiconductor lasers and photodiodes, noise in optical receivers, modulation techniques, coherent optical communication systems. *Prerequisite*: EE 3441 or equivalent.

3543 Microwave Engineering (3-0)
An introduction to the fundamentals of microwave engineering. Topics include waveguide transmission, impedance transformation and matching, passive microwave elements, resonant cavities, microwave networks and periodic structures. *Prerequisite*: EE 3347.

3560 Computer Vision (3-0)
Fundamental concepts associated with the construction of meaningful descriptions of physical objects from images; including image segmentation, two-dimensional and three-dimensional representations, knowledge representation, matching and inference. *Prerequisite*: Permission of instructor. May be taken as IE 3560 or CS 3560.

3570 Operating Systems (3-0)
Fundamental concepts as they apply to a variety of operating systems, including internal algorithms, such as CPU scheduling and memory management, sequential processes and advanced current topics including protection systems and distributed processing. *Prerequisite*: CS 3475 or EE 3474.

3571 Digital Signal Processing (3-0)
Properties of discrete signals and systems. Reconstruction of continuous waveforms from discrete signals. FFT, DFT, and Z transforms. Digital filter design for noisy deterministic and stochastic signals. Advanced Topics. *Prerequisite*: EE 3483.

3572 Image Processing (3-0)
The study of enhancement and recognition of features in single and multichannel digital images. *Prerequisite*: EE 3571.

3573 Computer Architecture (3-0)
Selected topics in computer hardware design such as micro-programming, pipeline and multiprocess configurations, memory architectures, and array processing. *Prerequisites*: EE 3369 and knowledge of assembly programming.

3574 Digital Computer Design (3-0)
Registers and counters; parity methods and storage organization; computer control, arithmetic and logical operations; analysis of simulation experiments for complex systems; system validation. *Prerequisite*: EE 3753.

3575 Digital System Design (3-0)
Emphasis on the design of computer hardware and large digital systems where sequential circuit design is impractical. The design process is based on the use of register-transfer language and control-sequence design language where a software description is

translated into hardware circuitry. Applications to computer and computer based design, including microprocessors. *Prerequisites*: EE 3442 and EE 3478.

3577 Distributed Processing (2-3)
Topics on distributed and parallel processing. Includes discussions of multiprocessing and pipelined systems using recent existing systems as examples. *Prerequisite*: EE 3573 or an equivalent computer architecture course.

3590 Special Topics
Advanced topics of contemporary interest in electrical or computer engineering. May be repeated for credit when topic varies. *Prerequisite*: Permission of the instructor.

1591-3591 Individual Studies
Individual variable-credit research, design or analysis on advanced phases of Electrical Engineering problems conducted under the direct supervision of a faculty member. A maximum of 3 credit hours may be applied toward the M.S. degree. *Prerequisite*: Permission of graduate advisor.

1594-6594 Graduate Research
Individual variable-credit research of contemporary topics in electrical or computer engineering. *Prerequisite*: Permission of departmental graduate advisor.

1595 Graduate Seminar
Conferences and discussions of various topics in electrical and computer engineering by faculty, graduate students, and speakers from industry and other institutions. Required of all graduate students during each semester of full-time enrollment.

3596-97 Graduate Projects
Individual research, design or analysis on advanced phases of electrical or computer engineering problems conducted under the direct supervision of a faculty member. The courses, including a written report, are required of all students in the non-thesis option. *Prerequisite*: Permission of the instructor.

3598-3599 Thesis Course for Master's Degree

3690 Special Topics (3-0)
Advanced topics of contemporary interest in computer systems engineering. May be repeated twice for credit when topic varies. *Prerequisites*: Doctoral candidacy and permission of the instructor.

1694-6694 Graduate Research
Individual variable credit research of contemporary topics in computer systems engineering. *Prerequisites*: Doctoral candidacy and permission of the instructor.

3698-3699 Dissertation
Dissertation course for doctoral students.

Mechanical and Industrial Engineering

101 Engineering Science Complex
(915) 747-5450

CHAIRPERSON: Thomas J. McLean
PROFESSORS EMERITI: Kenneth S. Edwards and John Whitacre
GRADUATE FACULTY: Bhaduri, Craver, Dowdy, Golding, Hererra, Hsu, Johnson, McLean, Robbins, Roderick, Swift, Villalobos, Wu

The Mechanical and Industrial Engineering Department offers a Master of Science with a major in Manufacturing Engineering, a Master of Science with a major in Mechanical Engineering, and a Master of Science with a major in Industrial Engineering. Specific courses of study in the Mechanical Engineering major include fluid and thermal systems, and solid mechanic and machine design. Courses of study in the Industrial Engineering major include operations research, quality control and manufacturing process engineering. Courses of study in the Manufacturing Engineering major include management of manufacturing operations, computerized manufacturing and manufacturing systems. Thesis and non-thesis options are available under these three degrees. Students enrolled in a thesis program normally take 24 hours of coursework plus 3598-99, Thesis. Non-thesis students follow a 36-hour program, which includes credit for 3596-97, Graduate Projects, that is open only to part-time students whose work schedule prohibits doing a thesis.

Any student holding a Bachelor of Science Degree in any Engineering field can participate in a program which leads to the Master of Science in Engineering with a major in Manufacturing Engineering.

The course work requires a total of 33 credit hours. Fifteen credit hours are to be selected from an approved group of core courses. Twelve to fifteen credit hours are electives to be selected by the student from five specialties available. Six credit hours are to be thesis for full-time students. Part-time students require three to six credit hours of graduate project courses. The project course, in which a report is required, must involve research and/or design on a problem in manufacturing engineering.

For Undergraduate and Graduate Students

Mechanical Engineering

Courses marked with an asterisk (*) may not be applied toward the degree of Master of Science in Mechanical Engineering.

3411 Automatic Controls
3412 Fluid Power and Control Systems
3443 Robotics and Automated Manufacturing
3455 Gas Dynamics
3456 Applications of Solar Energy
*3464 Mechanical Design
3468 Environmental Control Engineering
3487 Aerodynamics
*4451 Heat Transfer

Industrial Engineering

Courses marked with an asterisk may not be applied toward the degree of Master of Science in Industrial Engineering.

3432 Safety Engineering
3465 Project Planning and Control
*3484 Industrial Layout
*3485 Statistical Quality Control and Reliability
*3491 Production and Inventory Control
*3492 Probabilistic Operations Research
3493 Engineers and Managing
*4466 Senior Project

For Graduate Students Only

Mechanical Engineering

3501 Experimental Stress Analysis (2-3)
Modern techniques for determining state of stress and strain experimentally. The laboratory provides the opportunity to gain practice in the use of these devices and their ancillary equipment. *Prerequisite*: CE 3234 or permission of instructor. Laboratory Fee: $6.

3502 Advanced Mechanics of Materials I (3-0)
An introduction to the theory of elasticity and the principles of stress and strain. Solution of some elasticity problems such as bending and shear of beams, torsion of bars. Energy method and stability. *Prerequisite*: CE 3234.

3503 Advanced Heat Transfer I—Conduction (3-0)
Conduction in various coordinate systems; steady and transient-state cases with various boundary conditions; analytical, numerical and graphical solutions. *Prerequisite*: MATH 3226 or permission of instructor.

3504 Advanced Heat Transfer II—Convection (3-0)
Thermal boundary-layer theory; forced convection in laminar and turbulent flows; free convection. *Prerequisite*: MECH 4354 or permission of instructor.

3505 Advanced Heat Transfer III—Radiation (3-0)
Properties of radiating media; diffuse, specular and directional interchange for gray and non-gray surfaces; gas radiation. *Prerequisite*: MECH 4451 or permission of instructor.

3506 Advanced Fluid Mechanics I (3-0)
Survey of the principal concepts of fluid mechanics, statics, continuity, momentum and energy relations for continuum fluids, kinematics of fluid motion, governing equations for motion of non-viscous fluid, vorticity and circulation, Kelvin's theorem, Helmoholtz theorem, Crocco's theorem, steam function, potential flow, conformal transformation, theory or lift, wave phenomena in fluids. *Prerequisite*: MECH 4354 or permission of instructor.

3507 Advanced Fluid Mechanics II (3-0)
Viscous and turbulent flows. Viscosity and dissipation phenomena. The Navier-Stokes and energy equations; creep flow at low Reynolds numbers, laminar boundary layers, laminar stability, transition and turbulence, turbulent boundary layers, jets, wakes, and separated flows. *Prerequisite*: MECH 4354 or permission of instructor.

3508 Advanced Mechanical Design (2-3)
Study of the method of optimum design for mechanical systems. Evolution of optimum design; approximation for explicit design; mathematical functions in design, evaluation of the effects of manufacturing errors on product performance, optimum choice for method of analysis, statistical consideration for factor of safety; adequate design, optimum design, design equations, normal redundant and incompatible specifications; loose limits and loose specifications; problems with more than one primary design equation.

3509 Structural Dynamics (3-0)
Continuation of MECH 4465 with emphasis on multiple degree-of-freedom systems and their response to disturbances. Normal mode theory, matrix representation of problem, Laplace transform, electrical analogue and mobility techniques of solution. Vibration measurements and analysis. *Prerequisite*: MECH 4465 or permission of instructor.

3510 Advanced Thermodynamics (3-0)
Applications of general thermodynamic relations; study and applications of time-dependent energy relationships; analysis of power, refrigeration, cryogenic and direct energy conversion systems. *Prerequisite*: MECH 3376 or permission of instructor.

3512 Advanced Mechanics of Materials II (3-0)
Traditional approach to mechanics of materials with topics such as failure theories, fatigue, beams on an elastic foundation, stress concentrations, thick-walled and laminated cylinders, contact stresses, and inelastic behavior. *Prerequisite*: MECH 3502.

3513 Advanced Fluid Mechanics III (3-0)
Compressible flow, energy, continuity and momentum principles applied to compressible fluid flows; one, two, and three dimensional subsonic, supersonic and bypersonic flow; normal and oblique shocks; methods of characteristics; mixed flows; hodograph method; compressible laminar and turbulent boundary layers. *Prerequisite*: MECH 3455 or permission of instructor.

3514 Robotics and Flexible Automation (3-0)
Modern concepts of robotics and flexible automation including power and control mechanisms, flexible material handling systems, programmable controllers, interfacing and end-of-arm tooling. *Prerequisite*: Permission of instructor.

3518 Advanced Dynamics (3-0)
Velocity and acceleration analysis, motion of a point in space, rotating coordinate systems, balancing of masses; generalized coordinates, work and energy, impulse and momentum. *Prerequisite*: MECH 3238 or equivalent.

3559 Computer-Aided Manufacturing (3-0)
Modern concepts of using computers for manufacturing, including the theory of computer numerical control (CNC) and direct numerical control (DNC), CNC milling, CNC tuning and computer-aided process design. *Prerequisite*: Permission of instructor.

3562 Graphical Elements of Computer-Aided Design and Manufacturing (3-0)
Modern concepts of using computer graphics for engineering design and manufacturing, including computer graphics standards such as CORE graphics and GKS, graphic input/output devices, software design and programming techniques for computer-aided design and manufacturing (CAD/CAM). *Prerequisite*: MECH/IE 3559.

3590 Special Topics
Advanced topics of contemporary interest in mechanical engineering. May be repeated for credit when topic varies. *Prerequisite*: Permission of the instructor.

1591-3591 Individual Studies
Individual variable-credit for non-thesis related research, design or analysis on advanced phases of Mechanical Engineering problems conducted under the direct supervision of a faculty member. A maximum of 3 credit hours may be applied towards the M.S. degree. *Prerequisite*: Permission of Graduate Advisor.

3594, 6594 Graduate Research
Individual variable-credit research of contemporary topics in mechanical engineering. *Prerequisite*: Permission of departmental graduate advisor.

1595 Graduate Seminar
Conferences and discussions of various topics in mechanical engineering by faculty, graduate students and speakers from industry and other institutions. Required of all graduate students during each semester of full-time enrollment.

3596-97 Graduate Projects
Individual research, design or analysis on advanced phases of engineering problems conducted under the direct supervision of a faculty member. The courses, including a written report, are required of all students in the non-thesis option. *Prerequisite*: Permission of the instructor.

3598 Thesis

3599 Thesis

Industrial Engineering

3513 Expert Systems for Industrial Applications (3-0)
Survey of applied areas of artificial intelligence including machine vision and robotics. Expert systems technology as it applies to industrial problems. Discussion of commercial expert systems. Construction of expert system using expert system building tools. *Prerequisite*: Permission of the instructor.

3551 Linear and Combinatorial Optimization Methods (3-0)
Deterministic operations research techniques such as linear programming and its extensions, duality theory, sensitivity analysis, network related models, integer programming, and dynamic programming. Applications include production planning and project networks such as PERT/CPM. *Prerequisite*: IE 3389 or permission of instructor.

3552 Design and Analysis of Industrial Experiments (3-0)
Investigation of statistical sampling methods, hypothesis testing procedures, and design of experiments. Both parametric and non-parametric procedures are included. *Prerequisite*: IE 3485 or permission of instructor.

3554 Advanced Engineering Economy (3-0)
Capital budgeting, deterministic investment analysis, probabilistic engineering economy, manufacturing cost models, utility theory, and computer applications to engineering economy. *Prerequisite*: IE 3326 or permission of instructor.

3556 Probabilistic Optimization Methods (3-0)
Probabilistic operation research technique such as stochastic programming, Markov decision models, queueing theory, and system reliability theory. *Prerequisite*: IE 3492 or permission of instructor.

3557 Computer Simulation Applications (3-0)
An introduction to the concepts of simulation methodology as applied to the design and analysis of industrial systems. Specialized computer simulation language is applied to an industrial analysis or design term project. *Prerequisites*: Knowledge of FORTRAN and permission of instructor.

3558 Nonlinear Optimization Methods (3-0)
General Optimization theory and numerical optimization methods for non-linear decision models. Coverage includes applications to automatic process control, engineering design optimization as well as available computer software. *Prerequisite*: IE 3389 or permission of instructor.

3559 Computer-Aided Manufacturing (3-0)
Modern concepts of using computers for manufacturing, including the theory of computer numerical control (CNC) and direct numerical control (DNC), CNC milling, CNC tuning and computer-aided process design. *Prerequisite*: Permission of Instructor.

3560 Computer Vision (3-0)
Fundamental concepts associated with the construction of meaningful descriptions of physical objects from images; including image segmentation, two-dimensional and three-dimensional representations, knowledge representations, matching and inference. *Prerequisite*: Permission of instructor. May be taken as CS 3560 or EE 3560.

3562 Graphical Elements of Computer-Aided Design and Manufacturing (3-0)
Modern concepts of using computer graphics for engineering design and manufacturing, including computer graphics standards such as CORE graphics and GKS, graphic input/output devices, software design and programming techniques for computer-aided design and manufacturing (CAD/CAM). *Prerequisite*: MECH/IE 3559.

3590 Special Topics
Advanced topics of contemporary interest in industrial engineering. May be repeated for credit when topic varies. *Prerequisite*: Permission of the instructor.

1591-3591 Individual Studies
Individual variable-credit for non-thesis related research, design or analysis on advanced phases of Industrial Engineering problems conducted under the direct supervision of a faculty member. A maximum of 3 credit hours may be applied towards the M.S. degree. *Prerequisite*: Permission of Graduate Advisor.

3594-6594 Graduate Research
Individual variable-credit research of contemporary topics in industrial engineering. *Prerequisite*: Permission of departmental graduate advisor.

1595 Graduate Seminar
Conference and discussions of various topics in industrial engineering by faculty, graduate students, speakers from industry and other institutions. Required of all graduate students each semester of full-time enrollment.

3596-97 Graduate Projects
Individual research, design or analysis on advanced phases of industrial engineering problems, conducted under the direct supervision of a faculty member. The courses, including a written report, are required of all students in the non-thesis option. *Prerequisite*: Permission of instructor.

3598 Thesis

3599 Thesis

Metallurgical and Materials Engin ring

M201 Engineering Science Complex
(915) 747-5468

CHAIRPERSON: Lawrence E. Murr
GRADUATE FACULTY: Arrowood, Bronson, Fisher, McClure, Murr, Stafford, Tarin, Varma

Graduate students in Metallurgical and Materials Engineering are involved with academic studies and research programs that focus on understanding the structure, properties, processing and performance of materials, including the development of new or improved materials and advanced processing methods. These are the critical links between the design and the realization of new materials systems. Materials and materials limitations pervade all of the engineering and high technology fields that are an integral part of our society and its economic infrastructure. The challenges and opportunities for graduates in metallurgical and materials engineering are certainly exciting and exceptional.

The Metallurgical and Materials Engineering Department offers a Master of Science with a major in Metallurgical and Materials Engineering and an undesignated Master of Science with a major in Engineering. Students entering the program must demonstrate having a background which includes MET 3206 (Transport Processes in Materials Systems), 3208 (Applied Thermodynamics), and 3309 (Physics of Materials), 4306 (Physical Metallurgy), or their equivalent. Students holding a B.S. degree in Electrical or Mechanical Engineering or other related engineering fields or physics, chemistry, and related physical sciences can successfully complete the Master's program after taking certain undergraduate remedial courses which may be recommended by the Academic Advisory Commitee. Up to 9 hours of approved undergraduate courses may be applied toward the M.S. credit hour requirement. The Academic Advisory Committee will normally approve all academic program proposals and monitor academic progress of all graduate students until a thesis or research program advisor is chosen and a Research Advisory Committee developed. This can be done at any time after the student matriculates into the M.S. program. The Research Advisory Committee normally consists of the research advisor (who serves as its chairperson) and at least one additional member of the department faculty and one faculty member from another academic department. An additional member of the committee from another academic department is often desirable if a subspecialization is involved, bringing the committee size to 4 members.

Thesis and non-thesis programs are available under the M.S. in Metallurgical and Materials Engineering degree. Students enrolled in a thesis program normally take a minimum of 24 hours of coursework plus MME 3598-99 (Thesis). Non-thesis students follow a 36 hour program which includes credit for two Metallurgical and Materials Engineering Graduate Project courses, MME 3596 and 3597.

Thesis work should clearly demonstrate the ability to execute independent, innovative research. The research *should* be original and make a contribution to the state-of-the-art. The thesis work is the substance of the M.S. degree. It must be written (in whole or in part) as a technical paper and *submitted* for publication prior to the awarding of the degree. The student *should be* the senior (first) author.

Undesignated Degrees: A student holding a Bachelor of Science with a major in Metallurgical and Materials Engineering, Materials Science and Engineering, or a related materials area may work toward a 33 hour undesignated degree without a thesis, leading to a sub-specialization in an area outside of the major. The coursework includes 18 hours in the major field and at least 12 hours in the particular area of sub-specialization. The work in the major field includes credit for MME 3596 (Graduate Project). Possible areas of sub-specialization are indicated below.

Non-thesis students are required to present a research report which must be approved by at least two members of the Research Advisory Committee. There are no formal requirements for this report.

All students are required to take MME 4501, 3502, 3503, and 3504 which are designed to apply the principles of thermodynamics, transport, reaction kinetics, crystal defects and other materials fundamentals in contemporary materials engineering areas involving and reinforcing issues of structure, properties, processing, and performance. This course sequence is also designed to develop and apply experimental methods in metallurgical and materials engineering and materials science and engineering. A minumum (average) letter grade of 3.0 is required for courses taken at UTEP.

Sub-Specialization: Possible areas of sub-specialization for an undesignated degree or to complement a research area or to achieve a broader materials background may involve Business Management, Operations Research, Structural Mechanics, Electronic Device Design and Development, Experimental Design, Manufacturing Engineering emphasizing advanced manufacturing and Materials Processes, Waste Materials Management, and the like. Some examples of other

engineering courses which might contribute to developing these areas include the following.

Mechanical/Industrial/Manufacturing Engineering

MECH/IE 3511	Linear & Combinatorial Optimization Methods
MECH/IE 3552	Design & Analysis of Industrial Experiments
MECH/IE 3559	Computer-Aided Manufacturing
MECH/IE 3562	Graphical Elements of Computer-Aided Design & Manufacturing
MECH/IE 3590	Special Topics in Manufacturing Engineering

Civil Engineering

CE 3505	Advanced Structural Analysis
CE 3512	Environmental Processes
CE 3517	Similitude & Statistical Methods

Electrical Engineering and Computer Science

CS 3510	Computer Graphics
EE 3511	Semiconductor Devices
EE 3512	Advanced Optoelectronic Devices

Students from engineering disciplines outlined above or other science or engineering disciplines may wish to develop a sub-specialization in Metallurgical and Materials Engineering or Materials Engineering. In general, a sub-specialization could be developed by considering the core program:

MME 4501	Microstructural and Microchemical Characterization of Materials
MME 3502	Materials Extraction, Synthesis & Processing
MME 3503	Modern Concepts in Materials Science & Engineering
MME 3504	Phase Transformations & Microstructures

Other specialized areas could be developed by other groupings of courses or areas represented by course groupings.

For Undergraduate and Graduate Students

3309 Physics of Materials
3314 Advanced Materials Concepts
3321 Engineering Alloys
4304 Process Metallurgy I
4305 Process Metallurgy II
4306 Physical Metallurgy I
4307 Physical Metallurgy II
3409 Corrosion
3416 Failure Analysis
4405 Materials Fabrication
4413 Structural Characterization
4418 Metallurgical Design

METALLURGICAL AND MATERIALS ENGINEERING (MME)

For Graduate Students Only

4501 Microstructural and Microchemical Characterization of Materials (3-3)
An interdisciplinary approach to the theory and applications of techniques for characterizing chemical (microchemical) and microstructural features of solid materials. Techniques that will be stressed include X-ray diffraction, optical metallography, scanning and transmission electron microscopy (emphasizing analytical transmission electron microscopy), electron probe microanalysis, and surface and near surface microanalysis (Auger electron spectroscopy, ESCA, SIMS, etc.). Sample preparation techniques will be covered and students will be encouraged to examine materials which may have some application to their research problems. Offered in alternate years. *Prerequisite*: MET 4413 or equivalent introductory background in topic areas, or permission of instructor.

3502 Materials Extraction, Synthesis, and Processing (3-0)
Thermodynamic, thermochemical, electrochemical, kinetic, and phase equilibrium fundamentals and fundamental structures and properties of materials applied to examples of ferrous and non-ferrous extraction and processing. Examples include copper extraction, refinement, processing, alloying and performance; iron and steel making and iron alloy processing, metal and ceramic powder processing, and contemporary materials synthesis and processing. Offered in alternate years.

3503 Modern Concepts in Materials Science and Engineering (3-0)
Fundamentals of crystal structure and crystal chemistry structure-properties relationships, and structure and microstructure modification in solid materials. Order/disorder, imperfections, phase equilibria, phase diagrams, rate processes, and fundamentals of phase transformations will be covered. The role of microstructures in materials processing and performance will be developed in order to give students a concept of applications of materials fundamentals and materials by design. *Prerequisites*: MET 3206, 3208, 4306 or equivalent, or permission of the instructor.

3504 Phase Transformations and Microstructures (3-0)
The theory of the nucleation and growth kinetics of solid materials, solid-solid transformations and mechanisms. Rate processes, decomposition and ordering reactions and microstructures. Diffusionless transformations, eutectoid and martensitic transformations are covered along with associated microstructural morphologies and property/performance control by microstructure control in materials. *Prerequisites*: MET 4306 and 4307, or equivalent, MME 4501, or permission of the instructor.

3505 Thermodynamics of Materials (3-0)
The principles of chemical thermodynamics are applied to selected topics from all aspects of metallurgical processing. Subjects to be covered include solutions, phase equilibria, surface phenomena, free energy-composition diagrams, temperature-pressure diagrams, Eh-pH diagrams, and statistical estimation of thermodynamic functions.

3506 Transport Processes in Materials Systems (3-0)
The fundamental concepts of fluid flow, heat and mass transfer, and reaction kinetics are applied to selected topics from all areas of materials processing.

3507 Materials at High Temperatures (3-0)
Thermodynamic aspects of metal-oxygen reactions. Defects in inorganic (metal oxide) compounds and defect-dependent properties. Growth of oxide scales by lattice transport and development of stresses and strains. Oxidation in mixed reactants and hot corrosion and/or salt induced corrosion. Offered in alternate years. *Prerequisite*: MME 3505 or equivalent, or permission of the instructor.

3508 Mechanical Behavior of Materials (3-0)
The underlying principles of elastic and plastic deformation of metals, ceramics, polymers, and composite materials will be developed. Topics include dislocation theory, slip, twinning, microstructures, high and low temperature deformation behavior (tensile properties, creep and fatigue) of crystalline and amorphous materials. Offered in alternate years. *Prerequisite*: MET 3203 or equivalent, or permission of the instructor.

3509 Aqueous Corrosion (3-0)
Review of corrosion phenomena including electrochemical rate equations. Passive films and their role in corrosion. Electrochemical techniques. Pitting corrosion, stress corrosion cracking, corrosion fatigue and wear, and corrosion inhibition will be covered. Offered in alternate years. *Prerequisites*: MME 3505, 3506 or equivalent, or permission of the instructor.

3510 Advanced Failure Analysis (3-0)
An advanced study of structural failure processes to include topics in fracture mechanics, fatigue, and environmental assisted cracking. Analysis of failures using metallographic, electron microscopy, and microanalytic techniques will be covered. Fracture of specific materials; steels, nonferrous alloys, composites, and nonmetallics will be included.

3511 Wear of Materials (3-0)
Definitions of wear and tribological properties of surfaces. Characteristics of surfaces in contact. Wear processes and mechanisms, grooving wear, sliding wear, rolling-sliding wear and erosive wear applied to a wide range of materials and materials systems. The role of microstructures and properties of materials in wear phenomena

will be developed. Offered in alternate years. *Prerequisites*: MME 3503 and 3504 or permission of the instructor.

3512 Deformation Processing (3-0)
Deformation of crystalline materials and the role of structures and properties in controlling processing and performance. Applications of dislocation theory and theories of work hardening in metallic systems to cutting operations, metal forming and other material fabrication, extrusion, and machining and material removal. Nontraditional processing such as explosive forming, mechanical alloying, powder consolidation, and explosive welding and joining will also be included. Offered in alternate years. *Prerequisites*: MME 4501, 3502, 3503, 3504, and 3508 or permission of the instructor.

3513 Advanced Materials and Composites (3-0)
Properties and structures of composite materials and design of composite systems to yield desired combinations of properties. Metal, ceramic, and polymer composite systems as well as high-performance alloy systems or microcomposites. Applications of materials and composite fundamentals to manufacturing and processing. Offered in alternate years. *Prerequisites*: MME 4501, 3503 or equivalent, or permission of the instructor.

3514 Interfacial Phenomena in Materials Systems (3-0)
Thermodynamics of solid interfaces and interfacial equilibria. Interfacial free energy concepts and measurements. Structure of interfaces: solid surfaces, grain boundaries, phase boundaries, and system interfaces. Properties of interfaces and their role in materials performance. Offered in alternate years. *Prerequisites*: MME 4501, 3503, 3504 and 3505 or equivalent, or permission of the instructor.

3515 Materials Performance at High Strain Rates (3-0)
Principles of high rate deformation. Stress/strain, strain state, strain rate fundamentals. Deformation induced microstructures and relationships to properties and performance. Shock-wave fundamentals, shock hardening and strengthening. Explosive forming, welding and material working fundamentals. Principles and applications of shock wave compaction and consolidation of powdered materials and synthesis and sensitization of materials at high strain rates and high pressures. Offered in alternate years. *Prerequisite*: MME 3508 or equivalent, or permission of the instructor.

3590 Special Topics
Advanced topics of contemporary interest in metallurgical and materials engineering. May be repeated for credit when topic varies. *Prerequisite*: Permission of the instructor.

1591-3591 Individual Studies
Individual variable-credit research, design or analysis on advanced phases of metallurgical and materials engineering problems conducted under the direct supervision of a faculty member. A maximum of 3 credit hours may be applied towards the M.S. degree. *Prerequisite*: Permission of graduate advisor or Academic or Research Advisory Committee.

2594, 3594 Graduate Research
Individual variable-credit research of contemporary topics in metallurgical and materials engineering. *Prerequisite*: Permission of Academic or Research Advisory Committee.

1595 Graduate Seminar
Conferences and discussions of various, contemporary topics in metallurgical and materials engineering by faculty, graduate students, and speakers from industry, government, or other academic institutions or departments. The program is organized to encourage the development of communications skills at a professional level for graduate students. Required of all graduate students during each semester of full-time enrollment. Up to 3 credits can be applied to the degree.

3596-97 Graduate Projects
Individual research, design or analysis on advanced phases of engineering problems conducted under the direct supervision of a faculty member. The courses, including a written report, are required of all students in the non-thesis option. *Prerequisite*: Permission of the instructor.

3598 Thesis

3599 Thesis

The College of Liberal Arts

In 1942 the History Department, a component of today's College of Liberal Arts, awarded UT El Paso's first master's degree. Since then, most of the departments in the College have developed graduate programs. M.A. programs are available in Art, Communication, English, History, Linguistics, Political Science, Psychology, Sociology, Spanish, and Theatre Arts. In addition to the M.A., the Political Science Department offers the Master in Public Administration Degree and, in conjunction with the College of Business Administration, a joint MBA/MPA degree option. The Department of Music offers the Master of Music degree with options in Performance and in Music Education.

Students wishing to expand their knowledge in areas outside their previous training or present profession may pursue the Master of Arts in Interdisciplinary Studies. Students in this program take M.A.I.S. courses that emphasize cross-disciplinary approaches, with encouragement to pursue an individualized course of study designed to further their particular interdisciplinary interests.

UT El Paso and UT Austin offer a cooperative MSSW degree program designed to respond to community and regional needs in the area of social work practice and service. Graduates of the cooperative program are awarded a MSSW degree from UT Austin, but all classroom work is held on the UT El Paso campus. Courses are taught in the evenings and on weekends.

The most recent addition to the College's graduate program is a joint UT El Paso-UT Austin doctorate in Border Studies. Students in this program can complete much of their course work in residence at UT El Paso with the doctoral degree awarded by UT Austin.

Art

350 Fox Fine Arts
(915) 747-5181

CHAIRPERSON: W. Ray Parish
PROFESSORS EMERITI: Clark Garnsey, Wiltz Harrison
GRADUATE FACULTY: Arnold, Fensch, Jones, Parish, Quinnan, Segal, Thiewes, Wong
GALLERY DIRECTOR: David Andersen

REQUIREMENTS FOR THE M.A. DEGREE

The Art Department offers two master's degree options: Studio Practice and Art Education with majors and minors in Ceramics, Drawing, Graphic Design, Metals, Painting, Printmaking or Sculpture.

Prerequisites: (1) a bachelor's degree; (2) 51 semester hours of art, art history or art education; (3) a portfolio of at least 10 good slides of the applicant's recent work, presented in a clear plastic folder, with each slide labeled and identified; (4) at least two satisfactory letters of recommendation. The Art Education option requires a teaching certificate. A written statement of personal focus on art is recommended.

Studio Practice Option requires 33 hours—15 in a studio major, 9 hours of studio minor, 3 hours of Graduate Seminar, 3 hours in a related discipline or in Art History and 3 hours of a Graduate Exhibition.

Art Education Option requires 36 hours—12 hours in Art Education, 12 hours in studio minor (two 6 hour minors), 3 hours of Graduate Seminar, 3 hours in a related discipline or in Art History, and 6 hours of thesis.

All graduate students must be advised before registration every semester.

Undergraduate Courses for Graduate Credit

ART EDUCATION
3421 Special Problems in Art Education
3451 Advanced Art Education
3452 Special Problems in Art Education

CERAMICS
3404 Ceramics VI
3414 Ceramics VII
3424 Special Problems in Ceramics

GRAPHIC DESIGN
3406 Graphic Design Internship
3416 Special Problems in Graphic Design
3426 Portfolio Design

HISTORY OF ART
3409 Research Problems in Art History
3419 Special Problems in Art History

DRAWING
3430 Special Problems in Life Drawing
3410 Advanced Drawing I
3420 Advanced Drawing II

METALS
3403 Metals VI
3413 Metals VII
3423 Special Problems in Metals

PAINTING
3401 Painting VI
3431 Painting VII
3441 Special Problems in Painting

PRINTMAKING
3405 Printmaking VI
3425 Printmaking VII
3435 Special Problems in Printmaking

SCULPTURE
3402 Sculpture VI
3432 Sculpture VII
3442 Special Problems in Sculpture

For Graduate Students Only

GENERAL COURSES (ART)

3593 Graduate Exhibition (3-0)
Organization and presentation of a one-person exhibition. This effort includes the planning, promotion, design, installation, and verbal defense of the exhibition to the selected graduate committee. Fine Arts Fee: $10.

3595 Graduate Seminar (1-2)
Conference and discussions of various topics in Art by faculty, graduate students and outside speakers. Required of all graduate Art majors. May be repeated one time.

ART EDUCATION (ARTE)

3501 Art Education Seminar (3-0)
Literature and current research in art education, with exchange of ideas and discussion of problems in the field. Fine Arts Fee: $10.

3502 Graduate Problems in Art Education (0-6)
This course stresses individual direction and achievement in Art Education. May be repeated for credit.

3511 Teaching of Creative Art in the Elementary School (3-0)
This course is designed for the elementary classroom teacher. A series of projects, experiences, and discussions will assist the classroom teacher in making art a meaningful part of the curriculum. Fine Arts Fee: $10.

3522 Crafts Workshop (3-0)
Exploration of a variety of media in the crafts. Emphasis on media most adaptable to the public school art room. Problems and projects tailored to the students' needs. Fine Arts Fee: $10.

3597 Final Project (3-0)
The (optional) terminal project in the M.A. (Art Education) program. It involves serious, creative research in an area of art education. Fine Arts Fee: $10.

3598 Thesis (3-0)
Fine Arts Fee: $10.

3599 Thesis (3-0)
Fine Arts Fee: $10.

ART HISTORY (ARTH)

3502 Graduate Problems in Art History (0-6)
This course stresses individual direction and achievement in Art History. May be repeated for credit.

3519 History of Modern Art (3-0)
This survey will cover painting, sculpture, and architecture from the mid-nineteenth century to World War II. Emphasis will be on an analysis of the work and its relationship to the cultural, philosophical, scientific, political, and economic factors.

3529 History of Contemporary Art (3-0)
This course will span the period from World War II to the present. The critical survey will concentrate on painting, sculpture, and architecture.

GRAPHIC DESIGN (ARTG)

3502 Graduate Problems in Graphic Design (0-6)
This course stresses individual direction and achievement in Graphic Design. May be repeated for credit. Fine Arts Fee: $10.

3550 Directed Studio Problems (3-0)
Independent creative research with regular consultation between student and assigned faculty member. Fine Arts Fee: $10.

CERAMICS (CERM)

3502 Graduate Problems in Ceramics (0-6)
This course stresses individual direction and achievement in Ceramics. May be repeated for credit. Fine Arts Fee: $10.

3550 Directed Studio Problems (3-0)
Independent creative research with regular consultation between student and assigned faculty member. Fine Arts Fee: $10.

DRAWING (DRAW)

3502 Graduate Problems in Drawing (0-6)
This course stresses individual direction and achievement in Drawing. May be repeated for credit. Fine Arts Fee: $10.

3550 Directed Studio Problems (3-0)
Independent creative research with regular consultation between student and assigned faculty member. Fine Arts Fee: $10.

METALS (MTLS)

3502 Graduate Problems in Metals (0-6)
This course stresses individual direction and achievement in Metals. May be repeated for credit. Fine Arts Fee: $10.

3550 Directed Studio Problems (3-0)
Independent creative research with regular consultation between student and assigned faculty member. Fine Arts Fee: $10.

PAINTING (PNTG)

3502 Graduate Problems in Painting (0-6)
This course stresses individual direction and achievement in Painting. May be repeated for credit. Fine Arts Fee: $10.

3550 Directed Studio Problems (3-0)
Independent creative research with regular consultation between student and assigned faculty member. Fine Arts Fee: $10.

PRINTMAKING (PRNT)

3502 Graduate Problems in Printmaking (0-6)
This course stresses individual direction and achievement in Printmaking. May be repeated for credit. Fine Arts Fee: $10.

3550 Directed Studio Problems (3-0)
Independent creative research with regular consultation between student and assigned faculty member. Fine Arts Fee: $10.

Communication

202 Cotton Memorial
(915) 747-5129

CHAIRPERSON: Samuel C. Riccillo
PROFESSOR EMERITUS: Ray Small
ASSOCIATE PROFESSOR EMERITA: Jean Miculka
GRADUATE FACULTY: Adams, Byrd, Jones, Lawrence, Riccillo

The department offers a Master of Arts degree in Communication.

M.A. DEGREE PREREQUISITES: Twelve advanced hours (3300-3400) in Speech, Journalism, or Broadcasting. Satisfactory score on Graduate Record Examination.

COMMUNICATION

M.A. DEGREE REQUIREMENTS: Majors in Communication must take a minimum of eighteen semester hours in Communication. For majors electing to do a thesis, six hours of credit (3598-99 Thesis) may be counted toward a required minimum of thirty hours of total coursework, of which at least twenty-one hours must be in courses numbered 3500-3599. Majors electing a non-thesis option must take a minimum of thirty-six hours of total coursework, of which at least twenty-seven must be in courses numbered 3500-3599.

Undergraduate courses for graduate credit. With the prior approval of the graduate advisor, students may take up to 9 hours of upper level coursework, 6 hours of which may be from the departmental offerings, to strengthen areas in which the student may be deficient and to enrich the graduate offering. A list of these courses is available from the graduate advisor.

For Graduate Students Only

SPEECH

3531 Seminar in the Classical Rhetorical Tradition
Study of both theory and practice of persuasion and verbal communication during the classical Greek and Roman periods. May be taken more than once with a change in area of emphasis.

3532 Seminar in Contemporary Rhetoric
Study of the contributions to understanding of persuasion and communication by modern humanistic theorists, such as Kenneth Burke, I. A. Richards, and Marshall McLuhan. Application of such theory to a variety of contemporary communication events. May be taken more than once with a change in area of emphasis.

3543 Seminar in Communication Theory
Study of recent non-traditional contributions to theories of human communication. Investigates the application of models, the implications of recent developments in social psychology, and the results of experimental research. May be repeated for credit when content varies.

3550 Directed Study
Investigation of a significant area in rhetoric, communication, public address, or filmic communication by individual students or small groups. May include individual research projects or field study. May be taken more than once with a change in area of emphasis.

3562 Organizational Communication
Philosophy, methods and designs for studying the communication systems and practices in a complex organization.

3590 Critical Analysis of Motion Pictures
Various functions of the motion picture medium, such as artistic expression, mass entertainment, and communication to differing limited target audiences. Elements, syntax, and creative options in the medium. Standards for evaluation and analysis of motion pictures.

3591 Film as a Medium for Social Influence
Use of films for mass persuasion and reinforcement in differing societies. Use of films as specific persuasive messages adapted to distinct target audiences. Application of rhetorical and psychological theory, communication models, and film theory in analysis of specific techniques used in filmic persuasion. Detailed analysis of significant persuasive films. *Prerequisite:* SPCH/THEA 3491 or SPCH 3590 or permission of instructor.

3598 Thesis

3599 Thesis

Criminal Justice

303 Jack Vowell Hall and 102 Old Main
(915) 747-5296 or 747-5740

CHAIRPERSON: Howard Daudistel
DIRECTOR: Joseph B. Graves, Jr.
GRADUATE FACULTY: Graves

The Master in Public Administration (M.P.A.) degree in the Department of Political Science is the graduate program for the Criminal Justice Department. Graduate courses in Criminal Justice are designed for students who want to take courses in Criminal Justice to satisfy the twelve (12) hour elective requirement in the MPA degree.

3500 Seminar in Criminal Justice Administration (3-0)
Research, writing and discussion.

3508 Seminar in Juvenile Justice (3-0)
Research, writing and discussion.

3520 Seminar in Corrections (3-0)
Research, writing and discussion.

3540 Seminar in Selected Topics (3-0)
Research, writing and discussion.

Both basic and specific requirements for the M.P.A. degree are found under "Political Science" in this catalog.

SCULPTURE (SCUL)

3502 Graduate Problems in Sculpture (0-6)
This course stresses individual direction and achievement in Sculpture. May be repeated for credit. Fine Arts Fee: $10.

3550 Directed Studio Problems (3-0)
Independent creative research with regular consultation between student and assigned faculty member. Fine Arts Fee: $10.

English

111 Hudspeth Hall
(915) 747-5731

CHAIRPERSON: Robert T. Bledsoe
PROFESSORS EMERITI: Robert Northcut Burlingame, Lurline Coltharp, Joseph Lee Leach
GRADUATE FACULTY: Antone, Bledsoe, Boley, DeMarinis, Dick, Esch, Gladstein, Hernandez, Johnson, Jussawalla-Dasenbrock, Lawson, Mangelsdorf, Marchino, Meyers, Mortimer, Posey, Potts, Smith, Stafford, Taylor, Ullman, West

M.A. DEGREE IN ENGLISH
The English Department offers three master's degree options: English and American Literature, Creative Writing, and Professional Writing and Rhetoric.

ENGLISH AND AMERICAN LITERATURE
The primary objective of the Literature Option is to develop skill in reading and interpreting literature. The coursework is designed to provide both a comprehensive knowledge of literature in its historical and intellectual contexts and the opportunity to explore competing theories of critical interpretation. The Literature Option offers the opportunity for students to prepare for teaching in secondary schools and at junior colleges. It also offers the opportunity for students to prepare for admission to Ph.D. programs in British and American Literature.

Prerequisites: (1) a bachelor's degree; (2) for unconditional acceptance, a score of 500 on the GRE verbal scale and 500 on the GRE analytical scale; the score on the verbal scale will be given greater weight. Applicants with lower scores may be accepted conditionally if other prerequisites are met with distinction; (3) 18 hours of advanced level English courses; (4) writing sample.

Requirements: (A) 30 semester hours of coursework, English 3598-99, and an oral examination; or (B) 36 semester hours of coursework, English 1597, and an oral examination.

1. **Core Curriculum (27 hours):** English 3500; four courses from English 3501-06; four courses in at least three different literary periods from English 3551-56 (English 3525 may be included as one of the four).
2. **Electives (3-9 hours):** any other graduate English courses except English 1530-3530; graduate courses in other departments as approved by the Director of Graduate Studies.
3. **Research Options (1-6 hours):** (a) Thesis (English 3598-99)—a substantial work of literary scholarship; the student submits a thesis proposal and the names of a thesis director, English Department reader, and outside reader to the Director of Graduate Studies for approval, and then follows the Graduate School guidelines for preparing and submitting a thesis; (b) Master's Paper (English 1597): the student submits to the Director of Graduate Studies a proposal for expansion and revision of a graduate research paper under the supervision of a director, English department reader, and an outside reader and then follows the Graduate School guidelines for preparing and submitting the paper.
4. **Oral Examination:** A defense of the thesis or master's paper before the student's committee. In all cases a majority vote of the committee will determine acceptance or rejection.

CREATIVE WRITING
The Creative Writing Option combines workshop experience with the study of British and American Literature, allowing students to develop their personal writing skills in the context of their literary and critical heritage. Workshop courses in Fiction, Poetry, Screenwriting, Genre Fiction, and Non-fiction Freelancing are regularly offered. Students may select literature surveys and seminars that will heighten their awareness of literary traditions and develop their sensitivity to textual strategies. The Creative Writing Option is designed for students interested in careers as writers; many succeed in publishing works produced in the course of their study. The program also offers the opportunity for students to prepare to teach writing or to pursue more advanced degrees.

Prerequisites: (1) a bachelor's degree; (2) for unconditional acceptance, a score of 500 on the GRE verbal scale and 500 on the GRE analytical scale; the score on the verbal scale will be given greater weight. Applicants with lower scores may be accepted conditionally if other prerequisites are met with distinction; (3) 9 hours of advanced level Creative Writing courses; (4) 9 hours of advanced level literature coursework; (5) writing sample.

Requirements: 30 semester hours of coursework, English 3598-99, and an oral examination.

1. **Core Curriculum (21 hours):** English 3500 or 3520; two courses from among English 3501-3506; two courses from among English 3551-56; two courses from among English 3566-67-68.
2. **Electives (9 hours):** 3 hours must be Literature or Rhetoric; 6 hours selected from any graduate English courses except English 1530-3530; graduate courses in other departments as approved by Director of Graduate Studies.

3. **Thesis (6 hours):** English 3598-99—the Creative Writing Option requires the completion of an original imaginative work. The student submits a thesis proposal and the names of a thesis director, an English Department reader, and an outside reader to the Director of Graduate Studies for approval, and then follows the graduate school guidelines for preparing and submitting a thesis.
4. **Oral Examination:** A defense of the thesis made before the thesis committee. In all cases a majority vote of the committee will determine acceptance or rejection.

PROFESSIONAL WRITING AND RHETORIC

The Professional Writing and Rhetoric (PWR) Option stresses discourse theory, textual analysis, and practical writing. The core curriculum includes courses in rhetorical theory and application, discourse theory and analysis, linguistics, informative and persuasive writing, and literary discourse. There is, moreover, sufficient flexibility to allow students to fashion degree plans suitable to their individual interests. The PWR Option offers students the opportunity to prepare for careers as professional/technical writers and junior college or community college teachers, as well as for future academic study.

Prerequisites: (1) a bachelor's degree; (2) for unconditional acceptance, a score of 500 on the GRE verbal scale and 500 on the GRE analytical scale; the score on the verbal scale will be given greater weight. Applicants with lower scores may be accepted conditionally if other prerequisites are met with distinction; (3) 9 hours of upper division coursework in English, including Advanced Composition or the equivalent; (4) writing sample.

Requirements: 33 semester hours of coursework, English 3597, and an oral examination.

1. **Core Curriculum:**
   Professional Writing and Rhetoric (24 hours)
   - Research Methods: English 3500
   - Rhetorical Theory and Application: English 3510; Speech 3531 or 3532
   - Linguistic Theory and Application: 3 hours from Linguistics 3509, 3519, 3541, 3570, or Psychology 3416
   - Informative/Persuasive Discourse: 6 hours from English 3511, 3512, or 3515 (when topic is appropriate)
   - Literary Discourse: at least 3 hours from English 3501-3506, 3550-3556, 3525; up to 3 hours from English 3520, 3566-3568.
2. **Electives** (9 hours): Electives may include any course listed above that is not being counted as part of the required hours; other approved electives include Linguistics 3520, 3573, 3578, Speech 3491, 3543, 3550, 3562, 3591, Psychology 3440, Philosophy 3503, Political Science 3412, 3438, 3504, Sociology 3510, Management 3511, 3520, 3521, or graduate courses in other departments as approved by the Director of Graduate Studies.
3. **Practicum** (3 hours): English 3597—The Professional Writing and Rhetoric Option requires the completion of a supervised experience in addressing, responding to, and resolving a professional or academic communication problem through the preparation of an appropriate written document. The student submits a practicum proposal and the names of a practicum director, English Department reader, and an outside reader to the Director of Graduate Studies for approval, and then follows the Graduate School guidelines for preparing and submitting the practicum paper.
4. **Oral Examination:** A defense of the document prepared in English 3597 before the student's committee. In all cases a majority vote of the committee will determine acceptance or rejection.

INFORMATION FOR ALL OPTIONS

1. **Undergraduate Credit Hours:** Generally, undergraduate credit hours may not be used to satisfy graduate requirements. Exceptions must be approved by the Director of Graduate Studies and in no cases are to exceed 6 hours.
2. **Foreign Students:** Foreign students must supply a satisfactory grade in a special proficiency test in the English language before being allowed to register (write to Director of Graduate Studies, Department of English, for details).
3. **Graduate Advising:** Each student upon entering the graduate program will outline a tentative degree plan with the Director of Graduate Studies in consultation with the director of the student's option. Students who have deficiencies in their undergraduate preparation are encouraged to supplement their graduate courses with undergraduate courses (no graduate credit).
4. **Programs of Study:** During the first semester of graduate study each student must submit to the Office of the Graduate Dean a Preliminary Program of Study signed by the Departmental Graduate Advisor. The Preliminary Program of Study should show the courses required by the department which the student must complete prior to graduation. During the final semester of graduate study, each student must submit to the office of the Graduate Dean a Final Program of Study signed by the Departmental Graduate Advisor. The Final Program of Study should show the courses taken and the courses required by the department which the student will complete during his or her last semester of graduate study. Programs which show an incomplete grade or a GPA below 3.0 cannot be approved.

For Graduate Students Only

3500 Introduction to Graduate Studies in English (3-0)
Introduces students to the range of scholarly endeavors in English studies, to the standards, methods, and tools of research in the field, and to theoretical assumptions implicit in the various analytical and critical approaches to texts. Coursework will include a substantial research project carried out under close faculty supervision.

3501 British Literature to 1485 (3-0)
Survey of Old English and Middle English literature ranging from Beowulf to the Arthurian romances and covering such writers as Chaucer, the Gawain poet, and Malory.

3502 British Literature 1485-1660 (3-0)
Survey of representative writers, literary trends, and the social and intellectual background from the early Renaissance to the Restoration. Such writers as More, Wyatt, Sidney, Spenser, Shakespeare, Donne, Herbert, Milton, and Marvell, and such issues as Humanism, Petrarchanism, Neoplatonism, and Metaphysical poetics may be discussed. Emphasis will vary with the instructor.

3503 British Literature 1660-1832 (3-0)
Survey of literature from the Restoration through the Romantic period. Such writers as Dryden, Swift, Pope, Richardson, Fielding, Johnson, Wordsworth, Coleridge, Keats, and Byron, and such subjects as Restoration Theatre, Neoclassicism, the novel, Gothicism, and the Romantic aesthetic may be covered. Emphasis will vary with the instructor.

3504 British Literature 1832-Present (3-0)
Survey of representative writers and literary trends from the Victorian period to the present. Such writers as Tennyson, Browning, Dickens, Bronte, Eliot, Wilde, Shaw, Joyce, Woolf, Yeats, Lawrence, Lessing, and Fowles, and such issues as social reform, religious turmoil, industrialism, Darwinism, Marxism, and existentialism may be discussed. Emphasis will vary with the instructor.

3505 American Literature to 1860 (3-0)
Survey of representative writers, literary trends, and the social and intellectual background from the colonial period to 1860. Such writers as Bradford, Franklin, Jefferson, Bryant, Irving, Cooper, Poe, Hawthorne, Whitman, Emerson, Thoreau, and Melville, and such issues as Puritanism, national self-realization, and Transcendentalism may be discussed. Emphasis will vary with the instructor.

3506 American Literature since 1860 (3-0)
Survey of representative writers and literary trends from the Civil War to the present. Such writers as Twain, James, Crane, Dickinson, Cather, Frost, Cummings, Pound, Fitzgerald, Hemingway, Steinbeck, Faulkner, Porter, Ellison, and Plath, and such subjects as Realism,

Naturalism, Marxism, Freudianism, sexism, racism, Modernism, the World Wars, and regional writing may be discussed. Emphasis will vary with the instructor.

3510 The Field of Discourse: Theory and Analysis (3-0)
Exploration of the common and distinguishing characteristics of expressive, informative, persuasive, and literary discourse through the study of discourse theory and close analysis of texts.

3511 Practical Rhetoric: Persuasion and Argument (3-0)
A writing course stressing the application of classical and contemporary rhetorical theory to a variety of practical writing tasks involving argument and persuasion.

3512 Technical Writing Proseminar (3-0)
A writing course focusing upon rhetorical techniques for technical writing, graphics, and editing.

3515 Professional Writing Seminar (3-0)
Intensive study and practice in a range of professional writing fields, such as organizational and managerial communication, report writing, writing for publication, biography, translation. May be repeated once when topic varies.

3520 Literary Criticism: Theory and Practice (3-0)
A survey of the basic critical texts and arguments about literature in the Western tradition. Students will examine and practice the translation of these arguments into practical readings and valuation of selected literary texts. Coursework includes at least one substantial research project carried out under close faculty supervision.

3525 Genre: Theory and Practice (3-0)
Studies in the theory of genre with focus on one genre, such as the novel, the lyric, comedy, or the epic. Course may be repeated when the topic varies.

1530-3530 Topics in Composition (1-0, 2-0, 3-0)
Discussion, from a basis in discourse theory, of problems surfacing in the teaching of English composition and the application of strategies in the self-contained classroom and other instructional formats. Students may enroll for 1 to 3 hours; the course may be repeated; grading will be pass/fail. *Prerequisite:* ENGL 3510 and consent of the Director of Graduate Studies.

3545 English Teaching Methods (3-0)
An advanced course in English teaching methods, stressing theory and its classroom applications, and focusing alternately on such topics as teaching literature, composition, grammar, creative writing, or appropriate combinations of these. May be repeated when topic varies.

3550 Seminar: Special Topics (3-0)
Studies in comparative literature, current literary thought or techniques, or a focus on a prescribed area such as a subgenre or literary group.

3551 Seminar: Studies in British Literature to 1485 (3-0)
Detailed study of one or more major authors, schools, literary trends or genres from the Anglo-Saxon period to the Renaissance.

3552 Seminar: Studies in British Literature 1485-1660 (3-0)
Detailed study of one or more major authors, schools, literary trends or genres from the early Renaissance to the Restoration.

3553 Seminar: Studies in British Literature 1660-1832 (3-0)
Detailed study of one or more major authors, schools, literary trends or genres from the Restoration through the Romantics.

3554 Seminar: Studies in British Literature 1832-Present (3-0)
Detailed study of one or more major authors, schools, literary trends or genres from the Victorian period to the present.

3555 Seminar: Studies in American Literature to 1860 (3-0)
Detailed study of one or more major authors, schools, literary trends or genres from the Colonial period to the Civil War.

3556 Seminar: Studies in American Literature Since 1860 (3-0)
Detailed study of one or more major authors, schools, literary trends or genres from the Civil War to the present.

3566 Advanced Fiction Writing (3-0)
Intensive study and practice in the various forms and approaches of fiction writing, including workshop discussion of individual student manuscripts. May be repeated once under a different instructor.

3567 Advanced Poetry Writing (3-0)
Intensive study and practice in the various forms and approaches within the writing of poetry, including workshop discussion of individual student poems. May be repeated once under a different instructor.

3568 Creative Writing Seminar (3-0)
A variable topics course that provides intensive practice and study in one of the genres of imaginative writing, such as novel writing, screenwriting, non-fiction freelancing, or biography/autobiography. May be repeated when topic varies.

3597 Writing Practicum
The student submits a practicum proposal and the names of a practicum director, English Department reader, and an outside reader to the Director of Graduate Studies and then follows the Graduate School guidelines for preparation and submitting the practicum paper. Required of Professional Writing and Rhetoric majors.

1597 Master of Arts Research Paper (ENGLISH AND AMERICAN LITERATURE OPTION)
The student submits to the Director of Graduate Studies a proposal for expansion and revision of a graduate research paper under the supervision of a director, English Department reader, and an outside reader and then follows the Graduate School guidelines for preparing and submitting the paper.

3598 Thesis

3599 Thesis

History

334 Liberal Arts
(915) 747-5508

CHAIRPERSON: Charles Ambler
PROFESSORS EMERITI: K. K. Bailey, W. E. Fuller, J. H. McNeely, W. H. Timmons
GRADUATE FACULTY: Ambler, Clymer, Hutton, Jackson, Kawashima, Martin, McGee Deutsch, Perez, Righter, Schalk, Shover, Smith, Weber

DEPARTMENTAL REQUIREMENTS FOR THE M.A. DEGREE: Students working toward the Master of Arts degree in history may choose either the standard option or a specialized option in the history of the United States-Mexico Border. Both options provide degree plans with or without a thesis.

Standard Degree Plans (I & II)
Prerequisite: Admission to the Graduate Program in History.

Plan I requires the completion of 30 hours, including an acceptable thesis. A Plan I student must complete 9 hours of graduate seminars in history, 9 hours of graduate studies courses in history, and History 3598-3599.

The remaining 6 hours may be selected in any combination, from among graduate studies courses, graduate seminars, and upper division undergraduate courses taken for graduate credit.

Plan II requires the completion of 36 hours, including the submission of two acceptable seminar papers in lieu of a thesis. A Plan II student must complete 12 hours of graduate studies courses in history, 6 hours of graduate seminars in history, and, in the final semester of work, History 3593.

The remaining 15 hours may be selected from among graduate studies courses, graduate seminars, and upper division undergraduate courses taken for graduate credit. In keeping with graduate school regulations, no more than 9 hours of undergraduate courses may be counted for graduate credit and only 6 of these hours may be taken

in history; 3 additional hours may be included in a Minor field, if a Minor field is selected and approved.

Plan II students must submit the two seminar papers to the departmental committee which conducts the final examination for the M.A. degree, as prescribed by the Graduate School. The two seminar papers must be written under the direction of different professors.

As a part of the total 36 hours, a student may choose a Minor in a related field, provided the department's graduate advisor approves. The Minor requires 6 hours, of which at least 3 must be at the 3500 level.

Minor in Public History

Whether choosing Option I or II, a student may take a Minor in Public History. For the minor a student must successfully complete History 3502, Introduction to Public History, and History 3590, Internship in Public History (History 3590 may be replaced with History 3570, Seminar in U.S. History: Public History). In addition, the student must complete 9 hours of Department of History offerings or selected courses outside the department. These courses must be approved by the Department of History Graduate Advisor.

The Minor in Public History will be awarded only in conjunction with the completion of the M.A. in History degree.

Border History Degree Plans (III & IV)

Prerequisite: Admission to the Graduate Program in History and the completion of the fourth semester of Spanish language instruction with a grade of "B" or better, or successful completion of a department-approved Spanish language competency examination.

Plan III requires the completion of 30 hours, including an acceptable thesis. Specific requirements are as follows:

Seminars: Nine hours required, including the core course in border history and two other courses directly related to the U.S. -Mexico borderlands. Course substitution is permitted with the approval of the Border Studies Graduate Committee.

Studies Courses: Nine hours required. Of the nine hours, six must be related to the U.S.-Mexico Border and must be approved by the Border Studies Graduate Committee.

Other Courses: Six hours required from among History 3309, 3312, 3316, 3317, 3322, 3327, 3328, 3342, 3343, and 3390 (when topic is related to the U.S.-Mexico Border). With the approval of the Border Studies Graduate Committee, a student may substitute a graduate course, or a student may select a Minor field in a related discipline. A Minor field requires 6 hours, of which at least three hours must be at the graduate (3500) level.

Thesis: History 3598-3599.

Plan IV requires the completion of 36 hours; in lieu of a thesis, two revised seminar papers must be submitted to the committee conducting the final examination. The two seminar papers must be written under the direction of different professors. Specific requirements are as follows:

Seminars: Six hours required of courses related to the U.S.-Mexico border. Course substitution is permitted with the approval of the Border Studies Graduate Committee.

Studies Courses: Twelve hours required, of which at least nine must be related to the U.S.-Mexico Border and must be approved by the Border Studies Graduate Committee.

Undergraduate Courses Taken for Graduate Credit: Six hours from among the following—History 3309, 3312, 3316, 3317, 3322, 3327, 3328, 3342, and 3390 (when topic is related to the U.S.-Mexico Border). With the approval of the Border Studies Graduate Committee, a student may submit graduate level courses.

Other Courses: Nine hours from among any graduate courses in the department of history, or three graduate hours in the department of history and six hours in a Minor field in a related discipline. Minor fields must be approved by the Border Studies Graduate Committee. A Minor field requires 6 hours, of which at least three hours must be at the graduate (3500) level.

Independent Research: History 3593, to be taken in the final semester of work.

For Undergraduate and Graduate Students

The following undergraduate courses have been approved for graduate credit. Students taking these courses for graduate credit will be required to do additional work.

3301 Colonial America to 1763 (3-0)
3302 he American Revolution and the New Nation, 1763-1815 (3-0)
3304 The Age of Jackson, Clay, and Webster, 1815-1860 (3-0)
3305 The Civil War and Reconstruction Era, 1860-1877 (3-0)
3306 The Rise of Modern America, 1876-1900 (3-0)
3307 The Twentieth Century: From Roosevelt to Roosevelt (3-0)
3308 United States since 1933 (3-0)
3309 Mexican-American History (3-0)
3310 American Legal History (3-0)
3311 History of American Foreign Relations to 1914 (3-0)
3312 History of American Foreign Relations since 1914 (3-0)
3313 American Military History (3-0)
3314 American Intellectual Movements and Thinkers to 1900 (3-0)
3315 American Intellectual Movements and Thinkers since 1900 (3-0)
3316 Southwest Frontier (3-0)
3317 History of Texas since 1821 (3-0)
3318 American Environmental History
3319 The Old South (3-0)
3320 The New South (3-0)
3321 19th Century American West (3-0)
3322 20th Century American West (3-0)
3323 American Indian History (3-0)
3324 The United States in Vietnam and Southeast Asia (3-0)
3327 Attitudes Toward Minorities in the United States (3-0)
3328 History of Hispanic Peoples in the United States (3-0)
3330 History of the Far East (3-0)
3331 History of Religion in the East (3-0)
3332 Russia (3-0)
3333 The Soviet Union (3-0)
3336 Pre-Modern Africa (3-0)
3337 Modern Africa (3-0)
3339 Pyramids and Prophets: Ancient Egypt, Mesopotamia and Palestine (3-0)
3340 The Middle East and Islam (3-0)
3342 The Spanish Borderlands (3-0)
3343 The U.S.-Mexican Border (3-0)
3346 Central America and the Caribbean (3-0)
3347 South America since 1810 (3-0)
3349 History of Mexico to 1900 (3-0)
3350 The Mexican Revolution (3-0)
3351 Tudor England (3-0)
3354 England to 1547 (3-0)
3355 England since 1547 (3-0)
3359 History of Religion in the West (3-0)
3360 Ancient Greece (3-0)
3361 The Roman World (3-0)
3362 The Medieval World (3-0)
3364 The Age of Renaissance (3-0)
3365 The Age of the Reformation (3-0)
3367 The French Revolution and Napoleonic Eras (3-0)
3369 Twentieth Century Europe, 1900 to the Present (3-0)
3374 Modern Germany since 1866 (3-0)
3379 European Intellectual History since the French Revolution (3-0)
3381 The History of Spain and Portugal (3-0)
3390 History, Special Topics (3-0)
3391 History of Women (3-0)

For Graduate Students Only

STUDIES COURSES

Graduate Studies courses are designed to provide a flexible approach to the study of history in various general areas. The specific topic studied will vary from semester to semester; each semester a brief description will be found in the published time schedule. Generally, studies courses involve reading, discussion, and writing, but depending on the nature of the topic, lectures or other approaches may be employed.

3502 Introduction to Public History (3-0)

Emphasizes history careers apart from traditional teaching jobs. Fields such as archive and museum management, historic preservation, cultural resource management, and policy planning will be explored.

3505 Studies in United States History (3-0) +
Focuses in depth on a theme, movement, or period of significance in United States history. Past topics have included the family in colonial America, quantification in history, American slavery, the West in fact and fiction, U.S. foreign policy in Southeast Asia, Progressivism, and great American historians. Historical interpretation is usually emphasized.

3509 Studies in Latin American History (3-0) +
Survey of a major topic or period in Latin American history, with special emphasis on reading and discussion of significant historiographical interpretations. Typical topics include the Indian in Mexican history, the history of underdevelopment in Latin America, and women and the family in Latin America.

3516 Studies in European History (3-0) +
Focuses in depth on a theme, movement, or period of significance in European history. Topics could include problems such as: The Renaissance, the Reformation, the Industrial Revolution, the French Revolution, Naziism, modern social history methods; or could be focused on specific countries during a particular period such as Soviet Russia, modern Germany, Tudor-Stuart England, ancient Greece, medieval France, and the like. Historical interpretation is usually emphasized.

3518 Studies in African History (3-0) +
Survey of a major theme in African history through analysis of various interpretations and comparisons of developments in different geographical areas. Possible topics include the growth of states in the pre-colonial era, slavery and the slave trade, imperialism and the African response, colonial society, racism, economic change and development, and decolonization. Reading and discussion.

3521 Studies in East Asian History (3-0) +
Reading and discussion of major interpretative works on specific topics in the significant social, cultural, political, legal, and economic issues in the history of East Asia.

3545 Independent Reading (3-0)
Exploration of an historical theme or topic mutually agreeable to the professor and student. Substantial reading and writing required; periodic conferences with the professor.

SEMINARS
Graduate seminars usually involve discussion of research methodologies and some background reading. But primary emphasis is on research in original resources, with students expected to write a substantial seminar paper based on the research.

3570 Seminar in United States History (3-0) +
Focuses in depth on a theme, movement or period of significance in United States history. Areas from which topics have been chosen in the past include Colonial and Revolutionary America, American Foreign Relations, The Chicano, American Intellectual History, Modern America, the American South, the Civil War and Reconstruction Period, Texas History, the American West, and American Military History.

3577 Seminar in Latin American and Border History (3-0) +
Focuses in depth on a theme, movement, or period of significance in Latin American or Border history. Areas from which topics have been chosen in the past include all aspects and time periods of Mexican history, nineteenth and twentieth-century problems in other Latin American countries, Central American history, and major aspects of the U.S.-Mexican border experience.

3579 Seminar in African History (3-0) +
Introductory readings and research on themes in nineteenth or twentieth century African history. Particular focus on the relations between Africa and Europe and the United States.

3581 Historical Methods and Historiography (3-0)
The development of historical writing from the Bible and Herodotus to scientific history and the contemporary scene. Research tools in history, analysis of historical documents, and mechanics of the research paper, and the problems of historical composition.

3582 Seminar in European History (3-0) +
Focuses on a theme, movement, or period of significance in European history. Topics could include themes in European history, such as military history, religion and society, family history, women's history or revolution; or they could concern a particular area and time period such as modern Britain, Soviet Russia, modern Germany, and the like.

THESIS AND INDEPENDENT RESEARCH

3590 Public History Internship (3-0)
History work experience in a public agency, museum, archive, history consulting business, or other business. Evaluation by work place supervisor and instructor.

3593 Independent Research
(Open only to Plan II and Plan IV graduate students in history in the final semester of work.)

3595 Problems in Historical Research
Emphasizes research, with writing and discussion. To be taken in conjunction with History 3593, 3598 or 3599. Students will be required to make a formal presentation of the results of their ongoing research. Grading will be pass/fail; this course cannot be used for credit toward the M.A. degree. *Prerequisite:* consent of the graduate advisor.

3598 Thesis

3599 Thesis

\+ May be repeated for credit when topic varies.

Master of Arts in Interdisciplinary Studies

Hudspeth Hall, Room 314
(915) 747-5129

PROGRAM DIRECTOR: Barthy Byrd

The M.A.I.S. program is designed for individuals who, having completed a baccalaureate program or professional degree program at an accredited college or university, wish to expand their knowledge in areas outside of their previous training or present profession. To this end, each student will participate in the design of a plan of study consisting of courses offered by a variety of departments and including core seminars designed specifically for students in the program.

Basic Requirements for Admission

1. A bachelor's degree from an accredited institution in the United States (or proof of equivalent training in a foreign institution).
2. A satisfactory grade-point average in upper-division (junior and senior level) work and in any graduate work already completed.
3. A satisfactory score on the Graduate Record Examination.
4. Submission to the M.A.I.S. Advisory Committee of an acceptable Plan of Study.
5. Acceptance by the M.A.I.S. Advisory Committee and by the Graduate School.

Specific Requirements for the M.A.I.S. Degree

1. Thirty-nine semester hours of coursework, no more than 9 of which may be in a single disciplinary area, and of which no more than 9 may be outside of the College of Liberal Arts. Exceptions to the 9-hour limitations may be made under unusual circumstances. Exceptions must be approved by the M.A.I.S. Advisory Committee and by the Graduate Dean.
2. A minimum of 30 semester hours of graduate courses (those listed 3500 and above); the remaining 9 hours may be selected from among graduate level courses and/or upper division undergraduate courses (those listed at the 3300 or 3400 level), if approved for graduate credit.

3. A minimum of six semester hours of coursework from among the M.A.I.S. core seminars.
4. Successful completion of M.A.I.S. 3593: Final Project. The Final Project will be submitted to the committee conducting the student's final oral examination. Upon successful completion of the final examination, two copies of the Final Project will be bound and submitted to the Graduate School.
5. Successful completion of the final oral examination, and approval of the Dean of the Graduate School.

M.A.I.S. Core Seminars:

3550 The History of an Idea (3-0)
The historical consideration of a seminal idea or concept drawn from art, ethics, politics, science, religion or philosophy, and an assessment of its contemporary social and cultural importance. This course may be team-taught and cross-listed with a participating department. May be repeated once for credit when the topic varies.

3560 Contemporary Issues (3-0)
The detailed examination of a contemporary social or cultural concern from a multi-disciplinary perspective. This course may be team-taught and cross-listed with a participating department. May be repeated once for credit when topic varies.

M.A.I.S. Final Project

3593 M.A.I.S. Final Project
The final project consists of either: 1) two substantially revised or extended papers originally prepared for two of the graduate level courses taken as part of the M.A.I.S. program, one of which must have been written for MAIS 3550 or MAIS 3560; or (2) a new interdisciplinary paper which is based on two or more papers prepared for graduate level courses taken as a part of the M.A.I.S. program.

Open only to M.A.I.S. students in the final semester of their work. If the project is not completed in one semester, students will register for MAIS 3593 during each semester or summer session in which work on the final project is being done, but only three hours of credit will count toward the degree.

Languages and Linguistics

136 Liberal Arts
(915) 747-5767, 5801

CHAIRPERSON: Jon Amastae
PROFESSORS EMERITI: Lurline H. Coltharp, Jacob L. Ornstein-Galicia, Edgar T. Ruff, John McCarty Sharp
GRADUATE FACULTY: Amastae, Armengol, Bagby, Beyer, Blansitt, Cotton, Elerick, Ewton, Garcia, Goodall, Kluck, Manley, Perez, Phinney-Liapis, Teschner

The department offers the M.A. in Applied English Linguistics and in Spanish. In addition, selected courses can be taken for graduate credit in French, German, and Portuguese

Admission to the Programs

Applied English Linguistics:
1. Fulfillment of all general requirements for admission to the Graduate School.
2. B.A./B.S. in Linguistics, English, Language, or other field related to linguistics.

Spanish:
1. Fulfillment of all general requirements for admission to the Graduate School.
2. A satisfactory score on the Departmental Advanced Spanish examination.

Students seeking conditional admission with deficiencies will be required to complete advanced level undergraduate courses as directed by the Graduate Advisor. Such courses will not count toward the degree.

Requirements

M.A. in Applied English Linguistics:
1. 36 semester hours of which 6 hours may be 3400-level courses. A minor of 6-12 hours may be presented with the approval of the graduate advisor. A written comprehensive examination is required of all candidates and must be passed before enrollment in LING 3598.
   And 2. or 3.
2. Option 1 (Non-thesis): Submit two graduate seminar papers, suitably bound, as required by the Graduate School. A prospectus outlining each proposed paper must be approved by the Graduate Advisor and the student's supervising committee. The papers will be defended orally.
3. Option 2 (Thesis): Complete LING 3598-3599, Thesis, which counts for 6 of the required 36 hours of work. The procedure for proposing and completing the thesis must follow the requirements of the Graduate School and the current regulations for graduate students in the linguistics program.

M.A. in Spanish:
1. Complete 36 hours of work, including the appropriate options chosen from "Required Courses and Subject Areas" listed below. With the approval of the Committee on Graduate Studies, a student may present a minor consisting of 6 to 12 hours in a related field.
2. Complete course 3202 (fourth semester) in a second foreign language with a grade of at least B, or demonstrate equivalent proficiency.
   And 3. or 4.
3. Plan I (Non-Thesis Option): Submit two graduate seminar research papers, suitably bound, as required by the Graduate School. A prospectus outlining each proposed paper must be approved by the Committee on Graduate Studies. The papers will be defended orally.
4. Plan II (Thesis Option): Complete Spanish 3598-3599, Thesis, which counts for 6 of the required 36 hours of work. A prospectus outlining the proposed thesis must be approved by the Committee on Graduate Studies. The thesis will be defended orally.

Required Courses and Subject Areas:
In order to ensure a balanced course of study, all students must complete 21 credit hours distributed as follows:

I. Required Course: Spanish 3501
II. Required subject areas:
   (A) Spanish peninsular literature:
      1. One course in Golden Age (Spanish 3553, 3554, or 3558)
      2. One course in Twentieth Century (Spanish 3565 or 3571)
   (B) Spanish American literature:
      1. One course in Prose Fiction (Spanish 3519 or 3521)
      2. One course in Poetry (Spanish 3515 or 3517)
   (C) Hispanic linguistics:
      1. One course. Students who have not taken Spanish/Linguistics 3402 (or the equivalent) prior to undertaking M.A. coursework will be required to take this course which will count for credit toward the M.A. Those who have completed 3402 before entering the master's program will be required to complete one of the following: 3472, 3585, or 3588.
   (D) One course selected from among the following:
      1. Spanish 3523
      2. Spanish 3558
      3. A second course in Hispanic linguistics

For Undergraduate and Graduate Students

FRENCH

3401 Methods of Foreign Language Instruction (3-0)
3487 Poetry (3-0)
3488 Prose (3-0)
3489 Theater (3-0)
3490 Topics in French (3-0)

GERMAN

3401 Methods of Foreign Language Instruction (3-0)
3487 Poetry (3-0)
3488 Prose (3-0)
3489 Theater (3-0)
3490 Topics in German (3-0)

LINGUISTICS

3401 Methods of Foreign Language Instruction (3-0)
3406 Language Acquisition (3-0)
3448 Analyses of Second Language Acquisition (3-0)
3471 Studies in Linguistics (3-0)
3472 Contrastive Linguistics: Spanish/English (3-0)
3473 The Spanish Language in the Americas (3-0)
3490 Studies in the Spanish Language (3-0)

PORTUGUESE

3490 Topics in Portuguese (3-0)

SPANISH

3401 Methods of Foreign Language Instruction (3-0)
3402 Introduction to Hispanic Linguistics (3-0)
3424 *The Literature of Mexico* (3-0)
3428 Golden Age Drama (3-0)
3435 Nineteenth Century Spanish Novel (3-0)
3439 The Short Story (3-0)
3458 Twentieth Century Spanish Literature (3-0)
3461 Cervantes (3-0)
3463 Spanish American Poetry (3-0)
3472 Contrastive Linguistics: English/Spanish (3-0)
3473 The Spanish Language in the Americas (3-0)
3490 Topics in Spanish (3-0)

TRANSLATION

3481 Translation into English (3-0)
3482 Translation into Spanish (3-0)
3491 Topics in Translation (3-0)
3492 Professional Translation (3-0)
3493 Introduction to Simultaneous Translation (3-0)

For Graduate Students Only

FRENCH

3590 Topics in French (3-0)

GERMAN

3590 Topics in German (3-0)
An examination of a particular area of German language or literature. May be repeated for credit as topic changes.

LINGUISTICS

3501 Principles of Linguistic Analysis (3-0)
A survey of the precepts and procedures of modern linguistic analysis with special attention to the fundamentals of phonetics, phonology, and syntax.

3508 Second Language Teaching—English (3-0)
A study of the principles underlying modern second-language teaching, and their application, with particular reference to English as a second language. Includes use of audio-visual equipment.

3509 English Syntax (3-0)
A systematic and in-depth investigation of the syntax of English. Emphasis on the Standard Theory of transformational generative grammar, with some attention to recent developments.

3510 Pedagogical Issues in English Structure (3-0)
The structure of English grammar from the perspective of pedagogical concerns.

3512 Functionalist Syntax (3-0)
A study of Tagmemic and Paris School grammatical frameworks. Analysis of languages of a wide typological range.

3519 English Historical Linguistics (3-0)
An investigation into the origins of English as an Indo-European language and as a Germanic language. Reading of texts of historical interest. Attention to the nature of linguistic change. Examination and use of standard research tools.

3520 Phonology (3-0)
The phonetic basis of modern phonological analysis; phonological systems and structures; theory and practice in phonological analysis.

3540 Child Language Acquisition and Development (3-0)
Investigation of recent research on the acquisition and development of first and second languages by the child.

3541 Psycholinguistics and Reading (3-0)
An inquiry into the fundamental aspects of the reading process—linguistic, psychological, and physiological.

3570 Study in Language (3-0)
Topic to be discussed will be selected. May be repeated for credit when topic varies.

3573 Linguistic Variation (3-0)
A study of linguistic varieties and variation; particular attention to methods and hypotheses of different approaches.

3574 Language Testing (3-0)
A study of the principles of effective language testing, with special attention to second-language testing.

3578 Language Universals and Typology (3-0)
A survey of findings regarding language and typology and language universals. Attention to major questions that motivate ongoing research.

3585 Spanish Historical Linguistics (3-0)
A study of the origins of Spanish as a reflex of Latin and as a Romance language. Reading of texts of historical interest. Attention to the nature of linguistic change. Examination and use of standard research tools.

3588 Bilingualism (3-0)
A study of the formal and sociolinguistic dimensions of bilingualism. Attention to aspects of language planning and linguistics as a contributing factor in the devising of public policy.

3589 Problems in Language Instruction (3-0)
A course designed for language teachers involving study of psychological, linguistic and methodological aspects of language instruction and testing, especially with reference to English. May be repeated for credit when topic varies.

3590 Research Methodology and Bibliography for Applied English Linguistics (3-0)
A thorough examination of bibliographies, abstracts, catalogues, indexes, and other serial/non-serial research tools, along with research design and investigative theories in applied linguistics. *Prerequisite*: 15 semester hours of approved graduate-level coursework.

3598 Thesis

3599 Thesis

SPANISH

GENERAL

3501 Critical Approaches to Hispanic Literature (3-0)
Examination of historical and contemporary literary analysis, techniques and theories, and their application to Spanish-language prose, poetry, theater, and essays. Required of all M.A. candidates.

3502 Independent Study (3-0)
Subject to be determined in consultation with the Graduate Advisor.

3503 Special Topics (3-0)
An examination of a particular area of Hispanic languages or literature. May be repeated for credit as topic changes.

3598 Thesis

3599 Thesis

SPANISH AMERICAN LITERATURE

3511 Indigenous and Colonial Literature of Spanish America (3-0)
Readings in Spanish translations of important works of the Mayan, Nahuatl and Incan cultures. Selected works of Hispanic discoverers, conquistadors, and literati from 1492 through the eighteenth century.

3514 Nineteenth Century Spanish-American Literature (3-0)
Study of major Spanish-American works of the nineteenth century exclusive of Modernism; notably, Neoclassic and Romantic poetry, Romantic and Realist narrative, and Gauchesque poetry.

3515 Premodernist and Modernist Poetry (3-0)
Readings in the works of major Spanish poets of the nineteenth and early twentieth century, with special attention placed upon Ruben Dario and his school.

3517 Postmodernist and Contemporary Poetry (3-0)
Readings in the works of major Spanish-American poets from approximately 1910 to the present.

3519 Spanish-American Short Story (3-0)
Development of the short story form in Spanish America from its origin in the nineteenth century to the present.

3521 Twentieth Century Spanish-American Novel (3-0)
Readings from selected works of contemporary Spanish-American novelists.

3523 The Hispanic Essay (3-0)
The development and influence of the essay in the Hispanic world. Included in the readings are both Peninsular and Latin American writers.

SPANISH LITERATURE

3552 Spanish Literature to 1500 (3-0)
A study of the most representative works of medieval and early renaissance Spain, including *El Cid, Las Cantigas de Santa Maria, El Libro de Buen Amor/El Conde Lucanor, El Romancero* and *La Celestina*.

3553 Golden Age Drama (3-0)
Readings in major works of Spain's classical theater, by authors such as Lope de Vega, Tirso de Molina, Calderon de la Barca.

3554 Golden Age Prose and Poetry (3-0)
Representative readings from Spain's major poets and/or writers of the sixteenth and seventeenth centuries.

3558 Cervantes (3-0)
A thorough reading and substantial analysis of *El Ingenioso Hidalgo Don Quixote de la Mancha*, plus two or three of the *Novelas Ejemplares*.

3565 The Generation of 1898 (3-0)
Selections from the writings of important members of this literary generation, including Unamuno, Azorin, Ortega y Gasset, Baroja, and Antonio Machado.

3571 Twentieth Century Spanish Literature (3-0)
Readings in the works of modern Spanish literature, with emphasis on poetry and/or narrative prose fiction written after the Generation of 1898 to the present.

HISPANIC LINGUISTICS

3585 Spanish Historical Linguistics (3-0)
A study of the origins of Spanish as a reflex of Latin and as a Romance language. Reading of texts of historical interest. Attention to the nature of linguistic change. Examination and use of standard research tools.

3588 Bilingualism (3-0)
A study of the formal and sociolinguistic dimensions of bilingualism. Attention to aspects of language planning and linguistics as a contributing factor in the devising of public policy.

3589 Problems in Language Instruction (3-0)
A course designed for language teachers involving study of psychological, linguistic and methodological aspects of language instruction and testing. Same as LING 3589. May be repeated once for credit when topics vary.

3590 Research Methodology and Bibliography for Applied Linguistics (3-0)
A thorough examination of bibliographies, abstracts, catalogues, indexes, and other serial/non-serial research tools, along with research design and investigative theories in applied linguistics. *Prerequisite*: 15 semester hours of approved graduate-level coursework. Same as LING 3590.

Music

301M Fox Fine Arts
(915) 747-5606

CHAIRPERSON: Ron Hufstader
PROFESSOR EMERITUS: Richard Henderson
GRADUATE FACULTY: Cardon, Fountain, Hufstader, Loftin, Packales, Paul, Ross, Stannard, Trimble, White

Master of Music
The Master of Music degree is offered in two majors: Performance, which specializes in the study of a performing medium; and Music Education, which is designed for advanced training in the teaching profession. All instrumental and vocal media, composition, and conducting are available for study.

Specific Requirements for the Master of Music in Performance
1. A Bachelor's degree in Music or its equivalent.
2. Acceptance into the performance program via audition with a 3-person panel of area faculty. Vocal majors must demonstrate knowledge of Italian, French, German, Latin and English diction.
3. Completion of the following required courses with a B or above.

3 hours	3571	Bibliography and Research
3 hours	3596	Pedagogy of Vocal Music, OR
	3597	Pedagogy of Instrumental Music
2 hours	2517	Theory of Twentieth Century Music
2 hours	2511	Music History
9 hours	3591	Applied Music
3 hours	3598	Thesis
3 hours	3599	Thesis
6 hours		Electives (Upper level undergraduate courses may be accepted)
31 hours		TOTAL

Two semesters of participation in ensemble and a final oral examination are required. One thesis course is a recital.

Specific Requirements for the Master of Music in Music Education
1. A Bachelor's degree in Music or its equivalent, and certification to teach music in the public schools or equivalent professional teaching experience.
2. Acceptance into the music education program via the approval of a 3-person panel of area faculty after appropriate interviews and/or auditions.
3. Completion of the following required courses with a B or above.

3 hours	3571	Bibliography and Research
3 hours	3596	Pedagogy of Vocal Music, OR
	3597	Pedagogy of Instrumental Music
2 hours	2517	Theory of Twentieth Century Music
3 hours	2511	Music History
3 hours	3531	Music Education
3 hours	3535	Music Education
4 hours	2581	*or* 2561 Applied Music

3 hours	3598	Thesis
3 hours	3599	Thesis
6 hours		*Electives*
32 hours	TOTAL	

Two semesters of participation in ensemble are required. Final oral examination required.

For Undergraduate and Graduate Students

The following undergraduate courses may be included in the Graduate *Programs with permission of the Graduate Advisor.*

2311, 2312	Counterpoint (2-0)
2315, 2316	Form and Analysis (2-0)
3319	Advanced Composition
2411	Choral Arranging (2-0)
2412	Instrumentation and Orchestration (2-0)
2319	Music in the Middle Ages and Renaissance (2-0)
2320	Music in the Baroque and Early Classic Era (2-0)
2321	Music in the Classic Era and Romantic Era (2-0)
2322	Music in the Late Romantic Era and Twentieth Century (2-0)
3325	Music on the Border (3-0)
2343, 2344	History of Ballet (2-0)
3333	Advanced Conducting Techniques (3-0)
3434	Marching Band Techniques and Arranging (3-0)
3444	Choreography
3531	Problems in Music Education
3535	Field Work in Music
2353, 2354	Music Theatre Workshop (2-0)
2493	Pedagogy of Voice (2-0)
2494	Piano Pedagogy and Literature (2-0)

For Graduate Students Only

Applied Music (MUSA)

2561 Applied Lessons
Used by Music Education majors to develop a new secondary instrument.

2581 Applied Lessons
It can be used as: 1) a secondary applied area for a performance major, 2) the principal applied area for a music education major; or 3) an elective by graduate students in fields other than music. Admission requires proficiency of upper-level undergraduate major *as certified either by audition or the previous undergraduate* upper-level number admission. (A Fine Arts fee will be added.)

3581 Applied Lessons
It can be used as: 1) a secondary applied area for a performance major; 2) the principal applied area for a music education major, or 3) an elective by graduate students in fields other than music. Admission requires proficiency of upper-level undergraduate major as certified either by audition or the previous undergraduate upper-level number admission. (A Fine Arts fee will be added.)

3591 Applied Lessons
For performance majors. Requires acceptance into degree program by a three-person committee of area faculty. (A Fine Arts fee will be added.)

Education (MUSE)

3531 Problems in Music Education
Educational research in the elementary and secondary school fields. Students may conduct research on a problem of their own selection in a field of major interest. May be taken for credit in supervision, if desired. *Prerequisites*: Twelve semester hours of advanced courses in Music and a bachelor's degree. May be repeated for credit.

3596 Pedagogy of Vocal Music
A study of pedagogical materials and methods for use in teaching vocal music at various instructional levels.

3597 Pedagogy of Instrumental Music
A study of pedagogical materials and methods for use in teaching instrumental music at various instructional levels.

General (MUSG)

3535 Field Work in Music
The student works individually on a selected topic with an assigned specialist in that area under supervision of department head. *Prerequisites*: Twelve semester hours of advanced courses in Music and a bachelor's degree. May be repeated for credit.

3536 Independent Study
Independent academic study for performance majors in the Master of Music Degree.

3598 Thesis

3599 Thesis

Theory (MUST)

3513 Survey of Music Theory
Theory of the common practice period in western music. Includes figured bass realization, soprano harmonization, ear-training, harmonic analysis, and form. Will not count for Master of Music degree.

2517 Theory of Twentieth Century Music
Survey of important theoretical systems used to analyze twentieth-century music including those of Schoenberg, Hindemith and Schenker.

2518 Seminar in Schenker Analysis
A general introduction to the theories of Heinrich Schenker. Analytical projects of the student's choice.

2519 Contemporary Compositional Techniques
Directed composition using the various styles and techniques developed by composers between 1940 and the present day.

3520 Composition
Study of composition; open only to those accepted as Master's level theory and composition majors. May be repeated for credit.

Literature and History (MUSL)

2511 Selected Topics in Music History
Historical examination of important musical documents selected from the Medieval, Renaissance, Baroque, Classic, Romantic and Contemporary periods.

3514 Music History Survey
Music history survey from Middle Ages to twentieth century. Emphasis on stylistic identification of scores and performances. Will not count for Master of Music degree.

3571 Bibliography and Research
A study of research methods and materials designed to equip the student for scholarly research. Includes research project.

Philosophy

203 Worrell Hall
(915) 747-5213

CHAIRPERSON: Robert T. Bledsoe
GRADUATE FACULTY: Haddox, Hall

The Philosophy Department does not offer a graduate-level degree, but it regularly offers graduate courses that may be used towards graduate degrees in other disciplines.

For Graduate Students Only

3503 Seminar in the Philosophy and History of Science
A detailed study of the development of science or of one of the sciences and of scientific methods or of important historical figures such as Galileo, Newton, Darwin, Marx or Freud. The interrelationships among philosophical, theological and scientific theories are emphasized. May be repeated when content varies.

3551 World Historical Philosophers (3-0)
A detailed study of the life, writings and influence of one or a few selected philosophers. Usually Plato, Aristotle, Kant, and Hegel are treated in a sequence of offerings of this course. May be repeated when the course content varies.

3552 Basic Philosophical Issues (3-0)
Contemporary philosophical theories of perception and cognition, philosophical anthropology, the technological society and new religious sensibilities have been topics.

3553 Independent Study (3-0)
Student research under supervision of the faculty. Permission of instructor required.

Political Science

206 Benedict Hall
(915) 747-5227, 5528

CHAIRPERSON: Roberto E. Villarreal
GRADUATE FACULTY: Agor, Bath, Graves, Kruszewski, Neighbor, Peterson, Price, Rocha, Segal, Staudt, Valverde, Villarreal, Webking

PROGRAMS

Political Science graduate students may pursue one of three graduate programs, choosing among two Master of Arts degrees and a Master in Public Administration degree.

MASTER OF ARTS IN POLITICAL SCIENCE

BASIC REQUIREMENTS FOR ADMISSION TO THE M.A. PROGRAM

1. Satisfactory GRE or GMAT score as determined by the Department's Graduate Studies Committee;
2. Satisfactory GPA (3.0) in all upper-division work.

SPECIFIC REQUIREMENTS FOR THE M.A. DEGREE

PLAN I—Master of Arts, Thesis: The Master of Arts with thesis requires thirty (30) hours, twenty-four (24) hours of coursework and six (6) hours for the thesis. There must be a minimum of twenty-one (21) hours, including POSC 3598 and 3599, of graduate level courses (those numbered 3500 and above), and these courses must be from at least three (3) subfields of Political Science. Only nine (9) hours of 3300 and 3400 courses are permitted in a program and no more than six (6) of these hours may be included in either the major or the minor. The thesis program is recommended for students who wish to study for a Ph.D. in Political Science.

PLAN II—Master of Arts, Non-Thesis: The Master of Arts without thesis requires thirty-six (36) hours of coursework in at least three (3) subfields of Political Science and the submission of two (2) suitably bound graduate research papers of more substantial quality than ordinary seminar papers from two (2) subfields of Political Science. Only nine (9) hours of 3300 and 3400 courses are permitted in a program and no more than six (6) of these hours may be included in either the major or the minor. The two papers will be submitted to an examining committee which will include the professors under whose guidance they are prepared. The non-thesis program is not recommended for students intending to continue work toward the Ph.D. degree.

Under either Plan I or Plan II

Upon the occasion of petitioning for candidacy, each graduate student will declare either the thesis or non-thesis Master of Arts. Subsequently, graduate students may change from the non-thesis program to the thesis program, but not from thesis to non-thesis.

An optional six (6) hour minor is permitted in either program. The courses are to be selected in consultation with the Graduate Advisor.

MASTER IN PUBLIC ADMINISTRATION

The Master in Public Administration (MPA) degree provides professional education for students interested in public service careers. The program is designed to stress the knowledge, skills, values and behavior essential to the successful public servant. Some flexibility in curriculum is permitted to meet the diverse educational needs of pre-entry and in-career students, changing career students, and students in different career specialties in public administration. The curriculum components are designed to produce professionals capable of intelligent and creative analysis, communication, and action in the public sector context.

BASIC REQUIREMENTS FOR ADMISSION TO THE MPA PROGRAM

1. Satisfactory GRE or GMAT score as determined by the Department's Graduate Studies Committee;
2. Satisfactory GPA (3.0) in all upper division work;
3. All students must have the course equivalent of 3 hours of Public Administration and 3 hours of American Government as a prerequisite to the graduate seminars in the MPA Program;
4. In-career students may be requested to submit vitae of their professional work and letters of recommendation to complete the evaluation for admission and eligibility to enroll in certain courses.

SPECIFIC REQUIREMENTS FOR THE MPA DEGREE

Completion of at least 42 semester hours of coursework consisting of the following:

1. At least 27 hours of courses in the theoretical, methodological, and technical components of public management;
   Accounting 3501—Financial Accounting
   Political Science 3500—Administrative Theory
   Political Science 3501—Advanced Research Methods
   Political Science 3502—Advanced Research Methods in Public Administration
   Political Science 3503—Financial Management and Administration
   Political Science 3504—Public Policy Analysis
   Political Science 3506—Public Personnel/Administration
   Political Science 3507—Administrative Law and Regulation
   Political Science 3514—Administrative Ethics and Responsibilities
   Selected MBA core courses may be substituted for some of these courses, depending on course offerings by each program. Advance approval of MPA director is required for substitution.
2. Completion of an additional 12 hours of approved electives. No more than 6 hours of electives can be at the 3300 and 3400 level in courses approved for graduate level credit.
3. Satisfactory performance in a comprehensive written final examination of 6 hours length, in the core subject areas of public administration. Students are required to enroll in and successfully complete POSC 3594 before being permitted to take the exam. (POSC 3594 is not included in either the 27 hours of requirements or the 12 hours of electives.) A student may repeat the comprehensive exam only once if failed and must also re-enroll in POSC 3594 before doing so.
4. Upon admission, the M.P.A. Director may direct students who do not already possess significant administrative experience to enroll in POSC 3593 (Internship in Public Administration) as part of their 12 hour elective requirement.

Those students who want to take courses in Criminal Justice to satisfy the 12 hour elective requirement for the MPA degree will select four (4) courses from the following:
Criminal Justice 3500—Seminar in Criminal Justice Administration
Criminal Justice 3508—Seminar in Juvenile Justice;
Criminal Justice 3510—Seminar in Law Enforcement;
Criminal Justice 3520—Seminar in Corrections;
Criminal Justice 3540—Seminar in Selected Topics

TWO DEGREE OPTION—MPA/MBA

Students may also enroll in a two-degree option MPA-MBA program. The objective of this program is to permit students with broad interest in both the public and private sectors to double register in both the MPA and MBA programs. With the increasing interdependence of the public and private sectors, this option is attractive to those students wishing to pursue careers in positions responsible for working with their counterparts in private or public organizations. In order to be admitted into the two-degree option, the applicant must specify the option *at the time of application to the Graduate School.* Students who wish to enter either the MPA or MPA-MBA programs should consult with the Director of the MPA program with regard to admission,

required courses, approved electives, petition for candidacy, and comprehensive examinations.

SPECIFIC REQUIREMENTS FOR THE MPA-MBA TWO-DEGREE OPTION

1. Students must meet all requirements for admission to both programs.
2. The same leveling work required of an MBA student without a B.B.A. will be required, subject to the waiver procedures currently operative in the MBA program.
3. The program consists of 27 hours of core MPA courses, 27 hours of core MBA courses, POSC 3594 and a comprehensive written exam in the core subject areas of public administration, plus any additional required courses. The number of hours necessary to complete the two-degree option will vary depending upon each student's background and previous academic work, but will in any case involve a minimum of 57 hours and a maximum of 78 hours.
4. The core curriculum in each of the separate degree programs must be satisfactorily completed.
5. Electives must be approved by the academic advisor of both programs; upon such approval, the core courses of one program may be used to meet the elective requirements of the other.
6. Admission and continuance decisions are handled separately by the MPA and MBA graduate committees and by the Graduate School.

REGISTRATION

No student may be registered as a graduate student of the Department of Political Science without the advice of, and signed approval of his/her program by the Graduate Advisor for M.A. students or the Director of the MPA program for MPA students. This applies not only to the initial registration, but to all subsequent enrollments.

SATISFACTORY PERFORMANCE

Satisfactory performance in all graduate programs of the Department of Political Science is defined as maintaining a 3.0 grade average. A student in any of these programs receiving a grade of C or lower in two courses taken for graduate credit will be dismissed from the graduate program.

For Undergraduate and Graduate Students

The following undergraduate courses have been approved for graduate credit:

3310 The American Constitution: Two Hundred Years Later
3320 Political Socialization and Political Culture
3321 Chicanos in American Politics
3322 Urban Politics
3324 Soviet and Eastern European Politics
3325 The Party System
3326 Western European Politics
3327 Legislative Politics
3328 Constitutional Law
3329 Law and Society
3330 Public Opinion and Public Policy
3331 International Organization and Administration
3332 Civil Rights and Liberties
3333 Problems in Latin American Government
3334 Western Political Heritage I
3335 Western Political Heritage II
3336 American Political Thought
3337 State and Society
3338 Soviet Foreign Policy
3340 Public Policy Analysis
3341 The Presidency
3342 Third World Politics
3343 Foreign Policy of the United States
3344 Democracy in America
3345 Southwestern Border Politics
3346 Women, Power and Politics
3347 Inter-American Relations
3348 United States-Mexico Relations
3390 Special Topics in Political Science
3410 Readings in Political Science
3411 Political Geography
3420 American Government and the Military
3421 Urban Administration
3426 Communist World: Polycentrism
3427 Administrative Law and Regulation
3429 Philosophy of Law
3435 Contemporary Political Thought
3438 Administrative Theory
3440 Comparative Administrative Systems
3444 The Political System of Mexico
3445 Advanced Studies in American Politics
3450 Internship in Public Administration
3480 Undergraduate Research in Political Science

For Graduate Students Only

ALL SEMINARS may be repeated for credit when the topic varies.

American Political Processes

3510 Seminar in American Government (3-0)
Research, writing, and discussion.

3511 Seminar on the American Constitution Bicentennial (3-0)
Examines the nation's founding document and its evolution. Offered in conjunction with the bicentennial of the U.S. Constitution.

3526 Seminar in Political Parties and Politics (3-0)
Research, writing, and discussion.

3554 Seminar in Urban Politics (3-0)
Research, writing, and discussion.

Public Law

3507 Seminar in Administrative Law and Regulation (3-0)
The legal problems of the administrative process, including the uses of administrative discretion, fact-finding and hearing procedures, and the methods and scope of judicial review of administrative decisions.

3528 Seminar in Public Law (3-0)
Research, writing, and discussion.

International Relations

3530 Seminar in International Politics (3-0)
Research, writing, and discussion.

3533 Seminar in International Organizations and Law (3-0)
Research, writing, and discussion.

3540 Seminar in Foreign Policy Decision Making (3-0)
Research, writing, and discussion.

Comparative Politics

3515 Seminar in Southwestern Border Politics (3-0)
Research, writing, and discussion of Southwest Border politics. The course will put emphasis on United States-Mexico relations, political leadership, and ethnicity.

3521 Seminar in Comparative Politics (3-0)
Study of comparative political systems, including comparative political cultures. Emphasis on the methodology of comparative politics. Course content may vary with professor.

3522 Seminar in the Politics of Modernizing Nations (3-0)
Research, writing, and discussion.

3523 Seminar in Communist Politics (3-0)
Reading, writing, and discussion.

3525 Seminar in Latin American Studies (3-0)
Reading, writing, and discussion.

Political Theory

3536 Seminar in Political Theory (3-0)
Research, writing, and discussion.

Public Administration

3500 Seminar in Administrative Theory (3-0)
Basic introduction to the major theories and approaches which form the basis for the practice of public administration. (MGMT 3511 may be substituted, with permission of M.P.A. director.)

3502 Seminar in Advanced Research Methods in Public Administration (3-0)
Practical in-the-field application of quantitative and methodological techniques by government agencies, with special emphasis on microcomputers. The seminar usually will be taken during the second semester of graduate study.

3503 Seminar in Financial Management and Administration (3-0)
Analysis of the concepts and theories of public fiscal administration. Emphasis is placed on budgeting, accounting, purchasing and debt administration. (FIN 3505 may be substituted, with permission of M.P.A. director.)

3504 Seminar in Public Policy Analysis (3-0)
The study of the politics of the policy-making process. Emphasis is on the actors involved in public policy-making, their interactions, and the outputs of the policy process. (This seminar satisfies the requirements for M.P.A. and both M.A. degree programs.)

3505 Seminar in Program Implementation and Evaluation (3-0)
The study of the politics and economics of public policy implementation and evaluation. Emphasis is on the actual effects of government policies and programs.

3506 Seminar in Public Personnel Administration (3-0)
Includes subjects such as collective bargaining, civil service system, organizational development, and other modern personnel processes, using both case studies and simulation exercises. (MGMT 3522 may be substituted, with permission of M.P.A. director.)

3507 Seminar in Administrative Law and Regulation (3-0)
The legal problems of the administrative process, including the uses of administrative discretion, fact-finding and hearing procedures, and the methods and scope of judicial review of administrative decisions.

3508 Seminar in Comparative Public Administration (3-0)
A comparative view of government administration in developed and developing countries. Examines both the effects of culture on government bureaucracy and the efforts of governments to promote socioeconomic development. May include emphasis on U.S.-Mexico border administration.

3509 Seminar in Nonprofit Sector Administration (3-0)
Examines the special administrative challenges in the nonprofit sector, with attention to practical management and problem-solving. Includes topics such as the nature and scope of the nonprofit sector, fundraising, volunteer management, government and public relations, and the organization of nonprofit institutions.

3512 Seminar in Science, Technology, and Public Policy (3-0)
A study of selected political issues which involve scientific or technological questions. Specific topics to be investigated will vary, but may include problems such as energy, the environment, modern communications and the right to privacy, and government support of scientific research.

3513 Men and Women in Management (3-0)
Analyzes gender diversity in public and private institutions.

3514 Administrative Ethics and Responsibilities (3-0)
The course will deal with ethical issues that face public administrators—responsibilities, accountability, discretion, the public interest, professionalism, codes of ethics, and corruption. The course will focus on applied ethics and the reasoning process administrators can use to analyze and evaluate ethical dilemmas.

3550 Seminar in Public Administration (3-0)
Research, writing, and discussion.

3593 Internship in Public Administration (3-0)
Practical internship experience with a public or nonprofit sector agency, selected in consultation with the MPA Director. The experience will consist of at least twenty hours of work per week with the selected agency. The experience will be under close supervision by the agency and the MPA Director.

3594 Comprehensive Integration of Public Administration (3-0)
This course is designed to prepare the student for the final comprehensive examination in public administration. Key management concepts, issues, and value concerns in the core subject areas of public administration will be reviewed and integrated. This course is to be taken in a student's final semester in the MPA program.

General

3501 Seminar in Advanced Research Methods in Political Science (3-0)
Basic introduction to quantitative and methodological techniques in the field for students in both the MA and MPA programs. Required of all graduate Political Science majors. The seminar usually will be taken during the first semester of graduate study. (ECON 3501 or QMB 3511 may be substituted, with permission of M.P.A. director.)

1501 Political Science Laboratory (1-0)
Computer applications of political science data procurement and analysis techniques taught in 3501.

3580 Selected Problems in Government (3-0)
Research, writing, and discussion.

3598 Thesis (3-0)
As part of this course, the student will successfully prepare and defend a prospectus for the M.A. thesis. The prospectus must be approved by the student's thesis committee, and failure to meet this requirement within two long semesters will preclude continuation of the student in the M.A. program.

3599 Thesis (3-0)
Successful completion of POSC 3598 is a prerequisite for enrollment in this course.

Psychology

212 Psychology
(915) 747-5551

CHAIRPERSON: Harmon M. Hosch
PROFESSOR EMERITUS: Philip Himelstein
GRADUATE FACULTY: Barrientos, Cohn, Coleman, Devine, Ellis, Goggin, Hosch, Lucker, Miller, Moss, Sands, Whitworth, Zarate

DEPARTMENTAL REQUIREMENTS FOR M.A.—Before being admitted to the graduate program, a psychology major must include a course in psychological statistics and in experimental psychology in the undergraduate preparation.

The department offers two programs leading to the M.A. degree: General Experimental Psychology and Clinical Psychology.

For the General Experimental Psychology program, there must be a minimum of twenty-four hours of coursework and the thesis. It is the responsibility of the student to be sure to complete the required core for the M.A. degree in General Experimental Psychology. Information on required courses, which may change from year to year, may be obtained from the Graduate Advisor.

The M.A. in Clinical Psychology requires the completion of forty-five hours, including twenty-one hours of required courses, six hours of internship, and six hours of thesis in the total hours.

For both programs, a student may include only those courses approved by the Departmental Committee on Graduate Studies and no more than six hours of advanced undergraduate courses. Students receiving a grade of C or lower in three courses or a grade of D or F in two courses taken for graduate credit will be dismissed from the program. All students are required to take both a written and an oral examination. The written examination is a comprehensive examination on a variety of topic areas in psychology. The comprehensive examination is given twice a year, in the Fall and Spring semesters. Students are required to take the comprehensive examination prior to completion of the thesis. The oral examination is the final defense of the thesis before the thesis committee members.

For Undergraduate and Graduate Students

3401 Psychological Testing (2-2)
3410 Clinical Psychology (3-0)
3412 Advanced Abnormal Psychology (3-0)
3416 Psychology of Language (3-0)
3417 Advanced Statistics (3-0)
3424 Psychobiology (3-0)
3440 Advanced Industrial/Organizational Psychology (3-0)
3441 Motivation and Emotion (3-0)
3442 Comparative Animal Behavior
3452 Independent Research (3-0)

For Graduate Students Only

1501 Research Applications (0-3)
Supervised research in designated laboratories. Students may repeat course for credit. *Prerequisite*: Permission of instructor.

3502 Applied Sensation and Perception (3-0)
The basic principles of sensory and perceptual processes as they are involved in human performance in applied settings. Applications may include advertising, highway safety, symbolic representations in multicultural environments, audio-visual effectiveness, sensory evaluation in clinical settings, and computer graphic display systems.

3503 Advanced Experimental Psychology II (3-0)
A survey of experimental methods and findings in the study of human learning, memory, and information processing.

3509 Seminar in Psychopathology (3-0)
An examination of the research related to problems in etiology, diagnosis, and prognosis of the major disorders. *Prerequisite*: PSYC 3212, or PSYC 3412, or the equivalent.

3511 Advanced Statistics: Experimental Design (3-0)
Consideration of problems of analysis and design commonly encountered in psychological research. *Prerequisite*: PSYC 3417 or equivalent.

3515 Psychopharmacology (3-0)
A study of current topics and recent developments in the biochemical basis of psychopathology and related strategies of psychopharmacological intervention; efficacy evaluation; evaluation of toxicity and side effects.

3520 Seminar in Learning Theory (3-0)
Intensive study and analysis of systematic conceptions of the learning process.

3521 Seminar in Personality Assessment (3-0)
Introduction to methods and issues in the evaluation of personality and to the projective and objective instruments to assess personality. *Prerequisite*: PSYC 3401 or permission of instructor.

3522 Theories and Methods of Psychotherapy (3-0)
An analysis of theory, technique and research methods used in various current psychotherapies. *Prerequisite*: Permission of instructor.

3523 Psychometrics (3-0)
Principles of psychological evaluation, including intellectual, academic, neuropsychological, personality, attitude, and interest measures; reliability and validity; principles, methods, statistical procedures employed in developing new psychometric instruments, especially with respect to different cultural/ethnic minorities. Laboratory Fee: $20.

3524 Seminar in Development Psychology (3-0)
An examination of issues pertaining to human development across the life span.

3525 Seminar in Social Psychology (3-0)
Study of current issues, theories and methods in social psychology.

3527 Human Psychophysiology (3-0)
Recent research on basic psychological processes (e.g., learning, emotion, sleep, language) and physiological correlates (e.g., autonomic, electroencephalographic, and event-related responses).

3531 Cross-Cultural Research Methods (3-0)
In-depth analysis of the problems inherent in cross-cultural research. Particular emphasis is given to group vs. individual approaches, issues in translation, norming of instruments and culturally sensitive interviewing techniques.

3535 Applied Correlation and Regression Methods (3-0)
Reviews correlation techniques, simple and multiple regression and discusses their applications for psychological research in applied settings. *Prerequisite*: PSYC 3103.

3547 Advanced Behavior Technology (3-0)
Examines behavioral programming for a wide variety of problems and settings involving behavior changes for both normal and deviant individuals. *Prerequisite*: PSYC 3347 or the equivalent.

3550 Seminar in General Psychology (3-0)
Advanced study of contemporary problems and issues in selected topics in psychology. May be repeated with different instructors.

3560 Clinical Internship (0-3)
Supervised experience with clinical techniques in an approved agency other than the department's clinic. Each 150 clock hours is equivalent to 3 credit hours. May be repeated until 9 hours are accumulated; however, no more than 9 credit hours of PSYC 3560 or a combination of 3560 and 3570 will count towards the M.A. degree in Clinical Psychology. Grades in this course will not be utilized in computing grade point average. *Prerequisites*: Permission of instructor and PSYC 3521 or 3523. Psychology majors only.

3570 Psychology Clinic (0-6)
Supervised experience in the department's clinic. Each 150 clock hours is equivalent to 3 credit hours. May be repeated until 9 hours are accumulated; however, no more than 9 credit hours of PSYC 3570 or a combination of 3560 and 3570 will count towards the M.A. degree in Clinical Psychology. Grades in this course will not be utilized in computing grade point average. *Prerequisites*: Permission of instructor and PSYC 3521 or 3523. Psychology majors only.

3598 Thesis

3599 Thesis

Sociology, Anthropology, Social Work

102 Old Main
(915) 747-5740

CHAIRPERSON: Howard C. Daudistel
PROFESSOR EMERITUS: Julius Rivera
ASSOCIATE PROFESSORS EMERITI: Paul W. Goodman, David B. Eyde
GRADUATE ADVISOR: Ellwyn R. Stoddard
GRADUATE FACULTY: Daudistel, Howard, Iacono-Harris, Rodriguez, Stoddard

The Department offers a Master of Arts degree in Sociology.

The University of Texas at Austin and U.T. El Paso offer a Master of Science Degree in Social Work. Information about this program can be obtained by contacting the MSSW Program Coordinator in the Sociology Department, (915) 747-5740.

Graduate Program

M.A. DEGREE PREREQUISITES. Twelve semester hours of advanced courses in Sociology, a bachelor's degree, graduate standing, or consent of the advisor. The units presented should include theory and methods. The advisor may recommend that six semester hours of advanced courses in Anthropology be substituted for six of the Sociology hours.

M.A. DEGREE REQUIREMENTS. There are two options leading to the M.A. degree in Sociology.

The following are the requirements of the 30-hour thesis M.A.

degree program: 1) at least 21 of the 30 hours will be in 3500 level courses (that is, only nine hours of 3300 and 3400 work will be allowed for graduate credit); 2) each candidate must take one course in research methods (3512, 3513, or 3520), Sociology 3525 (Seminar in Sociological Theory), plus eighteen semester hours from the list of courses below; 3) enroll for at least one semester each in Sociology 3598 and 3599 (Thesis) and successfully defend the thesis before a committee while enrolled in Sociology 3599; 4) the student will be encouraged, but not required, to take six hours' coursework in some discipline other than Sociology as a minor; if the student elects to take a minor in another department or discipline, coursework in Sociology will be reduced accordingly; 5) student will submit a suitably bound thesis which must be approved by the student's committee and placed on file in the Department and in the Office of the Graduate Dean.

The following are the requirements of the 36-hour non-thesis M.A. degree program: 1) at least 27 of the 36 hours will be in 3500 level courses (that is, only nine hours of 3300 and 3400 work will be allowed for graduate credit); 2) the student will be encouraged, but not required, to take six hours' coursework in some discipline other than Sociology as a minor; 3) the student will submit a suitably bound graduate research paper, beyond regular semester papers, which must be approved by the student's committee and placed on file in the Department and in the Office of the Graduate Dean.

Students will be allowed only one grade lower than a B in coursework taken for graduate credit, and must maintain a 3.0 grade average.

For Undergraduate and Graduate Students

3301 Sociology of Educational Institutions (3-0)
3303 Sociology of Urban Life (3-0)
3306 Comparative Social Systems (3-0)
3307 Folk Religion and Magic (3-0)
3311 Methods of Research (3-0)
3318 Folk Societies of Eurasia and Africa (3-0)
3319 Indian Societies of the Americas (3-0)
3322 Collective Behavior and Social Movements (3-0)
3327 Majority/Minority Relations in the United States (3-0)
3333 Juvenile Delinquency (3-0)
3336 Multi-Cultural Society in the Southwest (3-0)
3341 Special Undergraduate Topics (3-0)
3342 Sociology of Deviance (3-0)
3346 Sociology of Religion (3-0)
3348 Criminology (3-0)
3357 Sociolinguistics (3-0)
3361 Mexican Folk Society and Culture (3-0)
3362 Medical Sociology (3-0)
3370 Sociology of Sex Roles (3-0)
3380 Society and Personality (3-0)
3381 Complex Organizations (3-0)
3401 General Sociological Theory (3-0)
3425 Social Class and Stratification (3-0)
3447 Population Analysis and Problems (3-0)
3490 Independent Study (3-0)

For Graduate Students Only

3510 Seminar in Social Organization (3-0)
An examination of size and complexity, vertical and horizontal processes, organizational effectiveness, and command and communication systems within bureaucratic and non-bureaucratic structures.

3512 Seminar in Advanced Measurement and Inference (3-0)
Introduction to techniques of multivariate analysis commonly used in sociology including multiple regression, factor analysis and discriminant function analysis.

3513 Research Uses in Social Data (3-0)
Data analysis techniques, statistical analysis and management of large data sets; the use of computer and Statistical Package for the Social Sciences. *Prerequisite*: SOCI 3212 or equivalent.

3515 Seminar in Sociology of Deviance (3-0)
Critical analysis of sociological theories, current research and applied approaches relevant to deviance.

3518 Seminar in Social Differentiation (3-0)
Social stratification theory and research; contributions of Marx, Weber, Davis, Bendix, Lipset and others; methods of stratification measurement.

3520 Seminar in Methodology (3-0)
The field research process from initial project proposal to the final report including the integration of the planning, execution and analysis phases.

3525 Seminar in Sociological Theory (3-0)
The role and utility of theory within the discipline, the processes of theorizing, reconceptualizing and theory testing, theorists and theoretical trends.

3540 Seminar in Demography (3-0)
Causes and consequences of trends in fertility, mortality and migration.

3541 Special Graduate Topics (3-0)
A course organized to investigate special topics and current issues of significance to sociologists. May be repeated for credit when content varies.

3544 Seminar in Social Anthropology/Ethnology (3-0)
Important theoretical perspectives in ethnology; including biological evolutionary, ecological, structural-functional, and cognitive viewpoints.

3548 Seminar in Criminology (3-0)
Social context of criminal law and criminal justice; theories of crime and treatment programs.

3561 Graduate Research and Intern Practicum (3-0)
A course designed to give students supervised experience in conducting sociological research as interns in community agencies. (May be repeated for a maximum of six credit hours.)

3562 Seminar in Health Services Delivery (3-0)
Health and medical occupations and the organization of care, cure and prevention systems; social and cultural factors affecting sick roles and community health policies and practices.

3565 Seminar in Sociology of Education (3-0)
Application of sociological theory and research to American education; present educational problems and possible solutions.

3575 Seminar in Southwestern Cultures (3-0)
An anthropological, ethnohistorical and sociological examination of salient Southwestern cultures; Mexican-Americans, Indian societies, Blacks, Orientals, etc.

3581 Seminar in Social Psychology (3-0)
Comparison of major theories of social psychology, including symbolic interactionism, exchange theory, and cognitive development theory; their assumptions and explanatory power.

3590 Individual Studies

3598 Thesis

3599 Thesis

Theatre Arts

371 Fox Fine Arts
(915) 747-5146

CHAIRPERSON: Roberto D. Pomo
PROFESSORS EMERITI: Robert Milton Leech, Gifford W. Wingate
GRADUATE FACULTY: Eastman, Etheridge, Perry, Pomo, Ronke

The Theatre Arts Department offers a Master of Arts with a major in Theatre Arts.

M.A. DEGREE PREREQUISITES: Twelve approved advanced semester hours (3300, 3400) of undergraduate credit in Theatre Arts.

M.A. DEGREE REQUIREMENTS

A. Each candidate for the M.A. degree will be required to make a satisfactory score on a comprehensive examination; at the

discretion of the department chairman, a portion of the examination may be a performance or a laboratory demonstration.

B. Majors in Theatre Arts must take a minimum of eighteen semester hours in Theatre Arts included in a total of thirty semester hours, of which at least twenty-one hours must be in courses numbered 3500-3599. Students in Theatre Arts must do either a research or a production thesis, for which they will receive six hours of credit (THEA 3598-99: Thesis) toward these minimum requirements.

For Undergraduate and Graduate Students

Courses which may be taken for graduate credit with approval of the graduate advisor. These are to be used to strengthen areas in which the student may be deficient and to enrich the graduate offerings.

3301 Reader's Theatre
4313 Acting II
3325 Directing I
3332 Scene Design
3335 Chicano Theatre & Drama
3336 Theatre in Spanish
3340 A History of Costume Design
3351 History of the Theatre I
3352 History of the Theatre II
3353 History of the Theatre III
3354 The American Theatre
3355 The Musical Theatre
3356 Women in Drama
3415 Practicum in Theatre
3418 Playwriting
3426 Directing II
3440 Selected Topics in Drama and Theatre
3442 Advanced Lighting Design

THEATRE ARTS

For Graduate Students Only

3500-3507 Graduate Projects in Drama
Research Projects directed by members of the graduate faculty in specific topics of drama and theatre according to the student's interest and need, including such areas as aesthetics, history, criticism, dramatic literature, design, management, and drama education. A course in this group may be taken a second time when the topic is significantly different.

3500 Graduate Projects in Drama
Individual research in Theatre Management.

3501 Graduate Projects in Drama
Individual research in Costume and/or Makeup Design.

3502 Graduate Projects in Drama
Individual research in History and/or Dramatic Criticism.

3503 Graduate Projects in Drama
Individual research in Scene Design and/or Shop Management.

3504 Graduate Projects in Drama
Individual research in Lighting and/or Sound Design.

3505 Graduate Projects in Drama
Individual research in Directing and Rehearsal Methods.

3506 Graduate Projects in Drama
Individual research in the Teaching of Acting.

3507 Graduate Projects in Drama
Individual research in Spanish Language Theatre and Drama.

3518 Methods of Graduate Theatre and Drama Research
Survey of the essential tools of graduate research and creation in theatre and drama—including bibliography, aesthetics, and creative and scholarly procedure—culminating in the preparation of a scholarly paper. Required of all majors.

3520 Graduate Projects in Theatre Production
Individual research in theatre technology and performance under the direct supervision of a faculty member in the student's area of specialization. May be taken more than once with a change of emphasis.

3522 Seminar in Theatre Technology
Studies of production design and methods of staging in the unfolding pattern of western theatre. Required of all majors.

3523 Seminar in Theatre History
The study of man's theatrical impulse as it manifests itself in the theatres and other social institutions of western civilization. Required of all majors.

3527 Seminar in Performance: Acting and Directing
Study of the strategies of theatrical presentation: the modes, styles, and techniques of acting and directing in their cultural context. Required of all majors.

3598 Thesis

3599 Thesis

The College of Nursing and Allied Health

The College of Nursing and Allied Health has master's programs in Nursing and Speech-Language Pathology. Students enrolling in the Master's of Science degree program in Nursing can elect a clinical concentration in adult, parent-child or psychiatric-mental health nursing and minor in either nursing education or nursing administration. These master's degree programs are fully accredited by the National League for Nursing.

The Master of Science degree in Speech-Language Pathology will qualify students for Texas License and certification by the American Speech-Language, Hearing Association.

Nursing

101 N. Campbell
(915) 747-5880

DEAN: Patricia T. Castiglia
PROFESSOR EMERITA: Eileen M. Jacobi
ASSOCIATE PROFESSORS EMERITA: Dorothy F. Corona, Betty Kinsinger
GRADUATE FACULTY: Amaya, Brands, Castillo, Lantican, Lara, Mahr, Mayorga, Millet, Reynolds, Smith, Tinkle

The Graduate Program in Nursing is designed to permit students to earn the degree of Master of Science in Nursing. The mission of the College is to prepare professional practitioners to respond to the health needs of individuals, families and groups in society. The curriculum of the graduate program is intended to prepare professional nurses for advanced leadership through enhanced clinical practice, research and role expansion. The student selects an area of clinical concentration as a major and a functional nursing minor in teaching or clinical supervision and administration. The enhancement of clinical practice occurs through the expansion and refinement of knowledge and the testing of theory. Role expansion occurs through advanced practice, teaching, and management functions as they relate to health care delivery and increasing professional responsibilities to society. In addition, through the functional roles, the nurse enhances the performance of others by contributing to the improvement of human functioning.

The degree of Master of Science in Nursing provides the graduate the opportunity to:

1. apply theoretical and conceptual frameworks from nursing and other disciplines to the practice of clinical nursing, teaching, supervising and administering;
2. synthesize theoretical formulations from nursing and other disciplines and make applications in the care of clients;
3. provide (expert) nursing care based upon an in-depth client assessment in an area of clinical focus;
4. evaluate ethical, moral, legal precepts in client care;
5. analyze culture and apply cultural imperatives in client care;
6. apply research methods to investigate problems which impact on nursing care and health care delivery;
7. analyze public policy issues as they impact on nursing and health care;
8. collaborate in interdisciplinary studies and practice in selected settings;
9. integrate peer review and/or peer guidance in clinical and functional practice;
10. demonstrate professional leadership at the local, state and national level; and
11. demonstrate professional development.

PROCEDURES AND REQUIREMENTS FOR ADMISSION

Applicants for admission apply to the Office of Admission and Evaluation. (Forms may be obtained from the Office of the Graduate School or from the College of Nursing and Allied Health Student Office.) *In addition* to the Graduate School's general requirements for admission, the prospective nursing graduate student must provide the following documentation:

1. Evidence of satisfactory completion of an NLN accredited baccalaureate nursing program or proof of equivalent education, e.g., at a foreign institution.
2. Evidence of successful completion of an undergraduate statistics course or must take it concurrently in the first semester.
3. Evidence of a complete and satisfactory physical examination.
4. Current liability insurance in the amount of $200,000-$600,000.
5. Current licensure or a temporary permit to practice as a Registered Nurse in Texas unless associated with federal services.
6. Current basic Cardiac Life Support Certification.
7. Graduate Record Examination or Miller Analogies Test passed with acceptable scores.

Applications are considered on an individual basis and may be reviewed by the college's committee on graduate studies.

DEGREE REQUIREMENTS FOR THE MASTER OF SCIENCE IN NURSING

A total of 36 credits is required for completion of the master's program. The first nine credits are core course requirements, which focus on developing the relationships between nursing theory, nursing practice, and nursing research. Nine credits must be completed in an area of clinical concentration. Six credits are required in a functional area. The remaining 12 credits are chosen in accordance with the thesis or non-thesis options.

Students select an area of clinical concentration from Adult Health Nursing, Psychiatric-Mental Health Nursing or Parent-Child Health Nursing. All clinical courses include a practicum. Course offerings are contingent upon adequate enrollment.

The student may choose from two functional areas: a) Teaching, or b) Supervision and Administration. Practicums are included in both of these areas.

Students may select the thesis or non-thesis option. If the thesis option is chosen, the research proposal completed as a part of the core research course may be used as the basis for the thesis proposal. Each student choosing the thesis option enrolls in the Advanced Research course. Students choosing the non-thesis option complete nine credits of graduate electives in nursing which have been approved by the academic advisor.

A comprehensive examination is required for completion of the degree.

STUDENT EMPLOYMENT

Student employment is a personal decision; however, it is up to the student to arrange the work schedule so as not to interfere with classes and clinical practicum requirements. Classes are offered in a variety of time periods throughout the year to assist the students in alleviating conflicts.

DEGREE PLAN FOR MASTER OF SCIENCE IN NURSING

REQUIRED CORE COURSES

3501 Issues and Problems in Health Care
3510 Nursing Theories and Processes
3570 Fundamentals of Nursing Research
One graduate level elective

CLINICAL CONCENTRATION
ADULT HEALTH NURSING:

3519 Advanced Human Physiology
*3520 Adult Health Nursing I
*3521 Adult Health Nursing II

PSYCHIATRIC-MENTAL HEALTH:

*3525 Psychiatric-Mental Health Nursing I
*3527 Psychiatric-Mental Health Nursing II
*3531 Psychiatric-Mental Health Nursing III

PARENT-CHILD HEALTH:

3519 Advanced Human Physiology
*3511 Parent-Child Nursing I
*3515 Parent-Child Nursing II

FUNCTIONAL AREAS:

For Students Planning to Teach:
3545 Curriculum and Instruction in Nursing Education
*3547 Roles and Functions of the Nurse Educator

For Students Planning for Administrative Positions:
3535 Nursing Administration
*3541 Supervision and Administration of Nursing Services in Health Care Agencies

THESIS OPTION

3571 Advanced Research in Nursing
3598 Thesis
3599 Thesis

NON-THESIS OPTION

Electives: 9 credits in College of Nursing and Allied Health

NURSING (NURS)

*Course includes a practicum.

For Graduate Students Only

3501 Issues and Problems in Health Care
Assessment of issues and problems in meeting health needs of society and their relevance to nursing and health care.

3503 Historical and Philosophical Study of Nursing
The study of the historical basis of nursing with special emphasis on the development of a philosophical base applied to contemporary nursing practice.

3505 Community Health/Community Mental Health Nursing
Analyzes social issues influencing community health and community mental health nursing. Focuses on continuity of care with emphasis on physiological and psychosocial problems of patients/clients and families. Complex community systems and strategies of health promotion and illness prevention are emphasized.

3510 Nursing Theories and Processes
Focuses on critical analysis of current nursing theories and related nursing process conceptualization with application to selected clients/patients and families.

3511 Parent-Child Nursing I
Analysis and evaluation of theoretical and conceptual basis for nursing intervention in health promotion and maintenance for selected parents and children with risk factors. *Prerequisite*: Core courses and NURS 3519. Includes a practicum.

3513 Neonatal Intensive Care Nursing
Analysis and evaluation of nursing measures to maintain or modify adaptive behaviors of neonates and families at risk. Focus is on health maintenance, restorative, and rehabilitative strategies.

3515 Parent-Child Nursing II
Implementation and evaluation of expert nursing care of parents and children experiencing major alterations in health status. Focus on health maintenance and restoration with emphasis on individualized application of a variety of theories and concepts in the clinical setting. *Prerequisite*: NURS 3511. Includes practicum.

3517 School Health
Focuses on the health care provider's role in the school health program. Current issues and trends in school health, administrative patterns and health care policies are analyzed. *Prerequisite*: NURS 3515. Includes practicum.

3519 Advanced Human Physiology
Provides opportunities to acquire expanded knowledge of the normal physiological systems of humans. Relationships between inter and intracellular metabolism are considered.

3520 Adult Health Nursing I
Focuses on application of nursing theories/frameworks with selected clients/patients along the age continuum manifesting deviations from health and requiring admission to the health care system. Consideration is given to the psychological and sociocultural concepts basic to nursing care. *Prerequisites*: NURS 3519 and core courses. Includes a practicum.

3521 Adult Health Nursing II
Focuses on providing continuity of nursing care for selected clients/patients/families who manifest deviations from health. *Prerequisite*: NURS 3520. Includes a practicum.

3523 Gerontological Health (3-0)
Focuses on the aging process and the health care provider's role in assisting older persons to achieve successful aging. Health promotion and disease prevention strategies are evaluated. Economic, ethical and political issues are analyzed in terms of quality of life for older persons.

3525 Psychiatric-Mental Health Nursing I
Systematic study of the theoretical foundations of psychotherapeutic nursing practice. Clinical practicum focuses on individual therapy with patients/clients. *Prerequisite*: Core courses. Includes practicum.

3527 Psychiatric-Mental Health Nursing II
Social systems approach to the study of mental health and mental illness. Emphasis is on the group approach to treatment. *Prerequisite*: NURS 3525. Includes practicum.

3531 Psychiatric-Mental Health Nursing III
Focuses on therapeutic interventions with dysfunctional families. Emphasizes cultural aspects of family models and techniques of family therapy. *Prerequisite*: NURS 3527. Includes practicum.

3533 Legal and Leadership Responsibilities in Nursing
Comprehensive study of ethical and legal processes; development of health care policy; role of the nurse and role of the professional organization in resolving legal, ethical, moral issues; responsibility of the person as citizen and nurse.

3535 Nursing Administration
Focuses on theories and principles of administration and management; application to nursing service supervision and administration. *Prerequisite*: Core courses.

3541 Supervision and Administration of Nursing Services in Health Care Agencies
Analyzes the development of nursing administration/supervision within health care settings. Focuses on supervision, organization and administration of nursing services for client care. *Prerequisite*: NURS 3535. Includes practicum.

3545 Curriculum and Instruction in Nursing Education
Principles, issues and problems of curriculum design in nursing education in a variety of learning settings.

3547 Roles and Functions of the Nurse Educator
Focus is on content delineation, planning, organizing, delivering and evaluating and teaching-learning process in nursing. *Prerequisite*: NURS 3545. Includes practicum.

3550 International Health
Focuses on major international health programs as they relate to cultural, ecological, and economic factors. The roles of the local, state, national and international agencies in relation to health are studied.

3560 Automated Systems in Health Care (3-0)
Focuses on uses and constraints of computerized health information systems and microcomputer software. Development, use and evaluation of software in health care delivery.

3570 Fundamentals of Nursing Research
Focuses on methods of scientific inquiry, research design and techniques of data collection, analysis and presentation of data.

3571 Advanced Research in Nursing
In-depth study of the conceptual, empirical and interpretive phases of scientific inquiry. Special emphasis on research design, methodological problems and data analysis and interpretation with consideration of the ethical and legal factors affecting nursing research. *Prerequisite*: NURS 3570. Required of all students selecting thesis option.

3594 Independent Study
A course designed by the student to meet an individual learning need. *Prerequisites*: Consent of advisor, instructor and Dean.

3598 Thesis

3599 Thesis

HEALTH EDUCATION

Students who wish to specialize in health education at the graduate level may select one of the following programs in the College of Education.

1. Master of Science in Health and Physical Education (with a Health Education emphasis).
2. Master of Education—Instructional Specialist Option (with a Health Education emphasis).

Please see the appropriate section under the College of Education in the Graduate Catalog. Also contact the appropriate graduate advisor in the Teacher Education Unit or the Kinesiology and Sports Studies Unit of the College of Education and the appropriate graduate advisor in Health Education in the College of Nursing and Allied Health.

HEALTH EDUCATION (HE)

3550 Curriculum Construction in Health Education (3-0)
Health education curriculum in all public school levels, with emphasis on curriculum as recommended by the Texas Education Agency.

3551 The Teaching of Family Life and Sex Education—Seminar (3-0)
Biological, behavioral, and cultural aspects of human sexuality. Emphasis is centered on teacher understanding and the development of teaching methods and materials for all grade levels.

3552 Evaluation in School Health Instruction (3-0)
Principles of objective test construction; the place of behavior and attitude scales, questionnaires, and inventories in the evaluation of school health instruction.

3553 Problems in Content and Method in Health Instruction—Seminar (3-0)
Development of content and teaching methods in problem areas in the health education curriculum.

3554 Current Issues in School Health Education (3-0)
Individual identification and study of current issues in school health education. Extensive reading and critical analysis of literature is required.

Sp ch-Language Pathology

107 College of Nursing and Allied Health
(915) 747-5250

DEAN: Patricia T. Castiglia
DIRECTOR: Joseph A. Perozzi
GRADUATE FACULTY: Chapman, Middleton, Perozzi, Reynolds

The Master of Science degree in Speech-Language Pathology is designed for students who wish to enhance their knowledge of communicative disorders and expand their employment opportunities. Students who successfully complete the course of study outlined below are eligible for certification by the American Speech-Language, Hearing Association in Speech-Language Pathology. Students who have a strong undergraduate background in Audiology may, with the approval of the graduate advisor, design a course of study which will lead to certification by the American Speech-Language, Hearing Association in Audiology. Recipients of the Master of Science Degree qualify for a Texas License in Speech-Language Pathology which is awarded by the State Committee of Examiners for Speech-Language Pathology and Audiology.

Requirements for Admission:

In addition to Graduate School requirements, a minimum of 24 semester hours of undergraduate upper-division course work in disorders of communication is required for admission to the M.S. degree program.

M.S. Degree Requirements:

Majors in Speech-Language Pathology must complete:

1. A minimum of thirty-nine semester hours, thirty of which are in required courses (see below) and nine of which are electives selected with the approval of the graduate advisor;
2. A minimum of 150 clock hours of supervised clinical practicum; and
3. Comprehensive written and oral examinations are required for students who choose not to write a thesis. Students who write a thesis are required to defend the thesis in an oral examination.

When engaged in clinical practicum, students must be simultaneously enrolled in SPLP 3569 or 3573. However, only one enrollment in each course may be counted toward the M.S. degree. Students who choose to write a thesis must enroll in SPLP 3598 and 3599. Those six hours will count toward the minimum of thirty-nine hours as electives.

Required Courses (30 hours)

SPLP 3557	Articulation Disorders
SPLP 3558	Cleft Palate
SPLP 3559	Fluency Disorders
SPLP 3560	Aphasia
SPLP 3561	Seminar in Speech Pathology
SPLP 3562	Disorders of Language
SPLP 3563	Disorders of Voice
SPLP 3564	Motor Speech Disorders
SPLP 3565	Advanced Audiology
SPLP 3569	Advanced Clinical Practicum in Speech Pathology

For Undergraduates and Graduate Students

These courses may be taken for graduate credit with the approval of the graduate advisor. They are to be used to strengthen areas in which the student may be deficient and to enrich the graduate offerings.

3409	Audiology
3410	Aural Rehabilitation
3418	Voice Science

For Graduate Students Only

3557 Articulation Disorders (3-0)
Study of the process of diagnosis and management of functionally and organically based articulation disorders in children and adults.

3558 Cleft Palate (3-0)
Diagnosis and management of articulation and resonance disorders related to cleft palate and other cranio-facial abnormalities.

3559 Fluency Disorders (3-0)
Etiology, diagnosis and treatment of childhood and adult stuttering and other disfluencies.

3560 Aphasia (3-0)
Etiology, diagnosis and treatment of communication disorders related to adult aphasia.

3561 Seminar in Speech Pathology (3-0)
Discussion of research methods. Investigation of various topics related to normal and/or deviant aspects of speech and language. May be taken more than one time with a change in area of emphasis.

3562 Disorders of Language (3-0)
Standardization, reliability, and validity of language tests. Advanced techniques in diagnosis and remediation of language disorders of children.

3563 Disorders of Voice (3-0)
Diagnosis and management of organic and hyperfunctional voice disorders.

3564 Motor Speech Disorders (3-0)
Study of the dysarthrias and apraxia of speech.

3565 Advanced Audiology (3-0)
Assessment of auditory function by utilizing conventional and special hearing tests and measurements.

3566 Medical Audiology (3-0)
Differential diagnosis as related to the site of lesion and medical implications.

3567 Conservation of Hearing (3-0)
Public school and industrial hearing conservation programs.

3568 Seminar in Audiology (3-0)
Group discussion of selected areas in clinical or industrial audiology or audio prosthology. May be taken more than once with a change in area of emphasis.

3569 Advanced Clinical Practicum in Speech Pathology (3-0)
Supervised clinical practicum in providing services for the speech and language impaired.

3571 Hearing Aids (3-0)
The study of hearing aids including but not limited to their acoustical design; hearing aid evaluation, selection, fitting, and follow-up of clients.

3572 Problems and Projects in Speech Pathology (3-0)
May be taken more than once with a change in area of emphasis.

3573 Advanced Clinical Practicum in Audiology (3-0)
Supervised clinical practicum in providing audiological services.

3574 Problems and Projects in Audiology (3-0)
Special projects under faculty supervision dealing with specific problems or projects. May be taken more than once with a change in area of emphasis.

3598 Thesis

3599 Thesis

The College of Science

The College of Science is the home of the University's first doctoral degree program, the Doctor of Geological Sciences, which was approved in 1974. Its first degree was conferred in 1979, and, in 1991, the designation of the degree was changed to Ph.D. in Geology. In addition, the College offers Master of Science degrees in Biological Sciences, Chemistry, Geological Sciences, Geophysics, Mathematics, and Physics. A five-year B.S.-M.S. program is offered in Chemistry, and the Department of Mathematical Sciences offers a Master of Arts in Teaching with a major in Mathematics (M.A.T.M.).

A Master of Science in Interdisciplinary Studies (M.S.I.S.) degree is available to students who wish to undertake interdisciplinary studies which cannot be accommodated within the normal programs of the College's academic departments. Curricula in this program are individualized to meet the needs of its students.

Biology

226 Biology Building
(915) 747-5944

CHAIRPERSON: Louis Irwin
PROFESSORS EMERITI: Albert G. Canaris, Gordon W. Robertstad
GRADUATE FACULTY: Arenaz, Bristol, Elizondo, Ellzey, Freeman, Goldstein, Harris, Hunter, Jones, Lieb, MacKay, Metcalf, Muganda-Ojiaku, Rael, Redetzke, Webb, Worthington

The Department of Biological Sciences offers a Master of Science degree in Biological Sciences.

DEPARTMENTAL REQUIREMENTS FOR THE M.S. DEGREE

The Department of Biological Sciences requires that all incoming graduate students take the GRE subject test in Biology or Biochemistry, Cell and Molecular Biology. In addition to general catalog prerequisites for entering students, 8 semester hours of General Chemistry are required in both options listed below.

Thesis Option: Thirty semester hours are required for this degree. Nine semester hours of undergraduate upper division courses (0300 or 0400) may be counted for graduate credit. A minimum of 21 of the 30 semester hours must be in graduate courses (0500), of which six hours of Thesis (Biology 3598-3599) will be counted towards the 30 semester hour requirement. No more than six hours of Biology 3502 (Research in the Biological Sciences) may be counted as credit toward the 30 semester hour requirement. Each student is required to take Seminar (1530) once per academic year with a maximum of two hours counting towards the degree. Six hours in a supporting area (minor) may be accepted by the department. A thesis describing original work is required and must be defended orally. The student should decide on an area of specialization and select a supervising professor within the first semester or 12 semester hours of admission. The supervising professor will act as chairperson of the thesis committee, which will be comprised of a minimum of three graduate faculty members, including one from outside the Department of Biological Sciences.

Non-Thesis Option: This program is limited to certified teachers. The total credit hours required for the degree is 36. Fifteen hours of upper division undergraduate courses (0300-0400) are the maximum acceptable. No more than three hours of Research in the Biological Sciences (3502) may be counted towards the degree. Each student is required to take Seminar (1530) once per academic year with a maximum of two hours counting toward the degree. A minor of not more than nine hours from outside of the Biological Sciences may be included if approved. One scholarly paper is required prior to conferral of the degree. Students must pass a comprehensive oral examination

BIOLOGY

For Undergraduate and Graduate Students

3318 Developmental Biology (3-0)
1319 Experimental Embryology (0-3)
3320 Genetics (3-0)
3321 Evolutionary Theory (3-0)
3326 Animal Ecology (3-0)
3341 Plants in Southwest Cultures (3-0)
3422 Biological Ultrastructure Interpretation (3-0)
2423 Transmission Electron Microscopy (0-4)
3424 Animal Behavior (3-0)
6425 Field Biology (3-0)
3426 Bioarchaeology (2-3)
3490 Biological Practicum (0-6)
1498-3498 Special Problems (0-2, 0-4, 0-6)

MICROBIOLOGY

For Undergraduate and Graduate Students

3328 Microorganisms in Ecosystems (3-0)
1328 Microbial Ecosystems Techniques (0-3)
3343 Pathogenic Microbiology (3-0)
1344 Diagnostic Bacteriology (0-3)
3345 Microbial Physiology (3-0)
1346 Microbial Physiology Methods (0-3)
3349 Prokaryotic Molecular Genetics (3-0)
3451 General Virology (3-0)
1452 General Virology Techniques (0-3)
3453 Immunology (3-0)
1454 Immunology Techniques (0-3)
3455 Medical Mycology (3-0)
1456 Medical Mycology Techniques (0-3)
3459 Public Health (3-0)

BOTANY

For Undergraduate and Graduate Students

3330 Comparative Plant Morphology (3-0)
2337 Plant Taxonomy (2-0)
2338 Plant Identification Techniques (0-4)
3340 Plant Physiology (3-0)

ZOOLOGY

For Undergraduate and Graduate Students

2364 Medical Parasitology (2-0)
1365 Identification of Human Parasites (0-3)
4366 Invertebrate Zoology (3-3)
2370 Animal Distribution (2-0)
3454 Paleozoic and Mesozoic Vertebrate Paleontology (3-0)
1455 Vertebrate Paleontology Techniques (0-3)
3456 Cenozoic Vertebrate Paleontology (3-0)
1457 Advanced Vertebrate Paleontology Techniques (0-3)
3476 Natural History of Fish, Amphibians, and Reptiles (3-0)
1477 Fish, Amphibian, and Reptile Research Techniques (0-3)
3478 Natural History of Birds and Mammals (3-0)
1479 Bird and Mammal Research Techniques (0-3)
3480 Vertebrate Physiology (3-0)
1481 Vertebrate Physiology Methods (0-3)

For Graduate Students Only

3501 Selected Advanced Topics in the Biological Sciences (3-0)
Topics vary, course in the form of formal classes. May be repeated for credit.

3502-5502 Research in the Biological Sciences
Emphasizes research, with writing and discussion. Not given as a formal class. May be repeated, but no more than six hours of credit will be counted towards degree. Laboratory Fee: $30 for 3502; $8 for 5502.

3504 Developmental Cytology (3-0)
Cellular and molecular aspects of plant and animal development.

3505 Herpetology (2-3)
A study of the morphology, taxonomy and life histories of reptiles and amphibians. Laboratory Fee: $8.

3506 Cytogenetics (3-0)
Study of chromosome structure, function and behavior. Emphasis on segregational mechanisms in mitosis and meiosis, and genetic consequences of chromosomal aberrations. *Prerequisite*: BIOL 3320.

3507 Biology of the Pleistocene (3-0)
A study of the organisms of the Pleistocene.

3509 Regulation of the Eukaryotic Genome (3-0)
The molecular biology of eukaryotes including genetic engineering, structure and organization of the eukaryotic genome, regulating the expression of eukaryotic genes and the role of oncogenes in eukaryotes. *Prerequisites*: Graduate Standing; BIOL 3320 or equivalent, or approval of instructor.

3510 Animal Virology (3-0)
The molecular biology and pathogenesis of animal viruses. Recent discoveries and new directions of research will be emphasized. *Prerequisites*: MICR 3451 and 1452 or approval of instructor.

3513 Biogeography (3-0)
Geographic distribution of plants and animals, and analysis of causative factors.

3516 Biosystematics (3-0)
Methods and principles of taxonomy, classification, and systematics.

3517 Plant Ecology (3-0)
Plant communities and factors determining them.

3518 Ecology of Desert Organisms (2-3)
Study of the physiological and morphological and behavioral adaptations of desert plants and animals. Effects of desert abiotic factors on species, populations and communities. Laboratory Fee: $8.

3520 Endocrinology (2-3)
A study of the effects and actions of vertebrate hormones with an emphasis on neuroendocrine control. Laboratory Fee: $8.

3521 Ornithology (2-3)
Anatomy, morphology, ecology, physiology, evolution, behavior and taxonomy of birds. Laboratory Fee: $8.

3523 Ultrastructure (3-0)
Current research advances in cellular biology.

3524 Mammalogy (2-3)
Class Mammalia, with emphasis on morphological, physiological, ecological, and behavioral adaptations to past and present environments. Laboratory Fee: $8.

3526 Advances in Immunological Concepts (3-0)
Study of immunological and immunochemical concepts. Emphasis will be placed on recent experimental advances in immunology. *Prerequisites*: MICR 3453 and 1454 or approval of instructor.

3527 Advances in Ecological Theory (3-0)
Study of recent advances in ecological theory with special emphasis on adaptation, population structure and dynamics, behavioral processes and species interactions.

3528 Numerical Analysis in Biology (2-3)
Study and application of specialized numerical methods in biological sciences. *Prerequisites*: Undergraduate core mathematics (MATH 3429) in Biology or equivalent.

3529 Physiology of the Bacterial Cell (3-0)
The study of the biochemical and physiological processes occurring in the bacterial cell. Emphasis will be placed on recent experimental approaches that are in current use in microbial physiology research. *Prerequisite*: Approval of instructor.

1530 Seminar (1-0)
Topics vary and are presented by enrollees and other speakers.

3598 Thesis

3599 Thesis

Chemistry

201A Physical Science Building
(915) 747-5701, 5720

CHAIRPERSON: William C. Herndon
PROFESSORS EMERITI: James W. Whalen
GRADUATE FACULTY: Becvar, Cabaness, Davis, Dirk, Ellzey, Herndon, Lloyd, Pannell, Porter, Ter Haar

The Department of Chemistry offers studies leading to the degree of Master of Science in Chemistry with experimental and/or theoretical research in the following fields of specialization: analytical, biochemistry, environmental, inorganic, organic, organometallic, physical, chemical physics, and materials science. Through a cooperative program with the Department of Geological Sciences, an M.S. degree with a concentration in geochemistry is offered. In collaboration with the Department of Geological Sciences, a program that can lead to the doctoral degree can be offered (for details concerning the doctoral program, see the listing for the Department of Geological Sciences).

General Departmental Requirements
The normal prerequisite to graduate studies in the Department of Chemistry is the bachelor's degree in Chemistry with a B average in chemistry courses taken at the junior and senior level.

Master of Science in Chemistry
In addition to the institutional requirements for a Master of Science degree, which includes a thesis, the candidate must also meet the following stipulations: A minimum of 21 of the required 30 hours of credits must be in courses at the 0500 level. Credits must include at least one graduate level course in three of the five areas of organic chemistry, physical chemistry, inorganic chemistry, analytical chemistry, or biochemistry. The candidate must also enroll in Chemistry 1595 during each semester of residence. Not more than one hour of Chemistry 1595 may be counted toward the 30 credit hour requirement. The normal program for the M.S. degree in Chemistry may include 6 hours of supporting work from approved fields. A program of specialization in chemical physics may be elected with the permission of the graduate advisor. Such a program may include, within the required 30 hours of credits, up to 12 hours in the related fields (e.g., Physics, Mathematics). Courses of study are designed for each student in consultation with the advisor. Each student must confer with the graduate advisor prior to each registration. The thesis presented for this degree must describe original work related to a research problem of some importance. The thesis must be defended orally.

Five-Year B.S.-M.S. Program
The curriculum for the B.S. degree in Chemistry can be completed in three and one-half years. After admission to the Graduate School of the University, it is possible to obtain the M.S. degree at the end of the fifth year of study in Chemistry. Qualified students should consult their academic advisor about the course of study, and about the various forms of financial assistance obtainable through this program.

Master of Science in Interdisciplinary Studies (M.S.I.S.)
The requirements for this degree are described under 'Master of Science in Interdisciplinary Studies' in this catalog. The program is designed for individuals possessing a bachelor's degree and wishing to work in areas outside of their previous training. The program is interdisciplinary and involves 36 hours of approved coursework in at least three different departments. A maximum of 6 hours of research problem work are included in the 36 hours; however, no thesis is required in this program.

For Undergraduate and Graduate Students

3321-3322	Organic Chemistry
2321-2322	Laboratory for Chemistry 3321-3322
3310	Analytical Chemistry
1310	Laboratory for Chemistry 3310

3351-3352	Physical Chemistry
1351-1352	Laboratory for Chemistry 3351-3352
3326	Physical Chemistry (not for Chemistry majors)
1326	Laboratory for Chemistry 3326
3428	Advanced Topics in Chemistry
3430	Biochemistry I
3432	Biochemistry II
2411	Instrumental Methods of Analytical Chemistry
2412	Laboratory for Chemistry 2411
3462	Structure of Matter
3465	Inorganic Chemistry
1465	Laboratory Course in Inorganic Chemistry
1476-3476	Introduction to Research
3480	Polymer Chemistry

For Graduate Students Only

3501-3502 Modern General Chemistry (3-0; 3-0)
An intensive course intended for school teachers, which presents a thorough grounding in the basic principles of chemistry. May not be counted toward the M.S. Degree in Chemistry. *Prerequisite*: 18 semester hours of undergraduate Chemistry.

1501 Advanced Experimental Chemistry (0-3)
For school teachers. Laboratory techniques demonstrating the principles of chemistry. Topics chosen from analytical, inorganic, organic, physical and biological chemistry. May not be counted toward the M.S. Degree in Chemistry. *Prerequisite*: 18 semester hours of undergraduate Chemistry.

3518 Advanced Analytical Chemistry (3-0)
Chemical equilibrium and its applications to separation and analysis.

3519 Contemporary Topics in Analytical Chemistry* (3-0)
Selected topics of current interest in modern analytical chemistry.

3521 Advanced Organic Chemistry I (3-0)
A survey of the more important types of reactions in organic chemistry; reaction mechanisms, stereochemistry of intermediates and products; current structural theory. *Prerequisite*: CHEM 3322.

3522 Advanced Organic Chemistry II (3-0)
A continuation of Chemistry 3521. *Prerequisite*: CHEM 3521.

3529 Contemporary Topics in Organic Chemistry* (3-0)
Selected topics of current interest in descriptive and theoretical organic chemistry.

3531 Advanced Biological Chemistry (3-0)
A survey of metabolism, enzyme catalysis, membrane function, and molecular biochemistry.

3539 Contemporary Topics in Biochemistry* (3-0)
Selected topics of current interest in organic or physical aspects of biological chemistry.

3551 Advanced Physical Chemistry I (3-0)
Schroedinger wave mechanics; atomic and molecular quantum states; applications to the treatment of wave functions for atoms and molecules.

3552 Advanced Physical Chemistry II (3-0)
Classical and statistical thermodynamics; applications to physical and chemical systems.

3559 Contemporary Topics in Physical Chemistry* (3-0)
Selected topics of current interest in experimental and theoretical fields of physical chemistry.

3561 Advanced Inorganic Chemistry (3-0)
Ionic, metallic and covalent bonding; valence bond, molecular orbital and ligand field theories; structure and properties of coordination compounds, metal carbonyls and complexes.

3569 Contemporary Topics in Inorganic Chemistry* (3-0)
Selected topics in Inorganic Chemistry.

1595 Graduate Seminar (1-0)

1596-3596 Graduate Research in Chemistry (3-0)
Prerequisite: Graduate standing and staff consent.

3598 Thesis

3599 Thesis

*May be repeated for credit when topics vary.

Geological Sciences

Geological Sciences 101
(915) 747-5501

CHAIRPERSON: G. Randy Keller, Jr.
GRADUATE FACULTY: Anthony, Clark, Cornell, Doser, Goodell, Hinojosa, Hoffer, Julian, Keller, LeMone, Marsaglia, Moss, Pingitore, Schmidt, plus joint appointments—Bronson, Fuentes, Harris

Graduate Programs in Geological Sciences

General requirements for the Master of Science degree can be found in the "General Information" section of this catalog.

M.S. Degree—Geological Sciences

Departmental Requirements—Students must have accomplished the equivalent of the B.S. degree requirements in geology, including those required courses in supporting disciplines. The Graduate Record Examination (GRE) is recommended but not required for admission. For the M.S. degree program, students must present 30 hours including a thesis (6 hours). At least 21 hours must be in courses numbered 3500 or above. Work in supporting fields (a minor) is not specifically required. However, coursework in supporting fields will often be included in a student's program of study with the approval of the Graduate Advisor and the Graduate Dean. All candidates are required to enroll in Geology 1501 every semester they are in residence. All candidates are required to pass an oral examination concerning their thesis investigation.

M.S. Degree—Geophysics

Departmental Requirements—Students must have accomplished the equivalent of the B.S. requirements in geophysics, including the required courses in supporting disciplines. The Graduate Record Examination (GRE) is recommended but not required for admission. For the M.S. degree program, students must present 30 hours including a thesis (6 hours). At least 21 hours must be in courses numbered 3500 or above. Work in supporting fields (a minor) is not specifically required. However, coursework in supporting fields will often be included in a student's program of study with the approval of the Graduate Advisor and the Graduate Dean. All candidates are required to enroll in Geology 1501 every semester they are in residence. All candidates are required to pass an oral examination concerning their thesis investigation.

For those prospective M.S. students in the geological sciences whose B.S. degree was not in the geological sciences, the basic geological training can be acquired through an individualized program of remediation including Field Camp (6465) or equivalent. Most students can concurrently proceed to the 30 hours of coursework in the selected areas, as shown above.

Ph.D. in Geological Sciences

Requirements for Admission—Students aspiring to the Ph.D. in Geological Sciences fall into three categories:

A Provisional Doctoral Student is one who holds a master's degree from an accredited institution in one of the following areas: biology, chemistry, mathematics, physics, computer science, or engineering, and intends to make up all deficiencies in geological background. Students holding the baccalaureate from an accredited institution in one of the above areas are encouraged to contact the Graduate Advisor to discuss procedures leading to acceptance as a Provisional Doctoral Student.

A Doctoral Student is one who (1) holds a master's degree in the Geological Sciences from an accredited institution, or (2) holds a bachelor's degree in the Geological Sciences from an accredited institution and has no deficiencies in science courses required for the B.S. degree in Geological Sciences at UT El Paso and has completed

30 hours of post-bachelor's study in geological sciences, or (3) has been removed from the Provisional Doctoral Student category by removing any deficiencies, completing 18 graduate hours in Geological Sciences, and receiving recommendations for Doctoral Student status from the Advisory Committee.

A Doctoral Candidate is one who (1) has removed all academic deficiencies, (2) has satisfied the provisions of the Foreign Language requirement, (3) has completed at least three-fourths of the required credit hours in Geological Sciences and supporting fields, (4) has passed the prescribed Comprehensive Examination, and (5) has been approved for Candidacy by the Graduate Dean, upon the recommendation of the Comprehensive Examination Committee.

Course Requirements—The Ph.D. in Geological Sciences degree requires 60 semester hours of graduate study above the baccalaureate or 30 semester hours of graduate study above the master's degree. A dissertation is required. Not more than one fifth of the required graduate hours can be earned in Special Problems courses.

Technical Sessions (Geology 1501) is a required course each semester the student is in residence.

Foreign Language Requirement—Each doctoral candidate is required to possess a comprehensive knowledge of one language other than his native tongue. Proficiency in a foreign language must be demonstrated by (1) passing a comprehensive examination, or (2) completing four semesters of college courses in the selected language, or (3) showing that the undergraduate degree was obtained in courses taught using a language other than English.

Committees—For each provisional doctoral student or doctoral student, the Graduate Advisor shall appoint an Advisory Committee consisting of three members of the graduate faculty.

For each doctoral candidate, a Doctoral Committee will consist of the dissertation advisor, at least two professors in the Department of Geological Sciences, and at least one scientist or engineer from outside the Department of Geological Sciences—all of whom are members of the graduate faculty and are approved by the Dean of the Graduate School. The total committee shall consist of at least five individuals.

Examinations—The Graduate Advisor will appoint a Comprehensive Examination Committee to administer the Comprehensive Examination. The Comprehensive Examination will normally be taken after removal of all deficiencies and completion of most of the coursework. Any student who fails the Comprehensive Examination twice shall be barred from further consideration for Doctoral Candidacy.

Dissertation—A doctoral dissertation is required. This dissertation must demonstrate the candidate's capacity for originality and independence in recognizing a significant geological problem, in carrying out an effective investigation, and in interpreting and reporting the results. The subject of the dissertation is to be selected in consultation with the dissertation advisor, and it must be approved by the student's Doctoral Committee and by the Graduate Dean. The dissertation advisor is to supervise the research work and to consult with other members of the Doctoral Committee on the progress of the work.

The candidate is required to defend the dissertation before the faculty of the University in an open meeting under the supervision of his Doctoral Committee.

Draft copies of the dissertation must be submitted to the Doctoral Committee six days before the defense and any suggested corrections must be made. Prior to commencement, two copies of the final bound dissertation, and the unbound original, must be submitted to the Graduate School Office. Two bound copies must also be submitted to the Graduate Advisor.

Microfilming of Dissertation—The doctoral candidate who has successfully completed all requirements for the degree is required to pay the cost of microfilm reproduction of the complete dissertation. The signed original copy (unbound) of the doctoral dissertation is sent from the Office of the Graduate School to University Microfilms, Ann Arbor, Michigan, for reproduction.

With the dissertation the student must also submit to the Dean of the Graduate School two copies of an abstract, not to exceed two pages in length (double-spaced) which has been approved in final form by the Doctoral Committee. This will be published in *Dissertation Abstracts International*.

Publication by microfilm does not preclude subsequent publication of the dissertation, in whole or in part, as a monograph or in a journal. Copyright at the author's expense may be arranged, if desired, by completing a special form to be secured in the Graduate School Office. In order to protect patent or any other rights, the Graduate Dean may be requested to delay publication by microfilm for a period of one year. This request must be supported by a written recommendation of the supervising professor.

Time Limits and Catalog Changes—All requirements for a Ph.D. in Geological Sciences must be completed within one eight year period. Work more than eight years old is lost and can be reinstated only by special permission of the Graduate Dean upon recommendation of the Departmental Committee on Graduate Studies. Further, all requirements for the doctorate must be completed within five years after passing the comprehensive examination.

General and specific requirements for degrees in the Graduate School may be altered in successive catalogs. Provided the requisite course continues to be offered, the student is bound only by the course requirements of the catalog in force at the time of admission or re-admission within an eight year limit, unless, with the approval of the Graduate Dean, he or she elects to be bound by the course requirements of a subsequent catalog. This regulation applies to course requirements only.

Departmental Requirements—Doctoral candidates in Geological Sciences who intend to specialize in Geology, Geophysics, Geochemistry, or Geobiology must have an M.S. degree in the fields shown above. M.S. degree students in other scientific fields or Engineering must make up the basic geological training. This includes an individualized program of remediation including Field Camp (6465) or equivalent plus any other coursework recommended by the Graduate Studies Committee. Concurrently most of these students can proceed to the 30 hours coursework in their selected area of Geological Sciences. Of the 60 (post-baccalaureate) hours required for the Doctoral degree, no more than 9 hours may be at the upper division level.

For Undergraduate and Graduate Students

3325 Sedimentology
3432 Exploration Geophysics, Seismic Methods
3434 Exploration Geophysics, Non-Seismic Methods
3454 Paleozoic and Mesozoic Vertebrate Paleontology
1455 Vertebrate Paleontology Techniques
3456 Cenozoic Vertebrate Paleontology
1457 Advanced Vertebrate Paleontology
4458 Geology Applied to Petroleum
3462 Stratigraphy
1466-3466 Special Problems
1467-3467 Special Problems/Geophysics

NOTE: There is a limit of 9 credit hours of courses listed above for graduate degree programs.

For Graduate Students Only

1501 Technical Session (1-0)
Required of all graduate students. Discussion of various geological topics by the faculty, graduate students, and speakers from industry and other institutions. *Prerequisite*: Senior or graduate standing.

PALEONTOLOGY/SEDIMENTARY GEOLOGY

4505 Biostratigraphy (3-3)
The systematic analysis of the separation and differentiation of rock units on the basis of the assemblages of fossils which they contain; special emphasis will be placed on the evolution of biothermal systems through time and problems of the establishment and utilization of biostratigraphic units and chronostratigraphic boundaries. *Prerequisite*: Graduate standing in Geology or Biology, or permission of instructor. Lab Fee: $5.

3565 Tectonics and Sedimentation (3-0)
Sedimentary basin evolution within a plate tectonic framework is discussed from the standpoint of siliclastic and carbonate sedi-

mentologic/stratigraphic, and diagenetic variations. Field trips are included. *Prerequisite*: GEOL 3325 or permission of instructor.

3567 Advanced Stratigraphy (2-3)
The history, usage and subtleties of stratigraphy will be investigated through lectures, assigned readings, and examples. You will have your chance in the field to see if you agree with those who have defined real stratigraphic units. *Prerequisite*: GEOL 3462, or permission of instructor. Laboratory Fee: $8.

PETROLOGY

3541 Petrology of Carbonate Rocks (2-3)
Description and classification of carbonate rocks, recrystallization, dolomitization, depositional environments, major groups of lime-secreting organisms, energy interpretations; diagenesis, and porosity formation. *Prerequisites*: GEOL 3325 and permission of instructor. Laboratory Fee: $15.

3542 Petrography of Clastic Sedimentary Rocks (1-6)
Thin section and hand specimen studies of conglomerate, sandstone, and mud rocks with emphasis on interpretation of primary and secondary processes, porosity development, and classification. *Prerequisite*: GEOL 3325 or permission of instructor. Laboratory Fee: $15.

3544 Advanced Petrology (2-3)
Study of magmas and magma genesis in light of field, theoretical, and experimental considerations. The course includes interpretation of isotopic and trace-element data. Laboratory studies focus on field trips and petrographic description of thin-sections. *Prerequisites*: GEOL 3315 or equivalent; CHEM 3351-3352 recommended. Laboratory Fee: $8.

GEOPHYSICS

3552 Geophysical Inverse Theory (3-0)
The quantitative study of mathematical methods used to interpret geophysical measurements and determine earth structure. Techniques for both linear and non-linear geophysical problems are studied to determine the resolution and precision of a geophysical model from a given set of data. *Prerequisites*: GEOL 3432, 3434, and MATH 3323, or consent of instructor.

3553 Geophysical Data Processing (3-0)
The application of computers for the analysis of geophysical data to determine as much as possible about the constitution of the earth's interior. The construction, analysis and interpretation of mathematical and statistical models of geophysical phenomena for massive amounts of data are studied using the techniques of Fourier analysis and digital filters. *Prerequisite*: GEOL 3432.

3554 Seismology (3-0)
A study of earthquake seismology, seismotectonics, and the use of seismological methods to determine earth structure. A theoretical foundation is provided by the study of wave propagation in homogeneous and isotropic media from the standpoint of both ray and wave theory. *Prerequisites*: GEOL 3432, MATH 3436 and PHYS 3351, or consent of instructor.

2556, 3556 Topics in Geophysics
Study of advanced topics in the fields such as exploration geophysics, geothermics, theoretical seismology, potential field, data analysis, inversion, seismotectonics, crustal studies, and global tectonics. *Prerequisite*. Permission of instructor. May be repeated when the topic varies.

3557 Well Logging (1-2)
The application of well logs to hydrogeologic, petroleum, and mineral studies to characterize sedimentation history and quantitatively evaluate rock and fluid properties. *Prerequisite*: Graduate standing. Laboratory Fee: $10.

3559 Physics of the Earth (3-0)
Physics of the earth's interior including seismic velocity and density structure, seismic wave propagation and gravitational and magnetic fields. Thermal history of the earth. Chemical and mineralogical composition of the earth, radioactivity, isotopes and geochronology. Magma generation, crystal evolution and tectonic models. *Prerequisite*: MATH 3112 or equivalent or permission of instructor.

1563-3563 Special Problems in Geophysics
Prerequisites: Graduate standing and permission of instructor.

STRUCTURAL GEOLOGY

3570 Tectonics (3-0)
Extensive readings on selected topics in and a broad review of the major principles and theory of tectonics. *Prerequisites*: GEOL 4323 and graduate standing.

3572 Regional Structural Geology (3-0)
A survey of regional structural styles. Extensive reading of key papers will highlight the similarity and differences of similar structural provinces worldwide, with emphasis given to western North America. Structural styles to be examined include: rift systems, fold and thrust belts, foreland uplifts, passive margins, accreted terranes, and strike-slip provinces. *Prerequisite*: GEOL 4323.

3574 Physical Processes in Geology—Rock Mechanics and Rheology (3-0)
Introduction to geological applications of linear elasticity, linear elastic fracture mechanics, steady state heat and viscous flow, and plasticity. Plane analytic boundary value solutions will be developed to examine geological examples of folding, faulting, fracturing and intrusion. *Prerequisites*: MATH 3213, PHYS 4211 and GEOL 4323, or permission of the instructor.

GEOCHEMISTRY

3543 Isotope Geology (3-0)
Study of the systematics and geochemistry of radiogenic and stable isotopes. The course includes both geochronology and the use of isotopes as traces in igneous, sedimentary, and metamorphic processes. *Prerequisite*: Graduate standing.

3577 Principles of Geochemistry (3-0)
Chemical processes involved in the distribution and migration of the elements on the earth through space and time. Principles of solution and mineral equilibria in surficial, sedimentary, hydrothermal, and igneous environments. *Prerequisite*: Graduate standing.

3579 Petroleum Geochemistry (3-0)
Examination of the biologic, chemical, and geologic processes involved in the accumulation of petroleum-source rocks, including diagenesis, catagenesis, and metagenesis of petroleum prone organic matter; of migration, accumulation, and maturation of liquid hydrocarbons; and of geochemical parameters useful in hydrocarbon exploration. *Prerequisite*: Graduate standing or permission of instructor. Laboratory Fee: $8.

3580 Analytical Methods in Geology
Theory and application of x-ray diffraction, x-ray fluorescence, atomic absorption, differential thermal analysis, DCP, and spectro-fluorimetry to chemical analyses of geological materials. *Prerequisite*: Graduate standing, and/or permission of instructor. Laboratory Fee: $20.

ECONOMIC GEOLOGY

3594 Mining Geology (3-1)
Geologic mapping, sample drilling, reserve calculations and economic evaluation of actively exploited and potential economic mineral deposits. Mine visits required. *Prerequisite*: Graduate standing. Laboratory Fee: $15.

3597 Geology and Mineral Resources of Mexico (3-0)
Stratigraphic and structural framework of the Republic of Mexico with particular reference to the distribution of mineral resources. Field excursion required. *Prerequisite*: Graduate standing.

GENERAL GEOLOGY

1515-2515-3515 Selected Topics in the Geological Sciences
Study of advanced topics in such fields as structural geology, economic geology, paleontology, petrology, and geochemistry. *Prerequisite*: Permission of instructor. May be repeated when the topic varies.

1562-3562 Special Problems in Geology
Prerequisites: Graduate standing and permission of instructor.

3575 Quantitative Techniques in the Geological Sciences (2-3)
Introduction to techniques for quantitative analysis of geologic data. Emphasis on the extraction of maximum information from large data matrices. Specific applications to petroleum and mineral exploration. Laboratory Fee: $8.

3581 Remote Sensing (2-3)
Microprocessor-based techniques for digital analysis of remotely sensed imagery and other spatial data sets in the geosciences. Applications demonstrated in resource exploration and environmental-land use assessment. *Prerequisite*: GEOG 3308, or permission of instructor.

3582 Geohydrology (3-0)
A survey of geologic controls on the occurrence, movement, and quality of groundwater. Contamination, water resource management, and rock/water interactions will be stressed. *Prerequisite*: Graduate standing.

3584 Nuclear Waste Disposal (3-0)
In-depth study of problems and issues associated with the past, current, and projected principles and methods of nuclear waste disposal. The multidisciplinary legal, political and technical aspects of siting, operation, and decommissioning of reactors and the subsequent removal of source waste generated at these facilities is considered. The course examines waste removal, classification, containerization, quality assurance, and transport. Waste repository site selection, performance assessment, operation, and entombment in various geological media are stressed. *Prerequisites*: Graduate standing; students outside the colleges of Engineering and Science will require permission of the instructor.

1589-6589 Graduate Research in Geological Sciences
Cannot be used to satisfy minimum degree requirements. Grade of S or U. *Prerequisites*: Graduate standing and permission of instructor.

3598 Thesis

3599 Thesis

FOR DOCTORAL STUDENTS ONLY

1615-2615-3615 Advanced Topics in the Geological Sciences
Advanced topics in paleontology and stratigraphy, mineralogy, petrology, geochemistry, structural geology, economic geology, and geophysics. *Prerequisite*: Doctoral graduate standing and permission of instructor. May be repeated when the topic varies.

1605-2605-3605 Special Problems, Geology

1610-2610-3610 Special Problems, Geophysics

3620 Dissertation

3621 Dissertation

3696 Doctoral Research in Geological Sciences
Cannot be used to satisfy minimum degree requirements. Grade of S or U. *Prerequisite*: Doctoral standing and permission of instructor.

Ma ter of Sci nce in Int rdisciplinary Studies

210 Physical Science
(915) 747-5715

PROGRAM DIRECTOR: Rufus E. Bruce

The M.S.I.S. program is designed to satisfy the need for interdisciplinary graduate programs of study which cannot be accommodated within the confines of the normal graduate programs of the university's academic departments. Typical interdisciplinary courses of study include Arid Region Studies, Environmental Science, Resource Management, Engineering Management, Materials Science, curricula in Computer Applications, and others. All such interdisciplinary programs require courses from the offerings of several different departments. The curricula under the M.S.I.S. program are individually tailored to the needs of each student.

Requirements for Admission

In addition to the other Graduate School entrance requirements, applicants for the M.S.I.S. program must submit a letter outlining their proposed areas of study and their graduate education goal. Upon the receipt of the application documents and letter, an evaluation is made to determine the Program's ability to satisfy the needs of the applicant, and the applicant is subsequently advised. Upon acceptance of the applicant into the program, a Guidance Committee, made up of at least three graduate faculty members from different departments, is selected by the Program Director to guide the student in his or her program. Faculty selected will normally have interests and expertise in the student's proposed field of study. Courses for the individual study plan are determined by the committee in consultation with the student. This committee normally also acts as the student's examination committee.

Special Requirements for the M.S.I.S. Degree

The M.S.I.S. degree requires 36 hours of graduate credit coursework; at least 24 of these hours must be selected from 0500 or higher level courses. The individually designed curriculum must include courses from the offerings of at least three different departments with no more than 15 hours in the department of highest course concentration and no more than 12 hours of credit from any other single department. At least half of all semester hours credited toward the degree must be selected from graduate credit courses offered by science and/or engineering departments.

Up to six hours of individual instruction graduate-level problem solving courses may be used to satisfy degree requirements. Students enrolled in such courses are expected to submit a report of the work accomplished. If the student desires and the Guidance Committee concurs, this report may be bound and presented in the form of a thesis.

The individualized curricula are composed of courses listed under the various individual departmental offerings in this catalog.

Mathematical Sciences

124 Bell Hall
(915) 747-5761

CHAIRMAN: Simon Bernau

GRADUATE FACULTY: Bernau, Foged, Gregory, Guthrie, Kaigh, Khamsi, Moschopoulos, Nymann, Rojo, Schuster, Sewell, Srinivasan, Staniswalis

DEPARTMENTAL REQUIREMENTS FOR THE MASTER OF SCIENCE DEGREE IN MATHEMATICS OR STATISTICS

For students electing to write a thesis the program involves a minimum of 24 semester hours of acceptable coursework and 6 hours of credit for thesis. For those not writing a thesis, at least 36 hours of acceptable coursework are required. All but 9 hours must be graduate coursework. Those students working toward the M.S. degree in

Mathematics should include Mathematics 3529, 3531, and 3551 in their program. For students desiring the M.S. degree in Statistics, 3580, 3581, 3585, and 3588 should be included. The particular course of study for each student must be approved by the departmental committee on graduate studies. A comprehensive examination is required.

DEPARTMENTAL REQUIREMENTS FOR THE MASTER OF ARTS IN TEACHING DEGREE WITH A MAJOR IN MATHEMATICS

Requirements for Admission—In addition to the general requirements for admission to the Graduate School, students must have completed the calculus sequence together with 12 semester hours of advanced courses in mathematics. Since the degree is intended for high school teachers of mathematics, two years of classroom experience are required for admission to this program.

The Master of Arts in Teaching degree with a major in Mathematics requires 36 semester hours of coursework. Six to nine of these hours must be taken in the College of Education. The remaining hours must be taken in mathematical sciences or computer science. A maximum of 18 of these hours may be chosen from 3300 or 3400 level courses. Each student must have his or her courses approved by the Graduate Advisor in order to ensure adequate breadth of courses in the mathematical sciences. A comprehensive examination is required.

For Undergraduate and Graduate Students

3300 History of Mathematics
3319 Elementary Number Theory
3323 Matrix Algebra*
3325 Principles of Mathematics*
3327 Applied Algebra
3328 Foundations of Mathematics
3330 Probability (STAT)
3335 Applied Analysis I
3341 Introduction to Analysis*
3380 Sampling Techniques (STAT)
3381 Nonparametric Statistical Methods (STAT)
3425 Modern Algebra
3426 Linear Algebra
3429 Numerical Analysis
3436 Applied Analysis II
3441 Real Analysis I
3442 Real Analysis II
3480 Statistics I (STAT)

* Cannot be counted for an M.S. degree in Mathematical Sciences.

For Graduate Students Only

3511 Applied Mathematics I (3-0)
Mathematics 3511 and 3512 are designed to introduce the student to those areas of mathematics, both classical and modern, which are useful in engineering and science. Topics are chosen from variational calculus, optimization, tensor analysis, elliptic integrals, partial differential equations, and the theory of finite fields with applications to coding theory. The courses may be taken in either order, and they may be repeated once as content changes. *Prerequisites*: MATH 3226 and 3323. MATH 3335 and 3436 are desirable, but not necessary.

3512 Applied Mathematics II (3-0)
See MATH 3511.

3529 Numerical Analysis (3-0)
Introduction to approximation theory, interpolation, numerical differentiation and integration; solutions of linear and non-linear equations, numerical solution of differential equations, optimization. Emphasis is on error analysis and stability. Several practical examples and computer programs will be covered. *Prerequisites*: The analysis equivalent of MATH 3341 and a working knowledge of a high level programming language.

3530 Computational Methods of Linear Algebra (3-0)
Numerical methods involved in the computation of solutions of linear systems of equations, eigenvalues, singular values, generalized inverses; linear programming; error analysis. *Prerequisites*: The linear algebra equivalent of MATH 3323 and a working knowledge of the FORTRAN programming language.

3531 Real Variables I (3-0)
Measurable sets and functions, Lebesque-Slieljes integration, Baire categories, Lp spaces and various types of convergence. *Prerequisite*: MATH 3441 or its equivalent as approved by the instructor.

3532 Real Variables II (3-0)
A continuation of MATH 3531. *Prerequisite*: MATH 3531 or its equivalent as approved by the instructor.

3543 Numerical Solution to Partial Differential Equations (3-0)
Introduction to finite difference and finite element methods for the solution of elliptic, parabolic and hyperbolic partial differential equations. *Prerequisites*: MATH 3226 and 3429 or their equivalents and knowledge of a high level programming language.

3551 Complex Variables I (3-0)
Complex integration and the calculus of residues. Analytical continuation and expansions of the analytic function. Entire, meromorphic, and periodic functions. Multiple-valued functions and Reimann surfaces. *Prerequisite*: MATH 3441 or its equivalent as approved by the instructor.

3570 Seminar
Various topics not included in regular courses will be discussed. May be repeated once for credit as the content changes. *Prerequisite*: Consent of Instructor.

3580 Mathematical Statistics I (3-0)
The probability foundation of mathematical statistics. Probability spaces, random variables, probability distributions, expectation, generating functions, multivariate transformations, law of large numbers, central limit theorem. *Prerequisite*: Consent of the instructor.

3581 Mathematical Statistics II (3-0)
The theory of point and interval estimation and hypothesis testing for parametric models based on the principles of sufficiency, maximum likelihood, least squares, and the likelihood ratio. *Prerequisite*: MATH 3580.

3582 Probability Theory I (3-0)
A mathematical study of the notions of probability spaces, measurable functions and random variables, modes of convergence and limit theorems. *Prerequisite*: Consent of the instructor.

3583 Probability Theory II (3-0)
A mathematical study of central limit theorems for sequences of independent and dependent random variables; multivariate limit theorems, conditional expectation and Martingale theory; introduction to the theory of stochastic processes, in particular, Brownian motion. *Prerequisite*: MATH 3582.

3584 Linear Statistical Models (3-0)
The theory of estimation and hypothesis testing for linear statistical models with application to experimental design. Includes discussion of generalized inverses. *Prerequisites*: Linear algebra and consent of the instructor.

3585 Statistics in Research (3-0)
The fundamental concepts and applications of statistical analysis in research. Following a review of basic one and two-sample procedures the concentration is on multiple linear regression and analysis of variance. Emphasis on use and interpretation of output from statistical computer packages. *Prerequisites*: A basic statistics course and consent of the instructor.

3586 Stochastic Processes I (3-0)
A study of the theory and applications of stochastic processes. The role of stochastic processes, elements of stochastic processes. Markov chains, limit theorems, Poisson processes. *Prerequisite*: Consent of the instructor.

3587 Stochastic Processes II (3-0)
A study of the theory and applications of stochastic processes; birth and death processes, renewal processes, Brownian motion, branching processes, queueing processes. *Prerequisite*: MATH 3586.

3588 Multivariate Data Analysis (3-0)
The multivariate normal distribution, multiple correlation and regression analysis, principal components, discriminant analysis, factor analysis.

Emphasis on use and interpretation of output from statistical computer packages. *Prerequisite*: MATH 3585 or consent of the instructor.

3590 Nonparametric Statistics (3-0)
Distribution-free statistical methods; nonparametric one and two sample tests and analysis of variance; goodness-of-fit tests; nonparametric measures of association; robust procedures. *Prerequisites*: STAT 3280 or equivalent and STAT 3330.

3591 Time Series Analysis (3-0)
Identification, estimation, and forecasting of stationary and non-stationary models; special analysis, analysis of trend and seasonal variation; Box-Jenkins methodology. Computer packages for time series data analysis will be employed. *Prerequisite*: STAT 3330.

3592 Statistical Computing (3-0)
A study of stochastic simulation and select numerical methods used in statistical software. *Prerequisites*: A high-level programming language, linear algebra, and STAT 3480 or equivalent.

1595 Graduate Seminar
Conferences and discussions of various topics in mathematics and statistics by faculty, graduate students, and outside speakers. Required of all graduate students during each semester of full-time enrollment. May not be counted more than once toward the degree requirement.

3598 Thesis

3599 Thesis

Physics

214 Physical Science
(915) 747-5715

CHAIRPERSON: Juan O. Lawson
PROFESSOR EMERITUS: C. Sharp Cook
GRADUATE FACULTY: Bruce, Craig, Dean, Lawson, Lopez, McIntyre, Ordonez, Robillard, Russell, Wang

The Department of Physics offers studies leading to the degree of Master of Science in Physics with experimental and/or theoretical physics research in acoustics, atmospheric physics and optics, condensed matter and surface physics, geophysics, and radiation physics. Through a cooperative program with the Geological Sciences Department, the Master of Science in Geophysics is offered. The department also offers other cooperative plans that can lead to the doctorate degree. For details please write to the Graduate Advisor of the Physics Department.

General Departmental Requirements

The normal prerequisite to graduate studies in the Department of Physics is the bachelor's degree in physics with a "B" average in physics courses taken at the undergraduate level. The bachelor's degree coursework should include advanced undergraduate courses in Mechanics, Electromagnetics, Modern Physics, Quantum Mechanics, Thermal Physics, and advanced laboratory practice. Any deficiency must be removed before the petition is made for candidacy for the M.S. degree.

Master of Science in Physics

The department offers a program of courses and research leading to the M.S. degree in physics. Two routes are available. Plan 1 is the usual route to be taken and requires 30 semester hours of credit: 24 hours of coursework plus a six-hour thesis (Physics 3598 and 3599). Plan 2 is an alternative route and requires the favorable recommendation of the Physics Department Graduate Studies Committee and 36 hours of coursework including the successful completion of a research problem (Physics 3591) with a written report being submitted to the department.

Requirements for Plan 1 are a minimum of 21 semester hours of graduate work at the 0500 level including thesis. Specific courses required are Physics 3521, 3525, 3541, 3561, 3598, and 3599.

Requirements for Plan 2 are a petition stating the reason for the alternate route and a minimum of 27 semester hours of graduate work at the 0500 level. Specific courses required are Physics 3521, 3525, 3541, 3542, 3561, and 3591.

Students must have their course program approved by the graduate advisor each semester. The student will choose, in consultation with the graduate advisor, a chairperson of the research committee and at least two additional committee members, who will supervise the thesis or research problem. One member of this committee must be from outside the Physics Department. These choices will be made before the student has completed two semesters of graduate work.

The candidate for the M.S. degree in Physics may have no more than two grades of "C" for courses used to fulfill the requirements of the degree and must pass a final examination which will include an oral defense of the thesis or research problem.

Master of Science in Geophysics

Physics graduate students may elect to obtain the M.S. degree in Geophysics. This degree requires 30 semester hours including a six-hour thesis. A minimum of 21 hours must be at the 0500 level or above. For physics students, specific courses required are Physics 3521, 3525, 3541, 3598, and 3599. At least 12 hours of approved coursework must be selected from the Geology-Geophysics courses offered by the Geological Sciences Department. All physics graduate students with deficiencies in Geology undertaking this route to the Geophysics M.S. degree should consult the Graduate Advisor in the Department of Geological Sciences about the development of an individualized plan to remedy such deficiencies.

Thesis supervisory committees will have at least two geophysics representatives from the Geological Sciences Department.

For Undergraduate and Graduate Students

A maximum of 9 semester hours of the following undergraduate courses in physics may, with the approval of the graduate advisor, be counted toward a M.S. in Physics: (An asterisk indicates that the course will only be approved in exceptional cases.)

3323 Physical Optics
*3325 Survey of Modern Physics
*3331 Thermal Physics I
3332 Thermal Physics II
2343 Advanced Laboratory Practice
*3351 Analytical Mechanics I
3352 Advanced Mechanics II
*3359 Astrophysics
*3360 Biophysical Mechanics
3428 Theoretical Geophysics
*3441 Electromagnetics I
3442 Electromagnetics II
2446 Experimental Physics
*3448 Fundamentals of Acoustics
*3453 Methods of Mathematical Physics
3455 Modern Physics I
3456 Modern Physics II
*3478 Undergraduate Special Topics in Physics

For Graduate Students Only

3521 Mechanics (3-0)
Lagrange's equations, nonholonomic constraints, Hamilton's principle, two-body central force, rigid body dynamics, Lagrangian relativistic mechanics, Hamilton and Hamilton-Jacobi equations, canonical transformations. *Prerequisite*: PHYS 3352. Offered fall semester.

3525 Mathematical Physics (3-0)
Linear systems, special functions, complex variables, and tensor problems in Physics. Offered fall semester.

3532 Plasma Physics (3-0)
Physics of fully ionized gases. Waves and instabilities. Transport properties. Interaction of charged particles with electromagnetic fields. *Prerequisite*: PHYS 3432, 3442 or consent of instructor.

3541 Electrodynamics I (3-0)
Boundary value problems, polarization and stress tensor. Conservation laws and energy-momentum tensor. Relativistic electrodynamics. Covariant form of field equations. Potentials and gauge invariance. *Prerequisite*: PHYS 3442. Offered spring semester.

3542 Electrodynamics II (3-0)
A continuation of PHYS 3541.

3546 Atmospheric Radiation Processes (3-0)
The theory of radiative transfer including gaseous absorption and emission, aerosol extinction, atmospheric fluxes and heating rates, airflow and other atmospheric radiative phenomena. Applications are made to remote sensing of planetary atmospheres.

3551 Nuclear Physics (3-0)
Systematics of nuclei, binding energy, nuclear models, scattering of protons and neutrons, nuclear reactions, passage of charged particles and gamma rays through matter. *Prerequisite*: PHYS 3457 or consent of instructor.

3561 Quantum Mechanics (3-0)
Solution of the Schroedinger wave equation for discrete and continuous energy eigenvalues; representation of physical variables as operators and the matrix formulation of quantum mechanics; approximation methods. *Prerequisite*: PHYS 3456. Offered spring semester.

3565 Advanced Statistical Mechanics (3-0)
Classical and quantum statistics of systems in equilibrium. Treatment of fluctuations and transport phenomena. Introduction to many-body problems. *Prerequisite*: PHYS 3432 or equivalent as determined by the instructor.

3571 Solid State Physics (3-0)
Electromagnetic, elastic and particle waves in periodic lattices as applied to the electrical, magnetic and thermal properties of solids. *Prerequisite*: PHYS 3456 or consent of instructor.

3591 Research Problems in Physics (0-9)
Required course for the 36-hour non-thesis option. Requires two copies of a type-written report. May be repeated for credit; maximum credit allowed six hours. May not be counted as thesis research but may be taken one time as a preparatory investigation course prior to the beginning of thesis research. *Prerequisites*: Submission of the Petition of Candidacy and consent of Chairperson of Supervisory Committee.

3593 Special Topics in Physics (3-0)
Topics to be announced. May be repeated for credit.

1595 Graduate Seminar
May be repeated for credit up to a total of 3 hours.

1596-6596 Graduate Research in Physics (0-3, 0-6, 0-9, 0-12, 0-15, 0-18)
This course may be taken as often as needed, but no more than 3 semester credit hours may be applied to satisfy the requirements for the master's degree. *Prerequisite*: Consent of Graduate Advisor.

3598 Thesis

3599 Thesis

Graduate Faculty

JIM R. ADAMS, Assistant Professor of Communication, 1989
B.A., M.A., University of Denver; Ph.D., University of New Mexico

WESTON AGOR, Professor of Political Science, 1982
B.A., St. Lawrence University; M.P.A., University of Michigan; Ph.D., University of Wisconsin

MARY LOUISE ZANDER AHO, Associate Professor Emerita of Teacher Education, 1963
M.S.E., University of Florida; M.A., The University of Texas at El Paso; Ph.D., Florida State University

PATRICIA ADKINS AINSA, Associate Professor of Teacher Education, 1977
B.A., The University of Texas at El Paso; M.S., Eastern New Mexico University; Ph.D., University of Colorado at Boulder

JON AMASTAE, Professor of Languages and Linguistics, 1980
B.A., University of New Mexico; Ph.D., University of Oregon

MARIA ALVAREZ AMAYA, R.N., Assistant Professor in Nursing, 1979
B.S.N., The University of Texas at El Paso; M.S., Texas Woman's University; Ph.D., New Mexico State University

CHARLES H. AMBLER, Associate Professor of History, 1984
B.A., Middlebury College; M.A., Ph.D., Yale University

ELIZABETH YOUNGBLOOD ANTHONY, Assistant Professor of Geological Sciences, 1988
B.A., Carleton College; M.S., Ph.D., University of Arizona

EVAN HAYWOOD ANTONE, Associate Professor of English, 1967
B.A., M.A., The University of Texas at El Paso; Ph.D., The University of California at Los Angeles

PABLO ARENAZ, Associate Professor of Biological Sciences, 1984
B.S., M.S., University of Nevada at Reno; Ph.D., Washington State University

ARMANDO ARMENGOL, Associate Professor of Languages and Linguistics, 1977
B.A., M.A., Ph.D., University of Illinois

JOHN CLEVELAND ARNOLD, Associate Professor of Art, 1965
B.A., University of Minnesota; M.F.A., Arizona State University

ROY M. ARROWOOD, JR., Assistant Professor in the Department of Metallurgical and Materials Engineering, 1989
B.S., North Carolina State University; M.S., Ph.D., University of California, Davis

MICHAEL EVAN AUSTIN, Professor of Electrical Engineering, 1963
B.S.E.E., M.S.E.E., Ph.D., The University of Texas at Austin

WALTER G. AUSTIN, JR., C.P.A., Associate Professor of Accounting, 1979
B.B.A., M.B.A., Texas Tech University; Ph.D., The University of Texas at Austin

ALBERTO IAN BAGBY, JR., Associate Professor of Languages and Linguistics, 1973
A.B., Baylor University; M.A., University of Missouri; Ph.D., University of Kentucky

KENNETH KYLE BAILEY, Professor Emeritus of History, 1960
B.A., M.A., Ph.D., Vanderbilt University

MARIE ESMAN BARKER, Associate Professor of Teacher Education, 1968
B.A., M.A., The University of Texas at El Paso; Ed.D., New Mexico State University

GUIDO ALAN BARRIENTOS, Associate Professor of Psychology, 1963
B.A., Universidad de San Carlos (Guatemala); M.A., Ph.D., University of Kansas

CHARLES RICHARD BATH, Professor of Political Science, 1966
B.A., University of Nevada; M.A., Ph.D., Tulane University

JAMES EDGAR BECVAR, Associate Professor of Chemistry, 1978
A.B., College of Wooster; Ph.D., University of Michigan

RAYMOND BELL, Lecturer in the Department of Computer Science, 1985
B.A., Texas Western College; M.A., U.C.L.A.

ANDREW BERNAT, Associate Professor of Computer Science, 1982
B.S., Harvey Mudd College; M.A., Ph.D., The University of Texas at Austin

SIMON J. BERNAU, Professor of Mathematical Sciences, 1988
B.Sc. M.Sc., University of Canterbury, New Zealand; B.A., Ph.D., Cambridge University, England

SANDRA STEWART BEYER, Assistant Professor of Languages and Linguistics, 1972
B.A., Wichita State University; M.A., M.Phil., Ph.D., University of Kansas

SACHINDRANARAYAN BHADURI, Associate Professor in the Department of Mechanical Engineering, 1963
B.M.E., Jadavpur University; B.A., Calcutta University; M.S.M.E., State University of Iowa; M.E.S., Johns Hopkins University; Ph.D., Colorado State University

DENNIS J. BIXLER-MARQUEZ, Associate Professor of Teacher Education, 1978
B.A., M.Ed., The University of Texas at El Paso; M.A., Ph.D., Stanford University

EDWARD LEE BLANSITT, JR., Professor of Languages and Linguistics, 1967
B.H., Instituto Tecnologico de Mexico; Ph.D., The University of Texas at Austin

ROBERT TERRELL BLEDSOE, Professor of English, 1971
B.A., Harvard University; M.A., University of Kent at Canterbury; Ph.D., Princeton University

TOMMY J. BOLEY, Associate Professor of English, 1967
B.B.A., North Texas State University; M.A., Ph.D., The University of Texas at Austin

RENA BRANDS, R.N., Assistant Professor of Nursing, 1971
B.S.N., Loyola University; M.S.N., University of California at San Francisco; Ed.D., New Mexico State University

JEFFERY T. BRANNON, Associate Professor of Economics, 1982
B.A., University of New Mexico; Ph.D., University of Alabama

JOHN RICHARD BRISTOL, Professor of Biological Sciences, 1970
B.A., Cornell College; M.A., Ph.D., Kent State University

ARTURO BRONSON, Associate Professor of Metallurgical and Materials Engineering and Geological Sciences, 1983
B.S.Met.E., M.S., The University of Texas at El Paso; Ph.D., Ohio State University

GARY DONALD BROOKS, Associate Professor of Educational Leadership and Foundations, 1968
B.M.E., Millikin University; M.S.Ed., Ed.D., Indiana University

ELBA K. BROWN-COLLIER, Associate Professor of Economics, 1978
B.A., M.A., Texas Tech University; Ph.D., Duke University

RUFUS E. BRUCE, Professor of Physics, 1966
B.S., Louisiana State University; M.S., Ph.D., Oklahoma State University

ROBERT NORTHCUTT BURLINGAME, Professor Emeritus of English, 1954
B.A., M.A., University of New Mexico; Ph.D., Brown University

LOU ELLA BURMEISTER, Professor Emerita of Teacher Education, 1968
B.A., M.A., Ph.D., University of Wisconsin

RICHARD WEBSTER BURNS, Professor Emeritus of Teacher Education, 1952
B.A., University of Northern Iowa; M.S., Ph.D., State University of Iowa

BARTHY BYRD, Associate Professor of Communication, 1984
B.A., M.A., New Mexico State University; Ph.D., University of New Mexico

WILLIAM RALPH CABANESS, JR., Associate Professor of Chemistry, 1965
B.A., M.A., Ph.D., The University of Texas at Austin

SERGIO D. CABRERA, Assistant Professor in the Department of Electrical Engineering, 1992
B.S., Massachusetts Institute of Technology; M.S., University of Alabama; Ph.D., Rice University

MARGARITA CALDERON, Associate Professor of Educational Psychology and Special Services, 1990
B.A., M.A., The University of Texas at El Paso; Ph.D., Claremont Graduate School

ALBERT GEORGE CANARIS, Professor Emeritus of Biological Sciences, 1970
B.S., M.A., Washington State University; Ph.D., Oregon State University

HUGH FREDERICK CARDON, Professor of Music, 1963
B.M., M.S., The University of Texas at El Paso; D.M.A., University of Oregon

MARY HELEN CASTILLO, R.N., Associate Professor of Nursing, 1977
B.S.N., University of Texas System School of Nursing; M.S.N., The University of Texas at Austin; Ph.D., New Mexico State University

YI-CHIEH CHANG, Assistant Professor in the Department of Electrical Engineering, 1991
B.S., M.S., National Taiwan University; Ph.D., University of Michigan

IVA CHAPMAN, Assistant Professor of Speech-Language Pathology, 1991
B.S., M.S., University of Southern Mississippi; Ph.D., University of Tennessee

KENNETH FREDRICH CLARK, Professor of Geological Sciences, 1980
B.S., University of Durham; M.S., Ph.D., University of New Mexico

KENTON J. CLYMER, Professor of History, 1970
A.B., Grinnell College; M.A., Ph.D., University of Michigan

LAWRENCE DAVID COHN, Assistant Professor of Psychology, 1989
B.A., Boston University; Ph.D., Washington University

EDMUND BENEDICT COLEMAN, Professor of Psychology, 1965
B.S., University of South Carolina; M.A., Ph.D., Johns Hopkins University

BENNY WESLEY COLLINS, Associate Professor Emeritus of Kinesiology and Sports Studies, 1950
B.A., The University of Texas at El Paso; M.S., University of Utah

LURLINE HUGHES COLTHARP, Professor Emerita of Linguistics and English, 1954
B.A., M.A., Ph.D., The University of Texas at Austin

DON C. COMBS, Assistant Professor of Educational Psychology and Special Services, 1989
B.A., M.A., North Texas State University; Ed.D., New Mexico State University

CLARENCE SHARP COOK, Professor Emeritus of Physics, 1970
A.B., DePauw University; M.A., Ph.D., Indiana University

DANIEL COOKE, Assistant Professor of Computer Science, 1987
B.S., Sam Houston State University; M.S., Texas A&M University; Ph.D., University of Texas at Arlington

WILLIAM C. CORNELL, Associate Professor of Geological Sciences, 1971
B.S., M.S., University of Rhode Island; Ph.D., The University of California at Los Angeles

DOROTHY FRANCIS CORONA, R.N., Associate Professor Emerita of Nursing, 1977
B.S., Whitworth College; M.N., M.S.N., Case Western Reserve University

ELEANOR GREET COTTON, Associate Professor of Languages and Linguistics, 1960
B.A., M.A., The University of Texas at El Paso; Ph.D., University of New Mexico

JAMES H. CRAIG, JR., Professor of Physics, 1987
B.S., M.S., University of Wisconsin-Milwaukee; Ph.D., Washington State University

WILLIAM LIONEL CRAVER, JR., P.E., Professor of Mechanical Engineering, 1970
B.S.M.E., The University of Texas at Austin; M.S.M.E., University of New Mexico; Ph.D., University of Oklahoma

HOWARD C. DAUDISTEL, Associate Professor of Sociology, 1975
B.A., M.A., Ph.D., University of California at Santa Barbara

MICHAEL IAN DAVIS, Professor of Chemistry, 1968
B.Sc., Ph.D., University of London

JAMES FRANCIS DAY, Professor Emeritus of Educational Psychology and Special Services, 1955
B.S., M.S., Utah State University; Ed.D., Stanford University

EUGENE ALAN DEAN, Associate Professor of Physics, 1958
B.S., The University of Texas at El Paso; M.S., New Mexico State University; Ph.D., Texas A&M University

RICK DE MARINIS, Associate Professor of English, 1988
B.A., M.A., University of Montana

JORGE A. DESCAMPS, Associate Professor of Teacher Education, 1975
B.A., Noviciado San Estanislao, Havana, Cuba; B.A., M.A., University of Puerto Rico; Ed.D., University of Florida

JAMES VINCENT DEVINE, Professor of Psychology, 1967
B.S., M.S., University of New Mexico; Ph.D., Kansas State University

JOHN ALEXANDER R. DICK, Assistant Professor of English, 1971
A.B., Harvard University; M.A., Ph.D., Yale University

CARL W. DIRK, Associate Professor of Chemistry, 1990
B.A., Montclair State College; M.S., Ph.D., Northwestern University

DIANE I. DOSER, Associate Professor of Geological Sciences, 1986
B.S., Michigan Technological University; M.S., Ph.D., University of Utah

JACK ALLEN DOWDY, P.E., Professor of Mechanical Engineering, 1964
B.S.M.E., Southern Methodist University; M.S.M.E., Oklahoma State University; Ph.D., The University of Texas at Austin

JAMES E. EASTMAN, Associate Professor of Theatre Arts, 1984
B.A., University of Nevada at Reno; M.A., San Francisco State University; Ph.D., Bowling Green State University

KENNETH SCOTT EDWARDS, P.E., Professor Emeritus of Mechanical and Industrial Engineering, 1965
B.M.E., Cornell University; M.A.E., Yale University; Ph.D., Cornell University

CHARLES GAYLORD ELERICK, Professor of Languages and Linguistics, 1968
B.A., University of New Mexico; M.A., The University of Texas at El Paso; Ph.D., The University of Texas at Austin

REYNALDO S. ELIZONDO, Professor of Biological Sciences, 1987
B.S., Texas A&M University; Ph.D., Tulane School of Medicine

BARBARA B. ELLIS, Assistant Professor of Psychology, 1990
B.A., Hollins College; M.A., Ph.D., University of South Florida

JOANNE TONTZ ELLZEY, Associate Professor of Biological Sciences, 1969
B.A., Randolph-Macon Woman's College; M.A., University of North Carolina; Ph.D., The University of Texas at Austin

MARION LAWRENCE ELLZEY, JR., Associate Professor of Chemistry, 1968
B.A., Rice University; Ph.D., The University of Texas at Austin

JON MAURICE ENGELHARDT, Professor of Teacher Education, 1988
B.A., M.A., Arizona State University; Ph.D., The University of Texas at Austin

WILKE D. ENGLISH, Associate Professor of Marketing, 1982
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Index

Academic Probation and Dismissal 12
Academic Regulations 11
Academic Services Building 28
Academic Standing 11
Accounting 32
Administrative Officers 5
Admission and Evaluation, Office of 28
Admission into a Graduate Program 9
Admission into the Graduate School 9
Agency Counseling 42
Art 58
Attendance, Class 11
Attorney, Students' 27

Bad Checks 16
Bilingual Education 41
Biological Sciences 79
Board of Regents 5
Bureau of Business and Economic Research 24
Bursar, Office of the 28
Business 37
Business Administration, College of 32
Business Law 37

Calendar 7
Career Service, University 26
Centennial Museum 25
Center for Inter-American and Border Studies 25
Chemistry 80
Civil Engineering 48
Classification of Graduate Students 9
Communication 59
Computer Information Systems 37
Computer Science 49
Computing and Communications Services, Center for 24
Counseling, Testing, and Psychological Services 26
Course Drops, Faculty-Initiated 11
Course Load 11
Course Requirements (general) 12
Courses Counted for Another Degree 12
Creative Writing 60
Credit, Transfer of 12
Criminal Justice 60
Cross-Cultural Southwest Ethnic Study Center 25
Curriculum Specialist 39

Deadlines for Submission of Applications 9
Debts 16
Debts Owed to the University 16
Degree Application Procedures 13
Degree Requirements, General 12
Degree Requirements, Specific 13
Degrees Offered and Areas of Study Inside Front Cover
Directory for Correspondence Inside Back Cover
Disabled Student Services 27
Dissertation Requirements 13
Doctor of Philosophy Degree in Electrical Engineering 14, 50
Doctor of Philosophy Degree in Geological Sciences 14, 81
Doctoral Program in Border Studies, Cooperative 15

Early Childhood Education 41
Economics 35
Economics and Finance, Department of 35
Education, College of 39
Educational Administration 45
Educational Diagnostician 42
Educational Leadership and Foundations 44
Educational Psychology and Counseling 43
Educational Psychology and Special Services 42
Educational Research and Statistics 46
Educational Supervision 44
Electrical Engineering 50
Elementary Education 40
Endorsement (Special Education Counseling) 43
Engineering, College of 48
English 60
English and American Literature 60
English Language Institute 26
English Requirements 12
Entrance Examinations, Graduate 9

Facilities and Services 24
Fees, Incidental 18
Fees, Lab and Fine Arts 17
Fees, Mandatory 17
Final Examination (general) 13
Finance 36
Financial Assistance 23
Financial Information 17
Fox Fine Arts Center 25
French 66

Geological Sciences 81
Geophysical Laboratory 25
German 66
Grades and Grade Point Averages 11
Graduate Council 6
Graduate Credit, Reserving Courses for 10
Graduate Faculty 89
Graduate School 6
Graduate School Administration 6
Graduation 13
Graduation Requirements 13

Hazing 15
Health Center, Student 28
Health Eduction 77
History 62
Housing Expenses 20

Immunization Requirement 16
In-Absentia Registration 13
Incomplete Documents 10
Incomplete or In Progress Work 11
Industrial Engineering 54
Institute for Manufacturing and Materials Management 24
Instructional Specialist 39
Inter-Collegiate Athletics, Department of 29
International Student Services 27

Kinesiology 47
Kinesiology and Sports Studies 46
KTEP-FM 25

Laboratory for Environmental Biology 25
Languages and Linguistics, Department of 65
Liberal Arts, College of 58
Library 24
Linguistics 66

Magoffin Auditorium 25
Management 37
Management, Department of 37
Manufacturing Engineering 53
Marketing 38
Marketing, Department of 38
Master in Public Administration 14, 69
Master of Accountancy 13, 32
Master of Arts 13
Master of Arts in Education 39, 42, 45
Master of Arts in Interdisciplinary Studies 13, 64
Master of Arts in Teaching
(with a Major in Mathematics) 13, 85
Master of Business Administration 13, 34
Master of Education 14, 39, 42, 44, 47

Master of Music 14, 67
Master of Science 14
Master of Science in Health and Physical Education 46
Master of Science in Interdisciplinary Studies 14, 84
Master of Science in Nursing 14, 75
Master of Science in Social Work, Cooperative 14, 72
Mathematical Sciences 84
Mathematics Education 41
Mechanical Engineering 53
Mechanical and Industrial Engineering, Department of 53
Metallurgical and Materials Engineering 55
Music, Applied 68
Music, Department of 67
Music Education 68
Music, General 68
Music Literature and History 68
Music Theory 68

Nursing 76
Nursing and Allied Health, College of 75

On-Campus Housing, Student 28

Parking Fee 19
Pass/Fail Basis, Courses Taken on a 11
Payment, Methods of 19
Penalties 15
Philosophy 68
Physics 86
Policies and Procedures 11
Political Science 69
Post-Baccalaureate Admission 10
Prerequisites (general) 12
Professional and Continuing Education, Division of 25
Professional Writing and Rhetoric 61
Programs of Study 12
Psychology 71
Public History 63

Quantitative Methods (in Business) 37

Reading Education 39, 41
Real Estate 38
Records, Student Educational 16
Recreational Sports Department 28
Registrar, Office of the 28
Registration 11
Registration Changes, Student-Initiated 11
Regulations, General 15
Repetition of Courses 11
Residence 12
Residency Regulations for Tuition Purposes 20

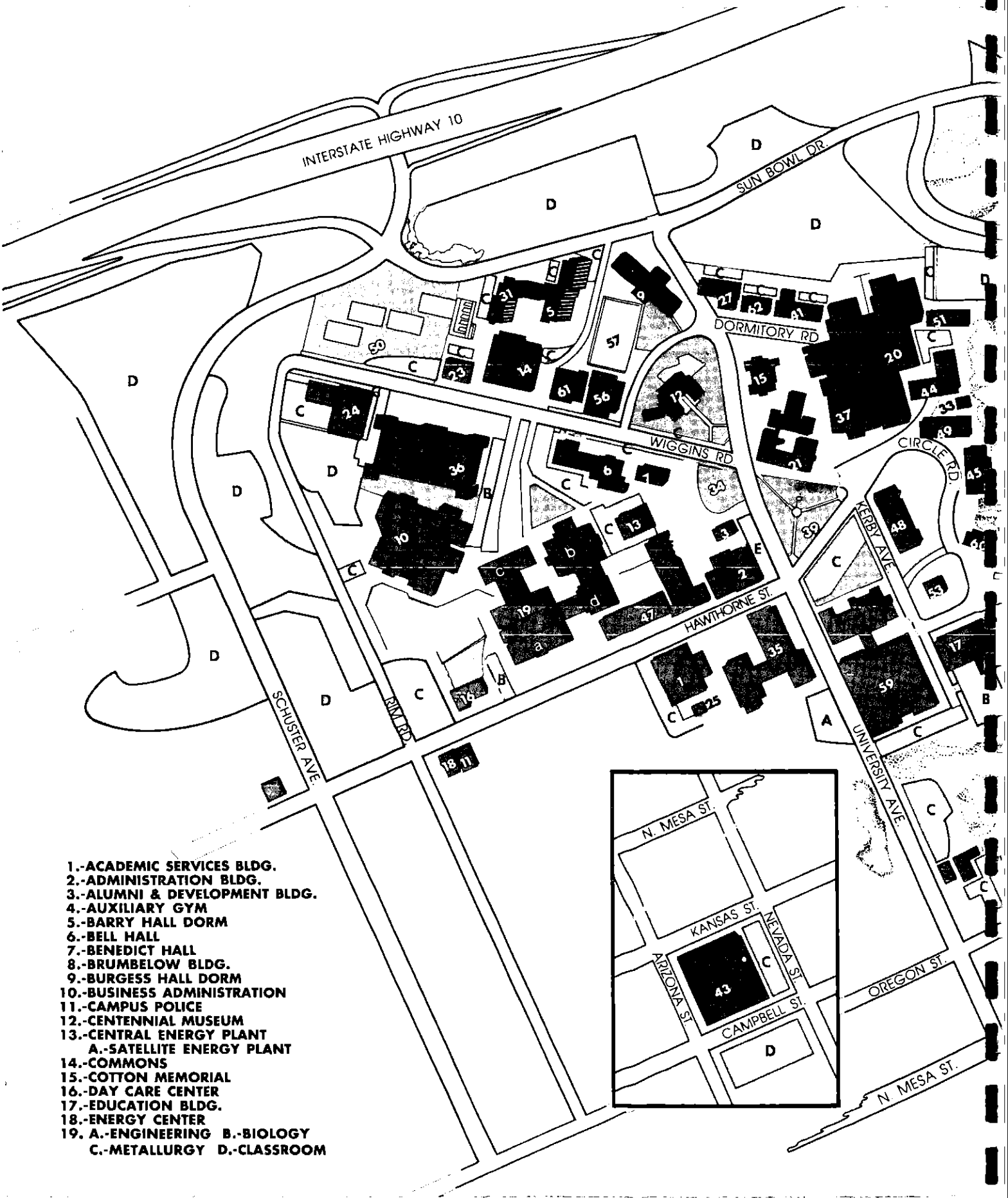
Schellenger Research Laboratories 25
School Counseling 42
Science, College of 79
Secondary Education 41
Seismic Observatory 25
Sociology, Anthropology, Social Work 72
Spanish 66
Special Education 43, 44
Speech 59
Speech-Language Pathology 77
Student Affairs, Office of 26
Student Association 27
Student Leadership Development 28
Student Life 26
Student Life Policies and Procedures 15
Student Organizations, Registered 27
Student Programs Office 28
Student Publications 28
Study Skills and Tutorial Services 27
Substitutions for the Thesis (general) 13

Teacher Certification 14, 40
Teacher Education 39, 40
Texas Western Press 24
Theatre Arts 73
Thesis Requirements (general) 12
Time Limits and Catalog Changes 12
Tuition 17
Tuition and Fees, Refund of 20

Union, The 26
University History 4

Veterans Affairs 28

Withdrawal from the University 11
Women's Resource Center 27



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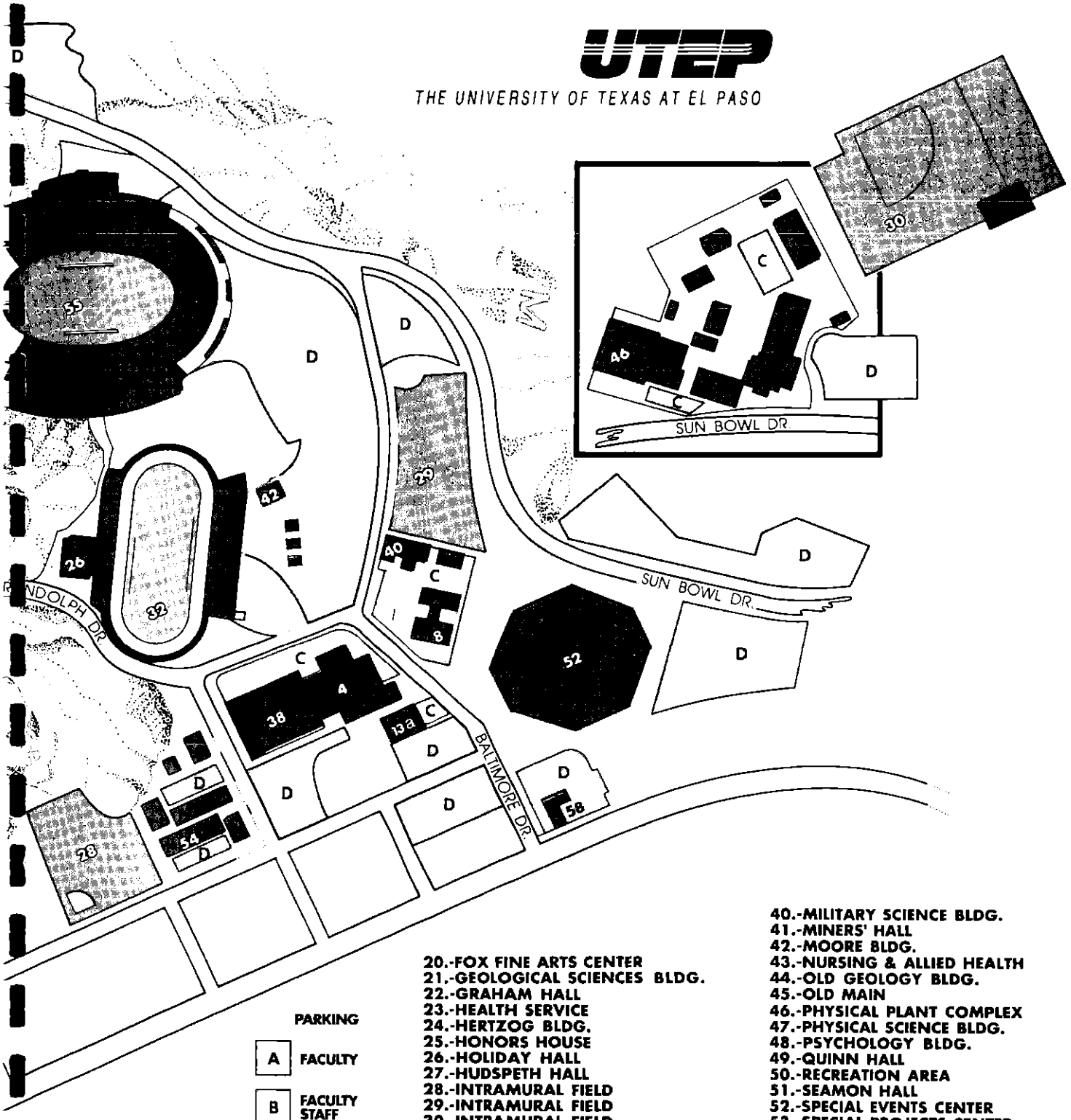

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- A — FACULTY
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