



**THE UNIVERSITY  
OF TEXAS  
AT EL PASO**

**Graduate Studies  
1983-1985**

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The University of Texas at El Paso hereby reserves the right to withdraw courses at any time, change fees, rules, calendar, curricula, degree programs, degree requirements, graduation procedures, and any other requirement affecting students. Changes will become effective whenever the proper authorities so determine and will apply to both prospective students and those already enrolled.

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The University of Texas at El Paso is accredited by the Southern Association of Schools and Colleges.

# THE UNIVERSITY OF TEXAS AT EL PASO

## Graduate Studies Catalog 1983-1985



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# GENERAL INFORMATION

## INTRODUCTION

The University of Texas at El Paso, second oldest academic component of the University of Texas System, was created in 1913 by the Texas Legislature as the Texas State School of Mines and Metallurgy. Since 1916 the campus has been located in the western foothills of the Franklin Mountains. The present campus has more than 300 acres. As the institution grew in size and increased its offerings over the years, the name was changed to the Texas College of Mines and Metallurgy in 1919, Texas Western College in 1949, and finally to The University of Texas at El Paso in 1967. Part of this growth and development came with the introduction of graduate study, first approved in 1940 with graduate courses offered the following year. The first master's degree, in history, was awarded in 1942.

The Doctor of Geological Sciences degree program was approved by the Coordinating Board of the Texas College and University System in 1974, with the first degree awarded in 1979.

The Graduate School is essentially a body of professors and scholars designated as Members or Senior Members of the Graduate Faculty and of students duly admitted to pursue their studies beyond the baccalaureate degree. All members of the Graduate Faculty are expected to maintain a national reputation in their field of scholarship. The administrative head of the Graduate School is the Graduate Dean. In academic areas or departments offering graduate level courses, the Members of the Graduate Faculty constitute an individual Committee on Graduate Studies. All recommendations made by committees on graduate studies are subject to review and approval by the Graduate Dean.

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 work is divided into *areas* and *departments*. Areas differ from departments in that they may be broader in scope, involving courses and research in several departments. The candidate for an advanced degree presents work done in a chosen major department or area, but is also usually expected to have done supporting work of an advanced level (upper division or graduate) in one or more associated areas. There are three component parts to graduate study: course work, independent study, and independent scholarly research leading to a report, thesis, or dissertation. No one of these component parts can be neglected by the graduate student, although the proportion of independent study to course work may vary according to the previous training of the individual student and the area chosen.

## Areas of Study and Degrees Offered

### Master of Arts

- Applied English Linguistics
- Drama
- Drama and Speech
- Economics
- Education
- English
- History
- Political Science
- Psychology
- Sociology
- Spanish
- Speech
- Speech Pathology and Audiology

### Master of Arts in Interdisciplinary Studies

### Master of Arts in Teaching

- Mathematics

### Master of Business Administration\*

### Master of Education

- Classroom Teaching
- Curriculum Development
- Educational Administration (with or without Professional Certificate)
- Educational Diagnostician
- Educational Psychology and Guidance
- Elementary Education
- Elementary Supervision
- Guidance and Counseling
- Health and Physical Education
- Reading
- Secondary Education
- Secondary Supervision

### Master of Music

### Master in Public Administration\*

### Master of Science

- Biology
- Chemistry
- Civil Engineering
- Computer Science
- Electrical Engineering
- Engineering
- Geology
- Geophysics
- Health and Physical Education
- Industrial Engineering
- Mathematics
- Mechanical Engineering
- Metallurgical Engineering
- Physics
- Statistics

### Master of Science in Interdisciplinary Studies

### Master of Science in Nursing

### Doctor of Geological Sciences

\*There is also a two-degree option in which students may pursue the M.B.A. and M.P.A. degrees simultaneously. See either program, in the pages which follow, under "Business Administration" or "Political Science."

# BOARD OF REGENTS OF THE UNIVERSITY OF TEXAS SYSTEM

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**JANEY SLAUGHTER BRISCO (Mrs. Dolph)**, Vice-Chairman  
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 B.A., University of Maryland; M.A., Rollins College, Ph.D., Indiana University

**WILLIAM C. ERSKINE, C.P.A.**, *Vice President for Business Affairs, 1981*  
 B.A., University of Washington

**MICHAEL EVAN AUSTIN**, *Dean, The Graduate School, 1963*  
 B.S.E.E., M.S.E.E., Ph.D., The University of Texas at Austin

**JOSE FERNANDO AVILA**, *Dean of Students, 1971*  
 B.S., M.Ed., The University of Texas at El Paso

**WILLIAM PHILLIP DUNLAP**, *Dean, The College of Education, 1982*  
 B.S., Southwest Missouri State University; M.S., Ph.D., University of Oregon

**ROBERT BELANGER GRIEVES**, *Dean, The College of Engineering, 1982*  
 B.A., M.S., Ph.D., Northwestern University

**FRED WILLIAM HANES**, *Director of Libraries, 1974*  
 A.B., Earlham College; M.A.L.S., Indiana University

**RONALD WAYNE HASTY**, *Dean, The College of Business Administration, 1983*  
 B.B.A., M.B.A., Eastern New Mexico University; D.B.A., University of Colorado

**WILLIAM CECIL HERNDON**, *Dean, The College of Science, 1972*  
 B.S., The University of Texas at El Paso; Ph.D., Rice University

**EILEEN M. JACOBI, R.N.**, *Dean, The College of Nursing and Allied Health, 1976*  
 B.S., M.A., Adelphi College; Ed.D., Teachers College, Columbia University

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

**WILLIAM PETER NELSEN**, *Director of Admissions and Registrar, 1978*  
 B.A., Tulane University

**ROBERT L. STAKES**, *Director, Adult and Continuing Education, 1982*  
 B.B.A., M.B.A., Lamar University

\*Year of first appointment at The University of Texas at El Paso.

## GRADUATE SCHOOL ADMINISTRATION

**MICHAEL EVAN AUSTIN**, *Dean*, 1963  
B.S.E.E., M.S.E.E., Ph.D., The University of Texas at Austin

**PHILIP JOSEPH GALLAGHER**, *Assistant Dean, ad interim*, 1972  
A.B., Providence College, M.A., Ph.D., University of Massachusetts

**GAIL LINDA MORTIMER**, *Assistant Dean*, 1976  
B.A., University of Tulsa; M.A., Ph.D., State University of New York at Buffalo (on leave, 1983-84)

**ELEANOR FLORENCE MITCHELL**, *Administrative Assistant*, 1972  
B.S.B.E., Lincoln University

\*Year of first appointment at The University of Texas at El Paso

## THE GRADUATE COUNCIL, 1983-1984

The Graduate Faculty of The University of Texas at El Paso (senior members, members, and ex officio members) 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, and includes the chairman of the Assembly (who automatically becomes chairman of the Council), two members elected from each college, and four elected at-large.

**ZBIGNIEW ANTHONY KRUSZEWSKI** (1984)\*  
Professor of Political Science  
Chairman, Graduate Assembly and Graduate Council

**KENTON J. CLYMER** (1984)  
Professor of History  
Member at Large

**BRAJA MOHAN DAS** (1986)  
Associate Professor of Civil Engineering  
College of Engineering

**HOWARD C. DAUDISTEL** (1985)  
Associate Professor of Sociology  
College of Liberal Arts

**ELDON EDWARD EKWALL** (1984)  
Professor of Curriculum and Instruction  
College of Education

**PHILIP HIMELSTEIN** (1986)  
Professor of Psychology  
College of Liberal Arts

**CARL THOMAS JACKSON** (1984)  
Professor of History  
Member at Large

**JOE LARS KLINGSTEDT** (1985)  
Professor of Curriculum and Instruction  
College of Education

**JOHN M. LANTZ** (1986)  
Associate Professor of Nursing  
College of Nursing and Allied Health

**JUAN OTTO LAWSON** (1985)  
Professor of Physics  
Member at Large

**DONALD E. MOSS** (1986)  
Associate Professor of Psychology  
Member at Large

**FRED W. NORWOOD** (1985)  
Professor of Accounting  
College of Business

**JAMES EUGENE NYMANN** (1985)  
Professor of Mathematics  
College of Science

**JOSEPH HENRY PIERLUISSI** (1984)  
Professor of Electrical Engineering  
College of Engineering

**ROBERT F. ROY** (1986)  
L.A. Nelson Professor of Geological Sciences  
College of Science

**DAVID B. STEPHENS** (1984)  
Associate Professor of Management  
College of Business

**MICHAEL EVAN AUSTIN**  
Dean of the Graduate School  
Ex-officio

\*Term expires on August 31 of year indicated.



## UNIVERSITY CALENDAR 1983-1985

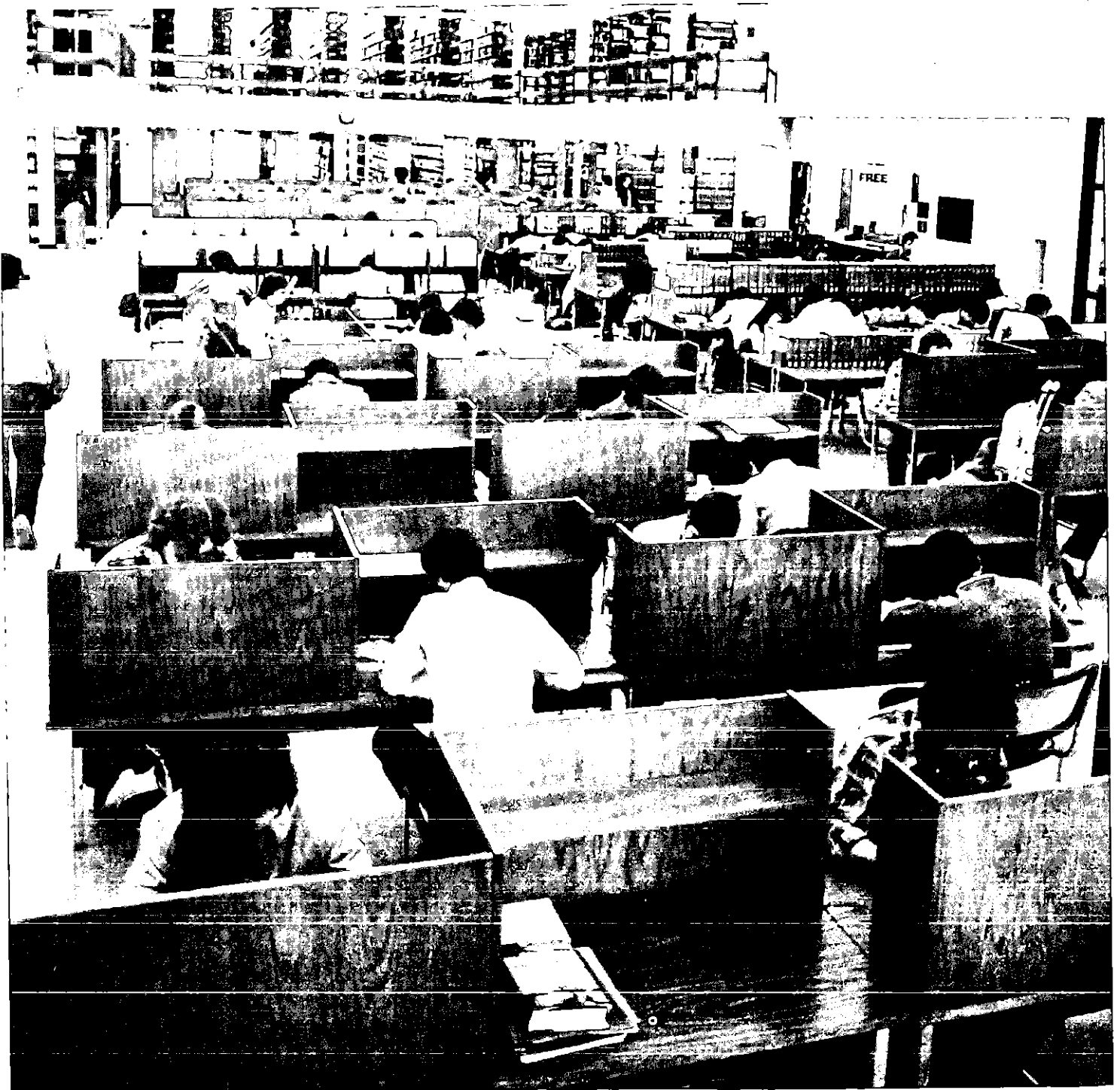
1983		FALL SEMESTER	1984	
Mon-Fri	Aug. 22-26	Last week of registration	Mon-Fri	Aug. 27-31
Mon	Aug. 29	Classes begin	Tue	Sept. 4
Fri	Sept. 2	Last day for late registration, fee payment, class or section additions or changes	Fri	Sept. 7
Mon	Sept. 5	Labor Day Holiday	Mon	Sept. 3
Wed	Sept. 14	Census Date	Wed	Sept. 19
Fri	Sept. 16	Application deadline for degrees to be conferred in December	Fri	Sept. 21
Mon	Oct. 10	Last day to drop a class or officially withdraw with an automatic W. After this date, grade of W or F determined by each instructor.	Mon	Oct. 15
Sat	Oct. 22	Homecoming	Sat	Oct. 13
Thur-Fri	Nov. 24-25	Thanksgiving Holiday	Thur-Fri	Nov. 22-23
Mon	Nov. 28	Course drop/withdrawal deadline. Students enrolled in courses after this date may not receive grade of W.	Mon	Dec. 3
Thur	Dec. 1	Deadline for graduate degree candidates for submission of thesis, dissertations and research papers, and for certification of graduate degree final examinations to the Graduate Dean.	Fri	Dec. 7
Fri	Dec. 9	Last day of classes	Fri	Dec. 14
Mon-Fri	Dec. 12-16	Final examinations	Mon-Fri	Dec. 17-21
Sun	Dec. 18	Winter Commencement	Sun	Dec. 23
	Dec. 19- Jan. 1	Winter Holidays		Dec. 24-Jan. 1
Mon	Jan. 2	University offices re-open	Wed	Jan. 2

1984		SPRING SEMESTER	1985	
Mon-Fri	Jan. 9-13	Last week of registration	Mon-Fri	Jan. 7-11
Mon	Jan. 16	Classes begin	Mon	Jan. 14
Fri	Jan. 20	Last day for late registration, fee payment, class or section additions or changes	Fri	Jan. 18
Fri	Jan. 28	Application deadline for degrees to be conferred in May	Fri	Jan. 25
Tue	Jan. 31	Census date	Tue	Jan. 29
Fri	Feb. 24	Last day to drop a class or officially withdraw with an automatic W. After this date, grade of W or F determined by each instructor.	Fri	Feb. 22
Mon-Fri	Mar. 12-16	Spring Holiday for students. No classes meet.	Mon-Fri	Mar. 11-15
Fri	April 20	Spring Holiday. No classes meet, University offices closed.	Fri	April 5
Mon	April 23	Course drop/withdrawal deadline. Students enrolled in courses after this date may not receive grade of W.	Fri	April 19
Fri	April 27	Deadline for graduate degree candidates for submission of thesis, dissertations and research papers, and for certification of graduate degree final examinations to the Graduate Dean.	Tue	April 30
Fri	May 4	Last day of classes	Fri	May 3
Mon-Fri	May 7-11	Final examinations	Mon-Fri	May 6-10
Sat	May 12	Commencement	Sat	May 11

1984		SUMMER SESSIONS	1985	
Fri	June 1	Registration, Summer I	Sat	June 1
Mon	June 4	Classes begin, Summer I	Mon	June 3
Thur	June 7	Census date, Summer I	Thur	June 6
Thur	June 7	Last day for late registration, fee payment, class or section additions or changes, Summer I	Thur	June 6
Fri	June 15	Last day to drop a class or withdraw with an automatic W, Summer I, 5-week classes. After this date, grade of W or F determined by each instructor.	Fri	June 14
Mon	June 18	Application deadline for degrees to be conferred in August	Mon	June 17
Tue	June 26	Last day to drop or officially withdraw with an automatic W, Summer I, 10-week classes. After this date, grade of W or F determined by each instructor.	Tue	June 25
Thur	June 28	Course drop/withdrawal deadline, Summer I, 5-week classes. Students enrolled in courses after this date may not receive grade of W.	Thur	June 27
Mon	July 2	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	June 28
Wed	July 4	Independence Day Holiday	Thur	July 4
Thur	July 5	Last day of classes, Summer I, 5-week classes	Wed	July 3
Fri-Sat	July 6-7	Final examinations, Summer I, 5-week classes	Fri-Sat	July 5-6
Sat	July 7	Registration, Summer II	Sat	July 6
Mon	July 9	Classes begin, Summer II	Mon	July 8
Thur	July 12	Census date, Summer II	Thur	July 11
Thur	July 12	Last day for late registration, fee payment, class or section additions or changes, Summer II	Thur	July 11

**8 / GENERAL INFORMATION**

Mon	July 23	Last day to drop or officially withdraw with an automatic W, Summer II	Mon	July 22
Thur	Aug. 2	After this date, grade of W or F determined by each instructor	Thur	Aug. 1
		Course drop/withdrawal deadline, Summer I, 10-week classes, and Summer II.	Fri	Aug. 2
Fri	Aug. 3	Students enrolled in courses after this date may not receive grade of W.		
		Deadline for graduate degree candidates for submission of theses, dissertations and	Thur	Aug. 8
		research papers, and for certification of graduate degree final examinations	Fri-Sat	Aug. 9-10
		to the Graduate Dean.		
Thur	Aug. 9	Last day of classes, Summer I, 10-week classes, and Summer II		
Fri-Sat	Aug. 10-11	Final examinations, Summer I, 10-week classes, and Summer II		



## ADMISSION TO GRADUATE STUDY

Applications for admission must be made to the office of the Dean of the Graduate School, where forms may be secured.

The following documentation must be presented to the office of the Dean before the application for admission to a degree program is acted upon:

1. Completed application form;
2. Proof of a bachelor's degree from an accredited institution in the United States or of equivalent training at a foreign institution. Graduates of U.T. El Paso must supply two complete transcripts on which the degree is posted; graduates of other American colleges and universities must provide one complete official transcript on which the degree has been posted; and graduates of foreign institutions must provide two complete official transcripts on which the degree has been posted;
3. Evidence of a satisfactory grade point average in upper division (junior and senior level) work and in any graduate work already completed;
4. A satisfactory score on either the Graduate Record Examination General (Aptitude) Test (GRE) or the Graduate Management Admission Test (GMAT), depending on the department involved, and the Test of English as a Foreign Language (TOEFL) for international students. All international students must take the Subject (Advanced) section of the Graduate Record Examination. In addition, the Departments of Modern Languages and Geological Sciences require all applicants to take the Subject (Advanced) sections of the examination in appropriate areas. Each applicant must have the official scores of required tests (GRE, GMAT, TOEFL) sent to the office of the Graduate Dean. Student copies are not acceptable;
5. Evidence of adequate subject preparation for the proposed graduate major.

The committee on graduate studies of the proposed major department will recommend acceptance, conditional acceptance, or rejection based on the information submitted. The committee's recommendation will be transmitted to the student by the Graduate Dean.

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.

### DEADLINE FOR SUBMISSION OF APPLICATION:

Individuals holding a baccalaureate degree from The University of Texas at El Paso should apply for admission at least thirty days prior to the beginning of the semester or summer session in which they plan to register. Those with degrees from other American universities or colleges should file their applications, along with official transcripts of all previous college or university work, at least sixty days in advance. International students should apply at least ninety days prior to the beginning of the semester or term. *All international students must take the Subject (Advanced) section of the Graduate Record Examination.*

Students from non-English-speaking foreign countries must make a score of at least 550 on the Test of English as a Foreign Language (TOEFL) given by the Educational Testing Service.

### THE GRADUATE RECORD EXAMINATION

**GENERAL (APTITUDE) TEST:** The General (Aptitude) Test of the Graduate Record Examination is designed to test preparation and aptitude for graduate study, and it must be passed with a satisfactory score by everyone seeking admission to all graduate programs except the M.B.A.; the M.P.A. program will accept either GRE or GMAT test scores. International students are required and all other students are encouraged to take the Subject (Advanced) part of the GRE test for their major. The test is taken at the applicant's own expense and is given five times a year, usually in October, December, February, April and June.

### THE GRADUATE MANAGEMENT ADMISSION

**TEST:** The GMAT is an aptitude test designed to measure certain mental capabilities important in the study of management at the graduate level, and it must be completed with a satisfactory score by all students seeking admission to the M.B.A. program; it may be taken instead of the GRE by students seeking admission to the M.P.A. program. The test is taken at the applicant's own expense and is given four times a year, usually in October, January, March and June.

**GRADE-POINT AVERAGE:** An applicant with a 3.00 average (on a scale of 4.00) in all work of upper division (junior and senior) and graduate level previously taken has satisfied the minimum requirements of the Graduate School in this regard. Some applications showing less than a 3.00 average may nevertheless be accepted upon special recommendation of departmental graduate advisors.

### ACCEPTANCE BY THE COMMITTEE ON GRADUATE STUDIES:

Students meeting other requirements for admission may nevertheless be denied admission by the departmental committee on graduate studies in their proposed area of study when there are more qualified applicants than can be accommodated in the available facilities or when there are more than can be adequately instructed by the available faculty.

**CONDITIONAL ADMISSION:** A student desiring to work toward an advanced degree in an area in which his undergraduate training is insufficient may be admitted with the understanding that coursework must be completed to make up the deficiencies noted by his graduate advisor. Such make-up work will be *in addition* to the regular degree requirements.

When a student with a less than minimum grade-point average or with a less than satisfactory GRE or GMAT test score is admitted on the recommendation of a graduate advisor, the first 12 semester hours the conditional student is to take will be assigned by the graduate advisor. Frequently, special conditions will be assigned regarding the number of semester hours to be taken and specific grade-point average to be maintained. If these conditions are not met, the student will be barred from subsequent registration in the Graduate School. Only in the most exceptional cases will conditional students be allowed to drop an assigned course.

### ENROLLMENT IN GRADUATE COURSES WITHOUT ADMISSION TO GRADUATE SCHOOL:

Individuals who have received a baccalaureate degree from an accredited institution (or its equivalent) but who have not supplied the documentation required for admission or individuals who do not wish to pursue a degree may enroll as "unclassified" graduate students and may register for courses (with the permission of the instructor). However, such registration does not constitute admission to the Graduate School nor can the courses taken prior to formal admission to the Graduate School be counted toward a graduate degree without a specific recommendation by the departmental graduate studies committee and approval by the Graduate Dean. Such approval is rarely given for coursework taken after the unclassified student's first semester on campus. Unclassified students who wish to request permission to count the coursework taken during their first semester on campus should complete the admission requirements during their first semester in residence. The unclassified student should consult the Graduate Dean for further information.

**FINANCIAL ASSISTANCE:** Scholarships, assistantships, work study and loan funds are available. Graduate scholarships are available to students of exceptional qualifications. Applications should be made to the Dean of the Graduate School.

Applications for scholarships are normally due on February 15th for awards that begin the following academic year.

Assistantship awards are handled by the departments. The College Work-Study Program and student loans are administered by the Financial Aid Office.

## ACADEMIC REGULATIONS

The successful applicant will be informed by mail about his or her admission. The student should then, at the earliest opportunity, meet with the assigned advisor. The course program must be approved *each* semester by the official graduate advisor of the major department before registration for courses.

**GRADES AND GRADE-POINT AVERAGE:** 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 3.00 at the end of the program of study. 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. 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 and dissertation courses) are counted in the average. A grade of A in a thesis course, dissertation course or in a specifically authorized seminar, conference or research course which involves a report in lieu of a thesis may not be used to offset a C.

In some courses the standard grading system is not practicable; such courses are not counted in the grade-point average.

A student may elect to take a 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.

The symbol I, meaning incomplete, reported in cases where the student has not completed all the assignments in a course before its conclusion, is valid for one year. Before the end of this time the student must turn in the required work for a regular grade. If the work has not been done 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.

Master's degree candidates must maintain, with the overall grade-point average, a 3.00 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.

**MAXIMUM COURSE LOAD:** The maximum course load for a graduate student is 15 semester hours, or 6 semester hours in a summer term; registration in excess of these maxima must have the special consent of the 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. Nine semester hours of graduate work is normally considered to be a full-time course load.

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

**REGISTRATION AND CHANGES IN REGISTRATION:** 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.

### CONTINUATION IN THE GRADUATE SCHOOL:

Registration in the Graduate School beyond the first semester (or summer session) is dependent on two factors: (1) Satisfactory progress in meeting any admission conditions that were imposed and (2) maintenance of a 3.00 grade-point average for all upper division and graduate courses taken in a given semester. Should a graduate student earn less than a 3.00 grade-point average in a given semester or summer session, continuance in the Graduate School is in jeopardy. During the next semester or summer session in which he or she is registered, a 3.00 grade-point average must be maintained; if not, the student will be dismissed.

The graduate student who has been dismissed may be readmitted for further graduate study only by petition of the committee on graduate studies of the department or area. This petition will be con-

sidered, and approved or disapproved, by the Dean of the Graduate School.

**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.

**EXTENSION:** Work done in extension classes, up to a limit of 6 semester hours, upon recommendation of the departmental committee on graduate studies and approval of the Dean, may be allowed for graduate credit, provided that (1) the courses and instructors are approved by the Graduate School and the department in which the student would have otherwise taken the work on campus; and (2) the applicant, before taking the extension course, is accepted for admission to the Graduate School and approved by the Dean for the courses desired. *Correspondence courses are not accepted for graduate credit.*

**RESERVATION OF WORK BY UNDERGRADUATES FOR GRADUATE CREDIT:** Ordinarily, undergraduates are barred from graduate courses. A student who has a bachelor's 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 lack not more than 12 semester hours (or 6 semester hours in a summer session) of work to complete all requirements for the first bachelor's degree and must have a grade point average of at least 3.00 in junior and senior 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 registration for all work must not exceed 15 semester hours (or 6 hours in a summer session).
4. All registration for graduate courses must be approved at the time of registration by the graduate advisor of the department and the Dean.

The undergraduate cannot count work in graduate courses toward the bachelor's degree. It will be reserved for credit toward a graduate degree. A form for reserving courses, which needs the signature of the undergraduate dean and the official graduate advisor in the student's major area, must be secured from the Graduate Dean's office.

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

**TRANSFER OF CREDIT:** Ordinarily all work for a graduate degree must be done at the University. Except as noted in the next paragraph, a maximum of up to 6 semester hours of graduate coursework may be transferred from another institution on the approval of the committee on graduate studies in the student's major area and the 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" was earned may not be transferred to U.T. El Paso.

**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 Dean upon the recommendation of the committee on graduate studies.

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 requirement 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.

**GRADUATION DATES:** Degrees will be conferred at the end of each semester and at the end of the summer session. Students intending to graduate must file an application for the degree prior to the deadline date published in the Schedule of Classes for the semester in which they plan to graduate.

**DEGREE APPLICATION PROCEDURES:** Graduate degree candidates must bring to the office of the Graduate Dean for approval an application for the degree signed by the departmental graduate advisor. The Graduate Dean-approved form must then be hand-carried to the Business Office for payment of the graduation fee. The degree application process is completed by filing the approved and paid application in the Office of Admissions and Records for the ordering of the diploma. This fee is not refundable if the student does not graduate on the date specified in the application.

The Graduate School discourages students from working toward more than one graduate degree at the same level.

**PETITION FOR CANDIDACY:** At the end of the first semester of full-time study, or upon completion of the first 12 hours of graduate work, each student must submit to the office of the Dean a Petition for Candidacy signed by the departmental graduate advisor. The petition shall show the courses taken and the courses required by the department before graduation. Petitions which show an incomplete grade or a GPA below a 2.00 average cannot be approved. Copies of the Petition for Candidacy are available in the office of the Dean.



## 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 3.00 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*.

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.

**ENTERING EXAMINATION:** The committee on graduate studies in the student's major area or department may, at its discretion, examine the student's undergraduate preparation before the application to enter the program is approved.

**COURSE REQUIREMENTS:** At least 30 semester hours of upper division and/or graduate instruction are required for any master's degree: 9 semester hours of upper division courses are the maximum allowable in any individual's program and not more than 6 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 eighteen semester hours in the major area and a minimum of six 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 Dean.

**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 semester hours of credit for the thesis, the student must register for course 3598 when work on the thesis is begun. Thereafter the student must register for course 3599 during each semester or term in which work on the thesis is being done.

Two completed and bound copies of the thesis, suitably titled, neatly typed 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.

**SUBSTITUTIONS FOR THE THESIS:** In certain instances substitutions for the formal thesis may be recommended to the Dean by the appropriate committee on graduate studies. Such substitutions may include internship reports (where the internship is approved as an essential part of the graduate program by the Dean) or reports prepared in certain graduate seminar- or conference-type courses. In every instance, such a substitution for the thesis must have the prior approval of the Graduate Dean. Reports should be comparable to the thesis in every respect except for the evidence of original research. It is required that the report be:

1. from a *specifically authorized seminar, conference, or research course* which has the prior approval of the Dean of the Graduate School;
2. reviewed and accepted by a supervising committee appointed by the Dean's office; upon acceptance of the report by the official committee, the candidate must submit two copies, entirely comparable to a thesis in all respects, to the Office of the Graduate Dean.

**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, is appointed by the Graduate Dean, on recommendation of the graduate studies committee of the department or area, and when a thesis is written, it will normally be the thesis committee. The committee will have one representative from the minor area. 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.

## SPECIFIC DEGREE REQUIREMENTS

**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 major or minor.
2. A major with a minimum of 18 semester hours including the thesis. Major fields for the Master of Arts include Drama and Speech (including speech pathology and audiology), Economics, Education, English, History, Linguistics, Political Science, Psychology, Sociology and Spanish.
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 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 "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 classroom. This option gives the student a broad background in mathematics, rather than a specialized research-oriented program. The particular courses taken would depend on the individual's background and interest and would be 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 prepare graduates 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 for 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 two-degree 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 listed for graduate credit.
3. A transfer student must complete at least 3 semester hours of the minor in residence.

Students who are employed in full-time teaching positions are limited to 3 semester hours of work each semester by the Texas Education Agency. With the written consent of the school superintendent, a student may take 6 semester hours of graduate credit for one semester a year.

**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 the Dean or Associate Dean of the College of Education in addition to the departmental graduate advisor.

**APPROVED PROGRAMS:** The following graduate programs have been approved by the Texas Education Agency and the State Board of Education for the Professional Certificate:

- Curriculum and Instruction:
  - Elementary Teaching
  - Secondary Teaching
- Educational Administration:
  - School Administration
  - Educational Supervisor in Elementary School
  - Educational Supervisor in Secondary School
- Educational Psychology and Guidance:
  - Counseling and Guidance
  - Education Diagnostician
- Health and Physical Education

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

**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 of 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 and 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 are permitted in a program, and no more than 6 hours may be included in either major or minor.
2. A major with a minimum of 18 semester hours including the thesis. Major fields for the Master of Science include Biology, Chemistry, Computer Science, Engineering, Geology, Health and Physical Education, Mathematics, and Physics.
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 of 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), or 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 "Interdisciplinary Studies" in this catalog.

**MASTER OF SCIENCE IN NURSING:** The curriculum of the Graduate Program in Nursing is designed to prepare professional nurses for advanced leadership through enhanced clinical practice, research, and role expansion.

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

**DOCTOR OF GEOLOGICAL SCIENCES:** The Department of Geological Sciences offers the Doctor of Geological Sciences degree to outstanding students who wish to continue graduate studies at the doctoral level. Although similar to most Ph.D. programs, this doctoral program is unique in that it requires an internship of nine months of practical experience in industry or a geological survey. This aspect of the program has proven invaluable to graduates who have entered teaching as well as those who have gone into industry. Another unique aspect of this program is the fact that 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 Doctor of Geological Sciences degree are found under "Geological Sciences" in this catalog.





# FINANCIAL INFORMATION

Tuition and fees are payable at the beginning of each semester and must be paid in full before the student will be permitted to enter class. The Business Office does not cash checks; however, checks are accepted in settlement of obligations to the University provided they are in the amount owed the University, and the maker has not previously had a check dishonored.

Non-Resident and International Students — \$40.00 per semester credit hour (no minimum). Final credit-hour requirement for thesis or dissertation only — \$50.00 for three semester credit hours.

## SUMMARY OF TUITION AND MANDATORY FEES

The fees shown in these schedules must be paid by all students registering for credit. The tuition and mandatory fees listed include a General Fee for Availability of Facilities of \$6.00 per semester hour, and a Student Services Fee of \$4.25 per semester hour (up to a maximum of \$51.00). Laboratory Fees, Fine Arts Fees, and Transportation Fees are charged, in addition to the scheduled fees, in those courses where applicable. All fees are subject to change by the State Legislature without notice. It is the student's responsibility to know the fees which are in effect for each semester in which the student enrolls.

### Fall and Spring Semesters (Each Semester)

Semester Hours	Resident Students	Non-Resident/ International Students	Nursing Students
1	\$60.25	\$50.25	\$30.00
2	70.50	100.50	40.50
3	80.75	150.75	50.75
4	91.00	201.00	61.00
5	101.25	251.25	71.25
6	111.50	301.50	85.50
7	121.75	351.75	99.75
8	132.00	402.00	114.00
9	142.25	452.25	128.25
10	152.50	502.50	142.50
11	162.75	552.75	156.75
12	173.00	603.00	173.00
13	181.00	649.00	179.00
14	191.00	695.00	185.00
15	201.00	741.00	191.00
16	211.00	787.00	197.00
17	221.00	833.00	203.00
18	231.00	879.00	209.00
19	241.00	925.00	215.00
20	251.00	971.00	221.00
21	261.00	1,017.00	227.00

### Summer Session

Semster Hours	Resident Students	Non-Resident/ International Students	Nursing Students
1	\$35.25	\$50.25	\$30.25
2	45.50	100.50	40.50
3	55.75	150.75	50.75
4	66.00	201.00	61.00
5	76.25	251.25	71.25
6	86.50	301.50	86.50
7	99.75	351.75	96.75
8	114.00	402.00	107.00
9	128.25	452.25	117.25
10	142.50	502.50	127.50
11	156.75	552.75	137.75
12	171.00	603.00	148.00

## TUITION

Tuition rates are established by the Legislature of the State of Texas. Rates for each long semester and each term of the summer session are:

Resident Students — \$4.00 per semester credit hour with Long Semester minimum of \$50.00 and Summer Term minimum of \$25.00. Final credit-hour requirement for thesis or dissertation only — \$12.00 for three semester credit hours.

Nursing Students: Semester Hours	Long Semester	Summer Term
1-5 (Minimum)	\$20.00	\$20.00
6	24.00	25.00
7	28.00	25.00
8	32.00	25.00
9	36.00	25.00
10	40.00	25.00
11	44.00	25.00
12 (or more)	50.00	25.00

## LABORATORY FEES

### ART

	Per Semester
3101, 3102, 3103, 3104, 3201, 3231, 3301, 3311, 3321, 3322, 3331, 3341	\$4.00
3205, 3225, 3305, 3325, 3335, 3401, 3405, 3425, 3431	6.00
3202, 3203, 3204, 3208, 3213, 3214, 3218, 3232, 3302, 3303, 3304, 3308, 3313, 3314, 3318, 3323, 3324, 3332, 3342, 3402, 3403, 3404, 3413, 3414, 3432	8.00

### BIOLOGICAL SCIENCES

Biology	1107, 1108, 1212, 1215, 1217, 1319, 1324, 1326, 1328, 1410, 1498, 2423, 2498, 2502, 3426, 3498, 3502, 3505, 3514, 3515, 3518, 3519, 3520, 3522, 3524, 3529, 4502, 5502	8.00
Botany	1334, 1336, 1340, 1473, 2338	8.00
Microbiology	1241, 1328, 1336, 1344, 1346, 1452, 1454, 1456, 2348	8.00
Zoology	1365, 1367, 1369, 1455, 1457, 1471, 3473, 1477, 1479, 1481	8.00

### BUSINESS ADMINISTRATION

Administrative Services	3101, 3102, 3103, 3104, 3301, 3302, 3305, 3306	5.00
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### CHEMISTRY

1310, 1324, 1325, 1326, 1351, 1352, 1465, 1470, 1476, 2106, 2214, 2321, 2322, 2412, 2476, 3476, 4420	8.00
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### DRAMA AND SPEECH

Speech	1104	2.00
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### ENGINEERING

Civil	4456, 4460, 4470	2.00
2396, 3313, 4390, 4448	4.00	
1234, 1236, 1453	6.00	
Electrical	1205, 1251, 4377, 1442, 1478, 2310, 2412, 1309, 1369, 1376, 2411	8.00

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Mechanical and Industrial	
Industrial 4377, 3236	4.00
Mechanical 3305, 3501, 4354, 4451, 4465	4.00
Metallurgical	
1101, 1203, 3412, 3413, 3541, 4304, 4305, 4306, 4307, 4415, 4405, 4418	6.00

**GEOLOGICAL SCIENCES**

1101, 1102, 1106, 1455, 1457, 3103, 3104, 3208, 3213, 3214, 3304, 3305, 3308, 3310, 3315, 3321, 3322, 3324, 3325, 3333, 3432, 3434, 3462, 3470, 3471, 3472, 3530, 3534, 3535, 3536, 3540, 3541, 3542, 3545, 3546, 3558, 3566, 3567, 3568, 3576, 3580, 3593, 4111, 4112, 4320, 4323, 4458, 4591, 4592	8.00
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**HEALTH AND PHYSICAL EDUCATION**

1101	4.00
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**LINGUISTICS**

1110, 1111, 1112, 1113	2.00
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**MODERN LANGUAGES**

French 4101, 4102; German 4101, 4102; Italian 4101, 4102; Latin 4101, 4102; Russian 4101, 4102; Spanish 4101, 4102, 4103, 4104	2.00
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**NURSING AND ALLIED HEALTH**

Allied Health	
1412, 1413	4.00
Nursing	
7302, 7303, 6305, 6306, 6307, 6310, 6317, 6318, 6319, 6320, 7370, 7371, 6401, 6405, 6410, 7410, 7411, 6419, 7471, 7472	4.00

**PHYSICS**

1120, 1121, 2343, 2446, 3101, 4103, 4104	8.00
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**PSYCHOLOGY**

1321, 1322, 3401, 3411, 1424	3.00
3523	5.00

**FINE ARTS FEES**

**ART**

3420, 3423, 3424, 3430, 3435, 3441, 3442 (except Art History and Art Education)	10.00
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**MUSIC**

Applied 2181, 2191, 2391, 2581	20.00
Applied 3181, 3191, 3391, 4191, 4391, 3581, 3591	35.00

**TRANSPORTATION FEES**

**BIOLOGICAL SCIENCES**

Biology 6425 — Transportation fee varies according to where course is based.

**GEOLOGICAL SCIENCES**

Geology 6465	200.00
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**SOCIOLOGY-ANTHROPOLOGY**

Anthropology 6247, 8447 — Archeology Field Courses — Transportation fee varies according to where course is based.

**OTHER MANDATORY FEES**

**GENERAL FEE FOR AVAILABILITY OF FACILITIES** — In accordance with the provisions of Article 2909c, V.C.S., the Board of Regents of The University of Texas System requires that every student who registers in The University of Texas at El Paso pay a compulsory

General Fee for Availability of Facilities (short title — General Fee) of \$6.00 per semester hour. Refund of this fee for students withdrawing or dropping courses is made on the same basis as refund of tuition.

**STUDENT SERVICES FEE** — Under authority of legislation enacted by the 56th Legislature, the Board of Regents has authorized a Student Services Fee in the amount of \$4.25 per semester hour, with a maximum of \$51.00. Students who do not pay the maximum \$51.00 fee will be excluded from some student activities. Students have the option to pay the full amount to obtain full student activity card usage. Activities supported from this source of income are Intercollegiate Athletics, Cheerleaders, Forensics, Student Health Service, Identification Cards, Intramural and Recreational Services, Student's Attorney, Music Performing Activities, University Players, Student Programs, Student Publications, Speech and Hearing Center, Student Association, Student Leadership Program and Swimming Pool. Refund of this fee will be made under the same conditions as refund of tuition and upon surrender of the student identification card.

**STUDENT GENERAL PROPERTY DEPOSIT** — Every student must make and maintain a General Property Deposit of \$10.00. This deposit is subject to charges for violation of library rules and for loss of or damage to University property. The student, upon notice from the Business Office, will be required to restore the deposit to the original amount any time it is reduced by fines or other charges. Payment must be made immediately upon request, and, pending receipt of payment, no credit will be allowed on the work of that semester or term, and the student will be ineligible to re-enter the University. The General Property Deposit will be refunded only when a student ends his career at the University. No refund will be made to a student who plans to continue work in a later semester or term. 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 and for the support of a general student union program. This policy applies to deposits heretofore paid as well as to those paid in the future.

**OTHER EXPENSES**

**LATE REGISTRATION CHARGE** — Any student who, with proper permission, registers after the appointed days for registering will be required to pay a special charge of \$5.00 for the first late day and \$2.50 for each additional late day to a maximum of \$15.00 to defray the cost of the extra services required to effect the late registration.

**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.

**GRADUATION FEE** — A graduation 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 described elsewhere in this section are not exempt from payment of this fee.

**PARKING FEE** — The Board of Regents has approved a parking fee as follows for those students desiring to park cars on the campus:

Fall Semester	\$10.00
Spring Semester	6.50
Summer Semester	4.00

Note: The fee is payable only once during the school year and is in effect from the date paid to the end of the school year in which paid. There will be no refund of the parking fee.

**REFUND OF TUITION AND FEES**

Refund policies are established 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	

Students withdrawing during a Summer Session term will be refunded applicable tuition and fees as follows:

Prior to first class day	100%	less \$15.00
During first three class days	80%	
During second three class days	50%	
After sixth class day	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 the first four class days of a Summer Session term, provided the student remains enrolled for that semester or term. Refunds for courses dropped by a student who withdraws later in the semester or term will be calculated according to the percentage schedules in the Withdrawals section above. 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 occurs and if records indicate the official withdrawal or drop was appropriately completed.

**OTHER FINANCIAL INFORMATION**

**EXEMPTION OF CERTAIN VETERANS OF MILITARY SERVICE** — Persons who have resided in Texas for at least twelve months prior to the date of registration, and who were citizens of Texas at the time of entry into military service, and who served in the Armed Forces or in certain of the auxiliary services in World War II (except those who were discharged because of being over the age of 38 or because of a personal request), the Korean War, and for more than 180 days during the Cold War, and were honorably discharged therefrom, and who are not eligible to receive educational benefits provided for veterans by the United States government, are exempt from the payment of tuition and certain required academic fees, but not from the payment of deposits. To obtain this exemption, the veteran must make application on the form prescribed by and obtained from the Financial Aid Office. A certified or photostatic copy of the veteran's service record (usually DD Form 214) must be submitted with the application. Exemption from fees described above also extends to the children of members of the Armed Forces who were killed in action or who died while in the service during the above named wars, and to orphans of members of the Texas National Guard who were killed while on active duty since January 1, 1946.

**HOUSING EXPENSES**

Rates for 1983-84, which include board of twenty meals per week and room with local telephone service, are as follows:

**KELLY AND BARRY HALLS, Room and Board:**

<b>SEMESTER CONTRACT - 4½ months</b>		
Double Room		\$1,216.00
Suite for Four (Kelly Hall ONLY)		1,287.00
Single Occupancy when available		1,466.00

<b>LONG SESSION CONTRACT - 9 months</b>	
Double Room	\$2,206.00
Suite for Four (Kelly Hall ONLY)	2,322.00
Single Occupancy when available	2,706.00

<b>SUMMER SESSION, PER TERM</b>	
Double Room	\$ 470.00
Suite for Four (Kelly Hall ONLY)	N/A
Single Occupancy when available	570.00

**STUDENT FAMILY APARTMENTS**

<b>MONTHLY (includes utilities)</b>	
Non-Renovated	\$ 250.00
Renovated	275.00

**SECURITY DEPOSITS**

Residence Halls	\$ 75.00
Student Family Apartments	100.00

Rates are subject to change by action of the Board of Regents, The University of Texas System.

Further information about the U.T. El Paso student housing facilities, as well as application forms, can be obtained from:

The Housing Office  
101 Kelly Hall  
U.T. El Paso  
El Paso, Texas 79968  
(915) 747-5353

**RESIDENCY REGULATIONS**

The following regulations apply to permanent residents of the United States.

Each student is responsible for paying the proper tuition rate based upon residency classification. If there is any question of legal residence in Texas under state laws and University regulations, the student must resolve the question with the Associate Director of Admissions before registration. Attempts on the part of a non-resident to evade the non-resident tuition will be taken seriously and may lead to expulsion. Any student who has paid the wrong tuition will be charged the difference and will be responsible for paying the additional amount before the next registration period. Any student classified as a resident who becomes a non-resident at any time by virtue of a change of legal residence is required to immediately notify the Office of Admission and Evaluation.

**MINORS**

An individual under 18 years of age who is living away from home 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 non-resident student.

An individual under 18 years of age or a dependent whose family has not resided in Texas for the 12-month period immediately preceding the date of registration shall be classified as a non-resident student.

An individual under 18 years of age whose parents were residents of Texas at the time of the student's registration is entitled to pay the resident tuition fee following the parent's change of legal residence to another state, as long as the individual remains continuously enrolled in a long semester in a state-supported institution of higher education.

**RESIDENCE OF INDIVIDUALS OVER EIGHTEEN**

An individual 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 legal Texas residence is maintained.

An individual 18 years of age or over who resides out of the state or who comes 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 non-resident student.

A non-resident 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 non-resident student may petition for reclassi-

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fication as a resident student as provided in the rules and regulations adopted by the Coordinating Board, Texas College and University System. Any individual reclassified as a resident student is entitled to pay the tuition for a resident of Texas at any subsequent registration as long as legal Texas residence is maintained.

### MARRIED STUDENTS

A non-resident who marries and remains married to a resident of Texas, classified as such under this Act at the time of the marriage and at the time the non-resident registers, is entitled to pay the resident tuition regardless of the length of time of residence in Texas, and any student who is a resident of Texas who marries a non-resident is entitled to pay the resident tuition as long as he or she does not adopt the legal residence of the spouse in another state.

A citizen of another country who marries a Texas resident should refer to the paragraph entitled "Citizens of Other Countries."

### MILITARY PERSONNEL AND VETERANS

Military personnel are classified in the following manner:

An officer, enlisted man or woman, selectee or draftee of the military service of the United States who is assigned to duty in Texas is entitled to register himself or herself, his or her spouse, and their children in a state institution or higher education by paying the tuition and other fees or charges required to Texas residents, without regard to the length of time of assignment to duty or of residence within the state.

A person in military service who wishes to pay the resident tuition personally or for dependents must submit before EACH registration a statement from the Commanding Officer or Personnel Officer certifying assignment to duty in Texas and that same will be in effect at the time of registration in an institution of higher education.

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 and other fees or charges provided for Texas residents.

A person who enrolls in an institution of higher education following separation from military service must be classified as a non-resident student unless, (1) he or she was a legal resident of Texas at the time of entrance into military service and has not relinquished that residence, (2) he or she can prove that during military service bona fide, legal residence in Texas was established at a time at least 12 months prior to registration, or, (3) he or she has resided in Texas other than as a student for 12 months prior to registration and subsequent to discharge from service.

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 resided within the State.

### EMPLOYEES OF INSTITUTIONS OF HIGHER EDUCATION OTHER THAN STUDENTS

A teacher, professor, or other non-student employee of a Texas institution of higher education is entitled to register himself or herself, his or her spouse, and their children in a state institution of higher education by paying the tuition and other fees or charges required for Texas residents without regard to the length of time of residence in Texas. A teacher, professor, or other employee of a Texas institution of higher education is any person employed at least one-half time on a regular monthly salary basis by a state institution of higher education.

### STUDENT EMPLOYEES

A teaching assistant, research assistant, or other student employee of any institution covered by this section is entitled to register himself or herself, his or her spouse, and their children in a state institution of higher education by paying the tuition and other charges required of Texas residents, without regard to the length of time of residence in Texas, provided that the student employee is employed at least one-half time in a position which relates to a degree program under rules and regulations established by the employer institution. This exemption shall continue through the summer session for students employed two consecutive semesters if the institution is unable to provide summer employment and, as determined under standards established by the institution, if the employee has satisfactorily completed employment.

### COMPETITIVE SCHOLARSHIPS

A non-resident student holding a competitive scholarship or service award of at least \$200 for the academic year or summer for which enrolled is entitled to pay resident tuition without regard to the length of time of residence in Texas, provided that he or she competes with other students, including Texas residents, for the scholarship and that the scholarship must be awarded by the University Scholarship Committee.

### CITIZENS OF OTHER COUNTRIES

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 of qualifying for resident status for tuition purposes under this Act as has a citizen of the United States.

### OFFICIAL CHANGE OF RESIDENCE STATUS

Every student classified as a non-resident shall be considered to retain that status until such time as application for reclassification is made and approved by the Office of Admission and Evaluation, 209 Administration Building. Additional questions concerning residence should be directed to this office.

## FACILITIES AND SERVICES

**THE LIBRARY** is central to the academic program, serving the research and study requirements of students and faculty with a rapidly expanding collection of books, periodicals, microforms, audiovisual materials, documents and maps. As of September, 1982, holdings of the Library include 531,076 books and bound periodicals, 113,538 documents, 4,929 serial and periodical subscriptions, 683,136 microforms and 72,097 maps. Although the map collection provides direct support to Geology and Geography, these holdings represent varied and important resources for all faculty and students.

The University Library, in addition to maintaining efforts to develop collections which strongly support the programs of the University, is an active participant in several cooperative networks and consortia. The Library's memberships in AMIGOS Bibliographic Network and the Center for Research Libraries provide additional library resources. Research facilities are also supplemented by interlibrary loan transactions with libraries throughout the United States.

The Library is fortunate to have several outstanding special collections of books and other materials which support important academic emphases at the University. The Mexican and Southwestern Collection, donated over the years by U. T. El Paso Professor John H. McNeely, is a major resource for scholars, and the Carl Herizog Collection of materials on print, books and book design is an interesting and valuable collection. Other special collections include the Judaica Collection, the Mexican Documents Microfilm Collection, and the S.L.A. Marshall Collection on Military History.

Latin American and Chicano Studies programs have developed rapidly in recent years, and the Library has added a variety of resources, both print and nonprint, to meet the study and research needs of these programs. New Library services have also been introduced to serve these growing fields of study.

The Science Library was added as a branch to serve the areas of Mathematics, Chemistry and Physics in 1970, and the Education Library was established in 1972. Both collections have extensive holdings of books, periodicals and other materials to serve students and faculty in these fields. In September, 1976, the Nursing/Medical Library became a branch of the University Library. Specialized materials in the Nursing/Medical Library include 12,000 books and 335 journal subscriptions. In 1978, the Library Annex was opened to house the Science Library collection as well as materials in the Bio-sciences and Engineering.

The Library staff includes 21 professional positions, 51 classified positions and approximately 100 student assistants. The Library is open 92 hours per week with some departments and branch libraries maintaining shorter schedules.

**THE COMPUTER CENTER** was established in March of 1974. Previous to that time, computing needs of the University were serviced by two separate centers: one for the academic community and one for the administrative area.

The Computer Center now functions as a service agency for all academic and administrative units within the University. In this capacity, the Computer Center supports all data processing needs, including data entry and processing for the administrative offices, and most of the computing needs for instruction and research in the academic departments.

Direct instruction in the area of computers through the Computer Science Department in the College of Engineering is augmented by computing instruction in many other departments. The Computer Center provides the facilities for this activity as well as consulting services for the benefit of faculty and students.

Currently, the Computer Center houses two computing systems. One is an IBM 4331-2 with two megabytes of real memory and more than 1.5 gigabytes of on-line direct access storage. This computer is dedicated to the McGill University System for Interactive Computing (MUSIC) under VM/SP. There are 107 terminals available for faculty and student use.

The second computer is an IBM 4341-MO2 with 8 megabytes of main memory and 4.5 gigabytes of on-line direct access storage. The computer currently runs two major operating systems, OS/MVT/HASP and MVS/SP-JES3, under VM/SP. This machine is shared by academic and administrative users. Administrative data processing needs are handled by a TOTAL data base system and ENVIRON/1 and CICS teleprocessing monitors supporting 50 terminals in various and administrative areas. The 4341 has two remote job entry stations and channel to channel communications to the IBM 4331.

Software installed for academic support includes various plotting packages; statistical packages including SPSS, BMD, NUCROS, and STATPAK; and language compilers including ALGOL-W, ALGOL-68, PASCAL, SNOBOL, LISP, WARFIV and WATBOL, as well as the standard compilers such as FORTRAN, COBOL, PL/1, BASIC and RPG.

Physical facilities of the Center are in three buildings. The administrative offices are located in Benedict Hall, first floor, south entrance. Computer operations, systems programming, production control, data entry and academic user services are located in the north section of Bell Hall, along with a small user area. The principal academic users' area has 34 terminals, several keypunches, a remote card reader and printer, documentation and some assistance.

### 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. SRL personnel have journeyed to Antarctica, Hawaii, Puerto Rico, and throughout the continental United States for research purposes.

SRL is open to proposals in various fields of the physical sciences, engineering, mathematics, the life sciences, and allied areas, for the extramural funding of research at The University of Texas at El Paso.

### THE EL PASO CENTENNIAL MUSEUM

opened in 1936 with funds allocated by the Commission for the Texas Centennial Celebration and is devoted to the preservation, documentation, and exhibition of objects and ideas pertaining to the human 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. The Museum is open to the public from 10 a.m. to 4:30 p.m. Tuesdays through Fridays of every week and on Sundays from 1:30 to 5:30 p.m.

### THE CROSS-CULTURAL SOUTHWEST ETHNIC STUDY CENTER

was established at the U.T. 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-containing 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.

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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 and Border Studies at U.T. 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 sociolinguistics 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/ U.T. El Paso, funded by the Texas Colleges Bicentennial Program, Inc., and (4) the Bilingual/Bicultural Education Symposium project funded by the Excellence Fund.

Currently the Center is undertaking a project on regional and national attitudes toward Hispanics and Hispanic immigration.

### **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 six seismographs and recorders for study of both short and long-period seismic waves. The records are used for research studies of earthquakes and related phenomena and are made available to the scientific community through an international data center.

### **THE J.W. MILLER MEMORIAL GEOPHYSICAL LABORATORY**

is a major research arm of the Department of Geological Sciences. This facility includes computer interfaced laboratory equipment for seismic and radioactivity measurements and a state-of-the-art seismic recording system.

### **THE CENTER FOR CONTINUING EDUCATION**

has a three-fold function:

1. To present courses or programs to answer community needs for education or training outside the regular channels of instruction. Although college credit is not granted for such work except in limited selected courses, certificates from the University are presented to those who complete the courses. In addition, if the course meets specified requirements, each person who completes it is awarded Continuing Education Unit credit.
2. To coordinate and administer conferences, seminars, symposia, special educational programs, etc., initiated by academic units or individual faculty and designated primarily for non-university personnel and agencies. Activities in this category may result in the award of academic credit or Continuing Education Units, as appropriate, if the activity meets specified requirements.
3. To provide extension courses for academic credit.

### **THE BUREAU OF BUSINESS AND ECONOMIC RESEARCH**

was established on the campus in September, 1963. The Bureau presently has as its objectives the continuous survey of the economy of El Paso and its immediate environs, and conducting research to build up information data resources for the Border region. Additionally, the Bureau conducts, supervises, and publishes studies of interest to the University, the academic and the business communities.

The Bureau vigorously seeks and supports funded research in all areas related to business and/ or economics.

The Bureau has been designated a State Affiliate for the Texas State Data Center. As such, the Bureau is building an updatable, computerized data bank to serve the community.

The Bureau publishes the **Southwest Business and Economic Review**, a quarterly review that publishes academic articles and research reports of interest to the academic and business community. The Review also publishes a quarterly report on local economic barometers and a summary of the El Paso economy based on a monthly survey conducted by the Bureau. The publication is distributed to many of the business firms in El Paso, Colleges of Business throughout the nation and approximately 1000 subscribers.

**TEXAS WESTERN PRESS** is an internationally known book publisher and university press. It issues hardback books written by faculty members and off-campus authors, 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 1930 Wiggins.

### **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 multi-institutional organizations that deal with inter-American and border issues. It also plays a prominent role in the special relationship between U.T. El Paso and La Universidad Autonoma de Chihuahua.

### **THE CENTER FOR PROFESSIONAL DEVELOPMENT**

is a recently formed program which combines the resources of the College of Business Administration and the Division of Continuing Education. It is designed to provide developmental and educational opportunities not only for the highest level business manager and other professionals, but to their staff members as well.

Through workshops, seminars, conferences, and symposia, the Center offers dynamic, 'real-world' experiences to enhance individual growth and organizational success through a continuing series of presentations. These include up-dating opportunities for top executives, development for mid- and first-level managers, and staff development training.

Programs vary in length from a few hours, to one-day, to weekend sessions, to a number of weeks. University faculty, local business practitioners, and nationally and internationally recognized talent are employed to enhance the quality of seminars, lectures, and workshops.

The Center also produces specific in-house presentations for clients with special needs, and in addition, can assist specific professional groups on a cooperative basis, to provide them with continuing education that meets licensing and certification requirements.

The Center for Professional Development (located on the first floor of the College of Business Administration building) is committed to the continuing education premise of life-long learning; it serves to link the business and professional community to the educational and developmental resources needed to remain current and up-dated.



# PROGRAMS OF STUDY

## ACCOUNTING

260 College of Business  
(915) 747-5192

CHAIRPERSON: Fred W. Norwood  
GRADUATE FACULTY: Collier, Ibarreche, Mayne, Norwood, Pate, Seglund

At present the Accounting Department does not offer a graduate level degree, but it does participate in the Master of Business Administration degree, the requirements of which are found under "Business Administration" in this catalog.

For Undergraduate and Graduate Students

- 3401 Advanced Accounting (3-0)
- 3402 Special Problems in Accounting (3-0)
- 3403 Accounting Systems (3-0)
- 3404 Auditing Principles and Procedures (3-0)
- 3421 Advanced Cost Accounting (3-0)
- 3422 Advanced Income Tax Research and Planning (3-0)
- 3423 Advanced Auditing (3-0)
- 3497 C.P.A. Problem Review (3-0)

For Graduate Students Only

### 3510 Corporate Accounting Development (3-0)

Accounting principles and their development in relation to the accounting problems of the corporation. Emphasis is placed on the administrative use of accounting data in corporate affairs and on the analysis and interpretation of accounting data, including financial statements. *Prerequisite:* Accounting 3309 or equivalent.

### 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:* Accounting 3309 or equivalent.

### 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:* Accounting 3511 or equivalent.

### 3514 Managerial Tax Planning (3-0)

A study of special income tax problems of all taxpayers; directions toward tax planning, federal estate and gift taxes, losses, claims for refund. *Prerequisite:* Accounting 3327 and 3328.

### 3580 Directed Individual Study in Accounting (3-0)

*Studies of topics not included in or going beyond the required course offerings. May be repeated for credit. Prerequisite:* Consent of instructor.

### 3590 Accounting Seminar

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.

## ART

350 Fox Fine Arts  
(915) 747-5181

CHAIRPERSON: Charles Fensch  
PROFESSOR EMERITUS: Wiltz Harrison  
GRADUATE FACULTY: Arnold, Bishop, Fensch, Gregory, Massey, Perlman, Simpson, Thiewes

At present the Art Department does not offer a graduate-level degree, but the following upper division undergraduate courses may be used for graduate credit when appropriate:

## 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

## 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

### 3502 Graduate Problems in Art (0-6)

This course stresses individual direction and achievement in the following areas: art education, art history, ceramics, drawing, metals, painting, printmaking, and sculpture. May be repeated for credit. Fine Arts Fee: \$10, except when problem is in art history or education.

## BIOLOGY

226 Engineering Science Complex  
(915) 747-5164

CHAIRPERSON: William H. Reid  
GRADUATE FACULTY: Bristol, Canaris, Ellzey, Freeman, Harris, Hunter, Jones, Metcalf, Rael, Redetzke, Reid, Robertstad, Salo, Webb, Worthington, Zajic

## DEPARTMENTAL REQUIREMENTS FOR THE M.S. DEGREE

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. Biology 3502 (Research in the Biological



Sciences) may be taken for not more than a total of six hours of credit toward the 30 semester hour requirement. Each student is required to take Seminar (1530) twice for two hours of credit toward 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 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 of 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) twice for two hours of credit 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 by the department. An oral examination is required prior to conferral of the degree.

## 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)
- 3324 Introductory Plant Ecology (3-0)
- 1324 Plant Ecology Techniques (0-3)
- 3326 Animal Ecology (3-0)
- 1326 Animal Ecology Techniques (0-3)
- 3328 Microorganisms in Ecosystems (3-0)
- 1328 Microbial Ecosystems Techniques (0-3)
- 3341 Plants in Southwest Cultures (3-0)
- 3410 Ecosystem Analysis (3-0)
- 1410 Ecosystem Analysis Laboratory (0-3)
- 3422 Biological Ultrastructure Interpretation (3-0)
- 2423 Transmission Electron Microscopy (0-4)
- 3424 Animal Behavior (3-0)
- 3426 Bioarchaeology (2-3)
- 6425 Field Biology (3-9)
- 3490 Biological Practicum (3-0)
- 1498-3498 Special Problems (0-6)

## MICROBIOLOGY

For Undergraduate and Graduate Students

- 3335 Mycology (3-0)
- 1336 Mycological Techniques (0-3)
- 3343 Pathogenic Microbiology (3-0)
- 1344 Diagnostic Bacteriology (0-3)
- 2347 Determinative Microbiology (2-0)
- 2348 Determinative Techniques (0-6)
- 3328 Microorganisms in Ecosystems (3-0)
- 1328 Microbial Ecosystems Techniques (3-0)
- 3345 Microbial Physiology (3-0)
- 1346 Microbial Physiology Methods (0-3)
- 3349 Bacterial Genetics (3-0)
- 3350 Food Microbiology (3-0)
- 1350 Food Microbiology Techniques (0-2)
- 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)
- 3460 Industrial Microbiology (3-0)
- 3461 Soil and Geomicrobiology (3-0)

## BOTANY

For Undergraduate and Graduate Students

- 3330 Comparative Plant Morphology (3-0)
- 3333 Plant Anatomy (3-0)
- 1334 Plant Anatomy Techniques (0-3)
- 3335 Mycology (3-0)
- 1336 Mycological Techniques (0-3)
- 2337 Plant Taxonomy (2-0)
- 2338 Plant Identification Techniques (0-4)
- 3340 Plant Physiology (3-0)
- 1340 Plant Physiology Techniques (0-3)
- 3430 Advanced Plant Ecology (3-0)
- 3472 Phycology (3-0)
- 1473 Phycological Methods (0-3)

## ZOOLOGY

For Undergraduate and Graduate Students

- 2364 Medical Parasitology (2-0)
- 1365 Identification of Human Parasites (0-3)
- 3366 Invertebrate Zoology (3-0)
- 1367 Invertebrate Zoology Investigative Techniques (0-3)
- 2368 Entomology (2-0)
- 1369 Entomology Techniques (0-3)
- 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)
- 3470 Protozoology (3-0)
- 1471 Protozoological Methods and Techniques (0-3)
- 3473 Animal Parasitology (0-4)
- 3476 Lower Vertebrates (3-0)
- 1477 Lower Vertebrate Identification Techniques (0-3)
- 3478 Natural History of Birds and Mammals (3-0)
- 1478 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.

### 2502-5502 Research in the Biological Sciences

Emphasizes research, with writing and discussion. Not given as a formal class. May be repeated but for no more than six hours of credit. Laboratory fee: \$8.

### 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.

### 3507 Biology of the Pleistocene (3-0)

A study of the organisms of the Pleistocene.

### 3509 Microbial Genetics (3-0)

A study of the genetics of microorganisms.

### 3510 Animal Virology (3-0)

The molecular biology and pathogenesis of animal viruses. Recent discoveries and new directions of research will be emphasized. *Prerequisite:* Microbiology 3451 and 1452 or approval of instructor.

### 3512 Recent Advances in Microbiology (3-0)

Current topics in Microbiology.

### 3513 Biogeography (3-0)

Geographic distribution of plants and animals, and analysis of causative factors.

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### 3514 Physiological Ecology (2-3)

Physiological adaptations of organisms to different environments; desert adaptations emphasized. Laboratory fee: \$8.

### 3515 Analytical Cytology (1-4)

Techniques of fixation, ultramicrotomy, photography, vacuum evaporation and transmission electron microscopy with interpretation of results. Laboratory fee: \$8.

### 3516 Biosystematics (3-0)

Methods and principles of taxonomy, classification, and systematics.

### 3517 Plant Ecology (3-0)

Plant communities and factors determining them.

### 3518 Identification and Ecology of Desert Plants (2-3)

The identification and adaptation of desert plants. Laboratory fee: \$8.

### 3519 Ecology and Physiology of Animal Parasites (2-3)

Field and laboratory investigations of animal parasites. 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.

### 3522 Malacology (2-3)

A survey of mollusks, emphasizing the fauna of the Southwest. 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.

### 3525 Biology of Fungi (3-0)

A modern approach to fungal regulation, development and ecology emphasizing current literature and research techniques.

### 3526 Advances in Immunological Concepts (3-0)

Study of immunological and immunochemical concepts. Emphasis will be placed on recent experimental advances in immunology. *Prerequisite:* Microbiology 3453 and 1454 or approval of instructor.

### 3527 Ecological Theory and Its Application (3-0)

Recent advances in ecological theory and their application to questions in adaptation, community structure, and environmental science.

### 3528 Determinative Methods in Biological Sciences (3-0)

Study and application of specialized determinative methods in the biological sciences. The digital computer is utilized. *Prerequisite:* Computer Science 3110 and Mathematics 3280 or equivalent training.

### 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.

### 3531 Microbiological Problems in the Hospital Environment (3-0)

An examination of the role of microorganisms in hospital environment infections.

### 3598 Thesis

### 3599 Thesis

## BUSINESS 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 objective of the M.B.A. program is to prepare graduates 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 for overall management and administration. The bulk of coursework is devoted towards 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.

### BASIC 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. 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 Management Admissions Test, the GMAT.
4. Acceptance by the Committee on Graduate Studies in the College of Business Administration.
5. Adequate subject matter preparation in Business Administration. Applicants must demonstrate sufficient knowledge in each area of the common body of knowledge of business. Such demonstration may be made by:
  - a. Having obtained an undergraduate degree in Business Administration (not a BA or BS in Business), or
  - b. Completion with a B or above of the courses listed below at this University or equivalent courses at other accredited institutions.

Common Body of Knowledge Area	Corresponding Courses At U.T. El Paso	Credit Hours
The Legal Environment	Business Law 3301	3
The Economic Environment	Economics 3203 & 3204	6
Financial Management	Finance 3310	3
Marketing Institutions	Marketing 3300	3
Accounting and Information Systems	Accounting 3309	3
Management Systems	Management 3300	3
Quantitative Methods	Statistics 3201	3
	Total	24

### SPECIFIC REQUIREMENTS FOR THE M.B.A. DEGREE

1. Completion of the required Business Core:
 

Accounting	3511	Accounting for Management
Economics	3511	Managerial Economics
Economics	3512	The Economic Environment
Finance	3511	Financial Management
Marketing	3511	Marketing Management
Management	3511	Organizational Management Seminar
Statistics	3511	Quantitative Methods in Business
Management	3525	Management Strategy and Policy
2. Completion of an additional 12 elective hours. A student may elect to complete either (a) 12 hours in a field of specialization, not more than 9 of which may be junior or senior level courses acceptable for graduate credit, or (b) a combination of 6 appropriate elective hours and 6 hours of thesis. Coursework is not restricted to courses offered by the College of Business Administration, but under any circumstances, elective courses must have a meaningful design that corresponds to the student's educational goals.
3. Each student must provide a satisfactory performance on a

comprehensive written or written and oral examination which will be administered in the last semester of the student's program or upon completion of the 24 hours of Business Core.

## TWO DEGREE OPTION — MBA/MPA

Students may also enroll in 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 the 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 24 hours of core M.B.A. courses, 21 hours of core M.P.A. courses, and 6 hours of M.P.A. internship, 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 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. The M.B.A. comprehensive examination is required.
7. Admission and continuance decisions are handled separately by the M.B.A. and M.P.A. graduate committees and by the Graduate School.

## CHEMISTRY

209A Physical Science Building  
(915) 747-5701, 5720

CHAIRPERSON: Cyril Párkányi

PROFESSOR EMERITUS: Lewis F. Hatch

GRADUATE FACULTY: Becvar, Cabaness, Chang, Davis, Eastman, Ellzey, Herndon, Lloyd, Pannell, Parkanyi, Whalen

ADJUNCT GRADUATE FACULTY: Watts

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, and chemical physics. Through a cooperative program with the Department of Geological Sciences, an M.S. degree 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. Any deficiencies must be removed before the petition is made for candidacy for the M.S. degree.

### Master of Science in Chemistry

In addition to the institutional requirements for a Master of Science degree, which include 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 includes 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 an excess of 6 hours but not more than 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.

Requirements for the degree in geochemistry are summarized in the listing for the Department of Geological Sciences.

### 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 Science (M.S.I.S.)

The requirements for this degree are described under "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)
3428	Advanced Topics in Organic Chemistry
3430	Topics in Biochemistry
3432	Biochemistry
2411	Instrumental Methods of Analytical Chemistry
2412	Laboratory for Chemistry 2411
3454	Advanced Topics in Physical Chemistry
3462	Structure of Matter
3465	Inorganic Chemistry
1465	A Laboratory Course in Inorganic Chemistry
3468	Inorganic Biochemistry (not for Chemistry majors)
1476-3476	Introduction to Research

For Graduate Students Only

### 3518 Advanced Analytical Chemistry (3-0)

Chemical equilibrium and its application to separation and analysis.

### 3519 Contemporary Topics in Analytical Chemistry\* (3-0)

Selected topics of current interest in modern analytical chemistry.

\*May be repeated for credit when topics vary.

## 26 / PROGRAMS OF STUDY

### 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:* Chemistry 3322.

### 3522 Advanced Organic Chemistry II (3-0)

A continuation of Chemistry 3521. *Prerequisite:* Chemistry 3521.

### 3529 Contemporary Topics In Organic Chemistry\* (3-0)

Selected topics of current interest in descriptive and theoretical organic chemistry.

### 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)

Schrodinger 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 pi-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

*Prerequisite:* Graduate standing and staff consent.

### 3598 Thesis

### 3599 Thesis

\*May be repeated for credit when topics vary.

## CIVIL ENGINEERING

201B Engineering Science  
(915) 747-5464

CHAIRPERSON: Wayne F. Echelberger, Jr.

GRADUATE FACULTY: Applegate, Das, Echelberger, Grieves, Huerta, Oey, Roschke, Rozendal, Shelton, 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 courses 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 Civil Engineering 3598-99, Thesis. Non-thesis students follow a 33 hour program which includes credit for Civil Engineering 3597, Research/Problem Report. Under exceptional circumstances the department graduate faculty may recommend a non-thesis program consisting of a minimum of 36 hours of coursework without a report.

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 3597, Research/Problem Report. Possible areas of sub-specialization may consist of Business Management, Computer Science, Industrial

Engineering or others, as approved by the student's graduate committee.

For Undergraduate and Graduate Students

2425 Construction Equipment, Methods and Projects Control (2-0)

3435 Structural Design I (3-0)

3438 Traffic Engineering Fundamentals (3-0)

3439 Design of Transportation Systems (3-0)

3440 Transportation Engineering (3-0)

3441 Water Supply Engineering (3-2)

3442 Waste-Water Engineering (3-2)

3443 Surface and Subsurface Drainage Design (3-0)

3446 Engineering Law (3-0)

3447 Ethics in Engineering (3-0)

4448 Soil Mechanics (3-3)

3449 Foundation Engineering (3-0)

3450 Engineering Hydrology (3-0)

3451 Public Health 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)

For Graduate Students Only

### 3502 Ground Hydrology (3-0)

Ground water occurrence and flow of fluid through porous media such as seepage and hydraulics of wells. *Prerequisite:* Approval of the instructor.

### 3503 Engineering Analysis (3-0)

Formulation and solution of initial and boundary value problems arising in structural mechanics. *Prerequisite:* Math 3326.

### 3504 Advanced Reinforced Concrete (3-0)

Review of fundamental behavior of reinforced concrete beam and column elements. Design of reinforced concrete systems in accordance with ACI Code. Topics may include two-way slabs, plates, shells, continuous beams, frames, prestressed concrete, composite design. *Prerequisite:* CE 3435, CE 4460.

### 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 or approval of instructor.

### 3506 Advanced Soil Mechanics I (3-0)

Stress and strain, rigid and flexible footings, stress in soil due to various types of loading, pore water pressure parameters, consolidation, sand drain, settlement analysis, permeability, seepage, dewatering. *Prerequisite:* CE 4448.

### 4508 Bioengineering Processes (3-3)

Description of biochemical processes involved in complex pollution problems. Energetics of aerobic and anaerobic processes, enzymes, metabolic reactions, synthesis, and theory of biological waste treatment. May be repeated for credit. *Prerequisite:* Approval 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:* Approval of instructor.

### 3513 Public Transportation (3-0)

Interdisciplinary aspects of public transportation problems, systems-team design approach to solutions. History and present state of public transportation, role of public transportation in urban environment, legislative, political, social, and economic aspects of transportation systems. Methodology and procedures for transit planning. Review of transit studies.

### 3514 Public Works Administration (3-0)

Management and engineering of public works and related systems in public jurisdiction. Traffic systems, streets and highways, illumination, distribution systems, solid waste, waste water, water treatment, building and grounds, etc. Personnel management, financing, public relations, and contract management.

**4515 Transportation and Traffic Planning Models (3-3)**

Development, analysis and discussion of applications of mathematical and schematic replicative, predictive and planning models in transportation and traffic engineering design problems. Selection of balanced transportation systems based on use of model split and traffic models.

**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:* Approval of instructor.

**3519 Construction Management (3-0)**

Selected topics in construction planning and management, including resource allocation, project planning and scheduling, estimating techniques, financial management of construction projects, project control.

**3520 Advanced Soil Mechanics II (3-0)**

Shear strength, earth pressure calculation on retaining structures, soil bearing capacity theories, stress on shaft and funnel linings, introduction to bearing capacity on permafrosts, slope stability. *Prerequisite:* CE 4448.

**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:* Approval of instructor.

**4522 Advanced Waste Treatment (3-3)**

Advanced problems relating to the treatment of water, sewage, industrial and radioactive wastes. *Prerequisite:* CE 3442 and approval of instructor.

**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.

**3526 Air Pollution Control (3-0)**

Effect of air pollution, classification of wastes, meteorological factors, sampling and analysis, abatement, statistical analysis.

**4527 Contemporary Topics in Surveying (3-3)**

Selected topics of current interest in modern surveying. May be repeated for credit when topic varies. *Prerequisite:* Approval of instructor.

**3528 Contemporary Topics in Urban Engineering (3-0)**

Selected topics of current interest in urban engineering. May be repeated for credit when topic varies. *Prerequisite:* Approval of instructor.

**3529 Contemporary Topics in Structures (3-0)**

Selected topics of current interest in structural engineering. May be repeated for credit when topic varies. *Prerequisite:* Approval of instructor.

**3530 Contemporary Topics in Geotechnical Engineering (3-0)**

Selected topics of current interest in soil mechanics. May be repeated once for credit when topic varies. *Prerequisite:* Approval of instructor.

**3531 Contemporary Topics in Water/Air Resources (3-0)**

Selected topics of current interest in water/air resources engineering. May be repeated for credit when topic varies. *Prerequisite:* Approval 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:* Approval of instructor.

**3533 Plates and Shells (3-0)**

The theory and design of plates and shell structures by the membrane and bending stress theories.

**3534 Sewage Treatment Plant Design (3-0)**

Design calculations for conventional physical and biological treatment processes are emphasized. A small-scale design project may be included. *Prerequisite:* CE 4508 or approval of instructor.

**3535 Soil Dynamics (3-0)**

Fundamentals of vibration, wave propagation in elastic homogenous medium, shear modulus of soil, geophysical exploration, foundation vibration — half space theory, lumped parameter systems, dynamic lateral earth pressure, soil liquefaction. *Prerequisite:* CE 3448.

**1595-3595 Graduate Seminar (3-0)**

Conferences, discussions and/or research, individual or collective, on advanced phases of engineering problems conducted under the direct supervision of a faculty member. Variable credit, and may be repeated for credit to total six credits. *Prerequisite:* Approval of instructor.

**3597 Research/Problem Report**

Report in lieu of thesis for graduate students with 33 hour option.

**3598 Thesis****3599 Thesis****COMPUTER SCIENCE**

306 Bell Hall  
(915) 747-5494

CHAIRPERSON: John Starner

GRADUATE FACULTY: Bernat, Gelfond, Gibson, Lifschitz, Liu, McDonald, Patterson, Riter, Starner, Williams

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 and foundation of computing, and computing applications. All students are required to take at least 12 hours of coursework chosen from Computer Science 3511, 3515, 3522, 3530, 3452 and Electrical Engineering 3573 and 3474. Thesis and non-thesis programs are available under this degree. Students enrolled in a thesis program normally take 27 hours of course work plus Computer Science 3598-99, Thesis. Non-thesis students normally follow a 34 hour course program plus credit for Computer Science 1590-91, Graduate Projects.

Prerequisites for the degree include at least 17 hours of undergraduate credit in Computer Science, consisting of two high-level programming languages — CS 4130, CS 4120 or 4225, CS 4332, CS 3440, and CS 3345 — or permission of the student's graduate committee.

For Undergraduate and Graduate Students

3335 Systems Programming (3-0)  
3350 Automata Theory and Formal Languages (3-0)  
3425 The Application Programming Environment (3-0)  
3430 Design and Implementation of Programming Languages (3-0)  
3442 Data Base Management (3-0)  
3445 Advanced Systems Design (3-0)  
3450 Systems Simulation (3-0)  
3452 Compiler Construction (3-0)  
3475 Theory of Operating Systems (3-0)  
3495 Special Topics in Computer Science (Theory of Algorithms) (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 3340 or equivalent; or permission of the instructor.

**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.

**3530 Data Communications (3-0)**

Study of modern techniques for data transmission including modulation methods, coding theory, transmission techniques, and switching theory.

**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.

**1590-91 Graduate Projects**

Individual design or research under the supervision of a faculty member. A written report is required. Required of all students on the non-thesis option.

**3595 Advanced Topics in Computer Science (3-0)**

One or more advanced topics in an area of computer science. The subject area may vary from year to year. May be repeated for credit.

**1596-6596 Graduate Research in Computer Science**

Studies of contemporary research topics in computer science.

**3598 Thesis**

**3599 Thesis**

## CRIMINAL JUSTICE

411 Liberal Arts  
(915) 747-5296

CHAIRPERSON: Joseph B. Graves, Jr.  
GRADUATE FACULTY: Graves, Mahan, Murillo

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.

**3510 Seminar in Law Enforcement (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.

## CURRICULUM AND INSTRUCTION

601 Education Building  
(915) 747-5426

CHAIRPERSON: Herbert K. Heger  
GRADUATE FACULTY: Ball, Barker, Burmeister, Burns, Descamps, Dunlap, Ekwall, Heger, Hernandez, Klingstedt, Milson, Pacheco, Salinger, Tinajero, Wagner

The Department of Curriculum and Instruction offers graduate programs of interest to teachers and to others who desire to acquire advanced professional education skills for application in non-school settings. This catalog covers graduate degree programs only. The College of Education is fully accredited by both the National Council for Accreditation of Teacher Education (NCATE) and the Texas Education Agency (TEA). Students who are engaged in graduate studies in Curriculum and Instruction may select one of two degree programs.

### MASTER OF ARTS IN EDUCATION

*Prerequisites:* At least 12 semester hours of 0300 and/or 0400 level education courses and admission to the thesis program by the departmental graduate studies committee. The committee will review undergraduate grade point average, Graduate Record Examination score and recommendations.

*Program:* Thirty semester hours, including at least 21 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 departmental Graduate Advisor. Areas of the Program are as specified below:

Major — 12 to 18 hours of approved Curriculum and Instruction coursework.

Minor — 6 to 12 semester hours in an approved supporting area or areas.

Thesis — Six semester hours: Ed.C. 3598 and 3599.

### MASTER OF EDUCATION

*Prerequisites:* At least 12 semester hours of 0300 and/or 0400 level education courses and admission to the M.Ed. program by the departmental graduate studies committee. The committee will review undergraduate grade point average, Graduate Record Examination score and recommendations.

*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 departmental Graduate Advisor. Students who are working toward the Master of Education degree in Curriculum and Instruction may select from one of the five options listed below:

#### Elementary Teaching Option

Specialization Area — Twelve semester hours of advanced or graduate credit in one of the following subjects: Art, Biological Sciences, Chemistry, Economics, English, French, Geological Sciences, Health and Physical Education, History, Mathematics, Music, Political Science, Physics, Reading, Spanish, Speech, and Sociology. At least 18 semester hours of undergraduate credit are required in the selected elementary subject.

Professional Core — Nine semester hours: Ed.C. 3501, 3502, and 3513.

Resource Area — Six semester hours approved by the departmental Graduate Advisor.

Electives — Nine semester hours including at least 6 semester hours in Curriculum and Instruction.

#### Secondary Teaching Option

Specialization — Twelve semester hours of advanced or graduate credit in one of the following subjects: Art, Biological Sciences, Business, Chemistry, Drama, English, French, Geological Sciences, Health and Physical Education, History, Mathematics, Music, Political Science, Physics, Spanish, Speech and Sociology. At least 24 semester hours of undergraduate credit are required in the selected secondary subject.

Professional Core — Nine semester hours: Ed.C. 3501, 3502 and 3511.

Resource Area — Six semester hours approved by the departmental Graduate Advisor.

Electives — Nine semester hours including at least 6 semester hours in Curriculum and Instruction.

#### Classroom Teaching Option

Specialization — Nine to twelve semester hours of advanced or graduate credit in an approved subject area.

Professional Core — Twelve semester hours: Ed.C. 3503, 3520, 3521 and 3535.

Applied Teaching — Six semester hours of Ed.C. 3548, which is repeated for credit twice.

Electives — Six to nine semester hours.

**Curriculum Development Option**

Specialization Area — Twelve semester hours in one of the specialization areas in Curriculum and Instruction (e.g. Curriculum Development, Reading, Bilingual-Bicultural Education, etc.).

Professional Core — Twelve semester hours: Ed.C. 3501, 3502, 3540, and either Ed.C. 3511 or 3513.

Resource Area — Six semester hours from courses approved for graduate credit outside the Department of Curriculum and Instruction.

Electives — Six semester hours including three semester hours in *Curriculum and Instruction*.

**Individualized Option**

Students whose needs are not met by any of the options listed above may plan special programs for submission to the departmental graduate studies committee. Programs recommended by this committee will be forwarded to the Graduate Dean for approval or rejection.

**PROGRAM ADVISING**

It is the responsibility of the student to consult the departmental graduate advisor regarding admission and degree requirements. The student must maintain a continuing advising relationship through the degree plan, comprehensive examination and program completion phases. The department 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 can provide more information in this area. Since the Texas Education Agency is currently revising certification regulations, the students should be aware that requirements may change during the life of this catalog.

A degree program is not the same as a certificate program. The first teaching certificate program (Permanent Provisional) is not suitable for graduate credit. The advanced certificate (Permanent Professional) and certain endorsement programs are suitable for graduate credit and can be largely combined with graduate degree study. However, a perfect match is not likely.

The University of Texas at El Paso has approved *provisional* certificate programs as follows:

1. Elementary Education
2. Secondary Education
3. All-levels Programs
4. Deaf and Severely Hard of Hearing
5. Speech and Hearing Therapy
6. Bilingual Endorsement
7. English as a Second Language Endorsement
8. Early Childhood for Handicapped Endorsement
9. Kindergarten Endorsement

The University of Texas at El Paso has *professional* certificate programs in the following areas:

1. All-Levels Music
2. Elementary Teaching
3. Secondary Teaching
4. Counselor
5. Educational Diagnostician
6. Mid-Management Administrator
7. Reading Specialist
8. Speech and Hearing Therapy
9. Superintendent
10. Supervisor

For Undergraduate and Graduate Students

- 3333 Education and the Mexican American (3-0)
- 3404 Developmental Reading in the Elementary School (3-1)
- 3408 Reading and Study in the Content Areas (3-0)
- 3423 Teaching Critical-Creative Reading (3-0)
- 3424 Reading Laboratory Experience (Elementary) (3-0)
- 3425 Reading Laboratory Experience (Secondary) (3-0)
- 3426 Seminar in Reading (3-0)
- 3434 Teaching Spanish as a Vernacular (3-0)
- 3436 English as a Second Language Methodology (3-0)
- 3440 Reading and Writing in English as a Second Language (3-1)
- 3441 *The Diagnostic Teaching of Reading* (3-0)
- 3449 Analysis and Evaluation of Reading Materials (3-0)

For Graduate Students Only

*General Prerequisite:* 12 semester hours of 0300 and/or 0400 level education courses or consent of the instructor.

**3501 Research Methods I (3-0)**

This is the first of a sequence of two courses designed to develop and interrelate the concepts of research and statistics. Attention will be given to the reading and critiquing of the research methodology and the statistics of research articles. Degree credit will not be granted for 3501 if degree credit is granted for 3503.

**3502 Research Methods II (3-0)**

A continuation of Ed.C. 3501. Degree credit will not be granted for 3502 if degree credit is granted for 3503. *Prerequisite:* Ed.C. 3501.

**3503 Research in Classroom Teaching (3-0)**

A study of research as it relates to significant aspects of classroom teaching with the emphasis on locating, reading, interpreting, and evaluating research as reported in the literature. Degree credit will not be granted for 3503 if degree credit is granted for 3501-02. Degree credit will not be granted for 3501-02 if degree credit is granted for 3503.

**3506 Remedial Reading (3-0)**

Examination and appraisal of significant researchers in the field of remedial reading. Attention given to the analysis and diagnosis of individual cases of reading, retardation, and to corrective and remedial procedures. *Prerequisite:* Ed.C. 3404 or 3408.

**3508 Instructional Problems (Elementary) — Seminar (3-0)**

Study of teaching problems arising in the classroom. Student will choose their own problems and those with allied interests will be grouped together to facilitate individual research. The instructor will guide this research. (May be repeated for credit when topic varies.)

**3509 Instructional Problems (Secondary) — Seminar (3-0)**

Same as Ed.C. 3508, except the problems are at the secondary level. (May be repeated for credit when topic varies.)

**3511 The Curriculum in the Secondary School (3-0)**

A study of the organization of the curriculum in the secondary school.

**3513 The Curriculum in the Elementary School (3-0)**

A study of the organization of the curriculum in the elementary school.

**1514-6514 Current Topics in Science Education**

A course designed to provide in-service teachers the opportunity to develop the competencies necessary to deal effectively with curricular changes in science; includes science concepts of a specific program, teaching strategies, structure of the specified program, and the demonstrated ability to integrate content and teaching strategies. (May be repeated for credit when topic varies.)

**3515 Clinical Reading Laboratory Experience (3-0)**

Actual laboratory experience for application of concepts, media and evaluation, to meet reading disadvantages in the elementary grades. *Prerequisite:* Ed.C. 3441 or 3541 or 3534. (May be repeated for credit when topic varies.)

**3517 Advanced Techniques of Graphic Media Production (3-0)**

The production of instructional media using advanced processes and techniques.

## 30 / PROGRAMS OF STUDY

### 1518-3518 Current Topics in Mathematics Education (1-0, 2-0, 3-0)

A course designed to provide in-service teachers an opportunity to develop competencies in specific teaching strategies and to increase knowledge of mathematics concepts in an integrated program. (May be repeated for up to six hours of credit when topic varies.)

### 3520 Curriculum and Instructional Design Elementary/Secondary School (3-0)

A study of the principles of design and the development of plans and procedures for instruction.

### 3521 Instructional Strategies and Classroom Management (3-0)

A study of decision-making methodologies and human interactions as they relate to classroom management.

### 3523 Educational Trends — Seminar (3-0)

A critical consideration of selected trends in education.

### 3527 Psychology of Reading (3-0)

Study of the reading process in such areas as language development, the psychology of learning, sensory, perceptual, and neurological factors, special problems of the culturally different child, emphasis on the study and evaluation of research literature and intensive study in individual topics of interest. *Prerequisite:* Ed.C. 3404 or 3408.

### 3531 Bilingual/Bicultural Curriculum Design and Development (3-0)

Identification of principles, problems and issues affecting bilingual curriculum. Examination of rationales and philosophies of various models of bilingual education programs. *Prerequisite:* Ed.C. 3302 and 3435.

### 3534 Clinical Diagnosis of Reading Difficulties (3-0)

Comprehensive study and clinical practice in the diagnosis of specific, limiting, and complex cases of reading disability. Experiences in administering and interpreting batteries of diagnostic tests and in the analysis and synthesis of findings for case studies. *Prerequisite:* Ed.C. 3404 or 3408.

### 3535 Construction and Use of Classroom Evaluation Instruments (3-0)

A study leading to skill in constructing and using norm-referenced and criterion-referenced achievement measures for summative and formative evaluation.

### 3537 Independent Graduate Studies (3-0)

(Area of study will be approved by professor sponsoring the student's work.)

### 3540 Philosophies of Education (3-0)

An in-depth study of major philosophies of education and their impact on education in the United States.

### 3541 The Diagnostic Teaching of Reading (3-0)

A study of standardized and informal materials and techniques for diagnosing and reading strengths and weaknesses of individuals and groups, techniques and methods of individualizing instruction and grouping according to student needs and interests. *Prerequisite:* Ed.C. 3404 or 3408; may not be taken for credit for those who have taken Ed.C. 3441.

### 3542 Problems in Reading — Seminar (3-0)

A course emphasizing educational research in reading. The student is allowed to make a choice of the field in reading in which to carry on educational research. *Prerequisite:* Ed.C. 3404 or 3408, and Ed.P. 3500, Ed.C. 3501, or consent of the instructor. (May be repeated for credit when topic varies.)

### 3544 Trends in Early Childhood Education (3-0)

A survey of research related to philosophies, objectives, and practices in pre-school education, including analysis through comparison and contrast of pre-school programs plus implications for designing such programs based on research and evaluation. *Prerequisite:* Six semester hours of 3400-level early childhood education courses and permission of instructor.

### 3545 Seminar in Early Childhood Curriculum

A curriculum development program 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.

### 3546 Teaching Reading in Spanish (3-0)

Emphasis on 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. *Prerequisite:* Ed.C. 3404 or 3434.

### 3548 Practicum in Instruction in Elementary and Secondary Schools (1.5-10)

Designed to be concurrent with public school teaching. Includes observation by the university instructor of the classroom teaching of the students and seminars designed to relate the classroom instructional situation to the corresponding educational theory. May be repeated once for credit. *Prerequisite:* A grade point average of at least 2.5 in each teaching field and in all education courses, and permission.

### 3550 Graduate Workshop in Education (3-0)

Area of study will be designated. (May be repeated for credit when topic varies.)

### 3551 Seminar in Reading (3-0)

An in-depth exploration of ways of developing higher level cognitive, affective, and 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:* Ed.C. 3404 or 3408.

### 3552 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: Linguistics 3471 (Language acquisition); Ling. 3471 (Bilingualism); Linguistics 3472.

### 3553 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:* Ed.C. 3434, or Spanish 3402, or Language Proficiency.

### 3598 Thesis

### 3599 Thesis

## DRAMA AND SPEECH

371 Fox Fine Arts

(915) 747-5146

CHAIRPERSON: Jean H. Miculka

GRADUATE FACULTY: Brand, Etheridge, Leech, Miculka, Middleton, Perozzi, Pomo, Rivera, Ronke, Wingate, Wood

### M.A. DEGREE PREREQUISITES:

- Drama: twelve advanced semester hours (3300, 3400) of undergraduate credit in Drama.
- Speech: twelve advanced semester hours (3300, 3400) of undergraduate credit in Speech.
- Drama and Speech: six advanced semester hours (3300, 3400) of undergraduate credit in Drama and six advanced semester hours (3300, 3400) of undergraduate credit in Speech.
- Speech Pathology and Audiology: minimum of eighteen advanced semester hours (3300, 3400) of undergraduate credit in disorders of communication.

### M.A. DEGREE REQUIREMENTS:

- 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 chairperson, a portion of the examination may be a drama and speech performance or a laboratory demonstration in speech pathology.
- For majors in Speech or in Drama:
  - Majors in Speech must take a minimum of eighteen semester hours in Speech. For majors in Speech electing to do a thesis, six hours of credit (Speech 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 in Speech electing a non-thesis option must take a minimum of thirty-six hours of total coursework, of which at least twenty-seven hours must be in courses numbered 3500-3599.

2. Majors in Drama must take a minimum of eighteen semester hours in Drama included in a total of thirty semester hours, of which at least twenty-one hours must be in courses numbered 3500-3599. Students in Drama must do either a research or a production thesis, for which they will receive six hours of credit (Drama 3598-99: Thesis) toward these minimum requirements.
- C. Majors in combined Drama and Speech must take a minimum of nine semester hours in Speech and nine semester hours in Drama, plus Drama/Speech 3598-99: Thesis. They must take a minimum of thirty semester hours of total coursework, of which at least twenty-one hours are in courses numbered 3500-3599.
- D. Majors in Speech Pathology and Audiology 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, and
  2. A minimum of 150 clock hours of supervised clinical practicum.

When engaged in clinical practicum, students must be simultaneously enrolled in PATH 3569 or 3573. However, only one enrollment in each course may be counted toward the M.A. degree. Students who choose to write a thesis must enroll in PATH 3598 and 3599. Those six hours will count toward the minimum of thirty-nine hours as electives.

**Required Courses (30 hours)**

- PATH 3557 Articulation Disorders
- PATH 3558 Cleft Palate
- PATH 3559 Fluency Disorders
- PATH 3560 Aphasia
- PATH 3561 Seminar in Speech Pathology
- PATH 3562 Disorders of Language
- PATH 3563 Disorders of Voice
- PATH 3564 Neurological Disorders of Communication
- PATH 3565 Advanced Audiology
- PATH 3569 Advanced Clinical Practicum in Speech Pathology

**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.

**DRAMA**

- 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
- 3342 Lighting Design
- 4350 Creative Drama
- 3357 The Early Theatre
- 3358 The Modern Theatre
- 3418 Playwriting
- 3426 Directing II
- 3440 Independent Study in Drama & Theatre
- 3491 Motion Pictures to Inform & Persuade

**SPEECH**

- 3308 Organizational & Institutional Communications
- 3316 General Semantics
- 3334 Teaching Forensics Activities
- 3411 Classical Rhetorical Theory
- 3414 Contemporary Rhetorical Theory
- 3415 Speech Criticism
- 3430 Seminar in Speech Communication
- 3443 Communication Analysis & Theory
- 3491 Motion Pictures to Inform & Persuade

**SPEECH HEARING AND LANGUAGE DISORDERS**

- 3409 Audiology
- 3410 Aural Rehabilitation
- 3411 Speech for the Deaf
- 3413 Language for the Deaf I
- 3414 Language for the Deaf II
- 3418 Voice Science
- 3441 Clinical Practicum in Speech Pathology and Audiology

For Graduate Students Only

**DRAMA**

- 3500 Theatrical Production — Theatre Management (3-0)**  
Individualized instruction in theatre management.
- 3500 Theatrical Production — Costume Design and Construction (3-0)**  
Individualized instruction in costume design and construction.
- 3500 Theatrical Production — Make-up Procedures (3-0)**  
Individualized instruction in make-up procedures.
- 3500 Theatrical Production — Set Design and Shop Management (3-0)**  
Individualized instruction in set designed shop management.
- 3500 Theatrical Production — Lighting and Sound Control (3-0)**  
Individualized instruction in lighting and sound control.
- 3500 Theatrical Production — Directing and Rehearsal Methods (3-0)**  
Individualized instruction in directing and rehearsal methods.
- 3500 Theatrical Production — Teaching of Acting (3-0)**  
Individualized instruction in teaching of acting.
- 3500 Theatrical Production — Organizing Spanish-Language Theatre Programs (3-0)**  
Individualized instruction in organizing Spanish-language theatre programs.
- 3518 Bibliography and Scholarly Methods of Drama and Theatre**  
Designed to equip the student with effective techniques for scholarly research and writing in the field of theatre and drama.
- 3520 Contemporary Production**
- 3522 Seminar in Design**  
A course for the general drama student relating design concepts to the needs of the playwright and director. Period set design, theatre design and contemporary design trends are studied.
- 3523 Theatre and Drama in Human Affairs (3-0)**  
Drama and theatre as reflections of the history of Western thought.
- 3525 Problems in Creative Dramatics and Children's Theatre**
- 3527 Seminar in Performance**  
May be taken more than once with a change in area of emphasis.
- 3529 Seminar in Playwriting**  
Those taking the course will be expected to make substantial progress toward the completion of a three-act play. May be taken more than once with a change in area of emphasis.
- 3598 Thesis**
- 3599 Thesis**

**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.

**3541 Seminar in Speech Education**

Develops a perspective on aims and methods for teaching a variety of courses in communication and public speaking at the high school and lower college division levels. May be repeated for credit when the content varies.

**3543 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.

**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 repeated for credit when content varies.

**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:* Speech/Drama 3491 or Speech 3590 or permission of instructor.

**3598 Thesis****3599 Thesis****SPEECH PATHOLOGY AND AUDIOLOGY****3557 Articulation Disorders**

Study of the process of diagnosis and management of functionally and organically based articulation disorders in children and adults.

**3558 Cleft Palate**

Diagnosis and management of articulation and resonance disorders related to cleft palate and other cranio-facial abnormalities.

**3559 Fluency Disorders**

Etiology, diagnosis and treatment of childhood and adult stuttering and other disfluencies.

**3560 Aphasia**

Etiology, diagnosis and treatment of communication disorders related to adult aphasia.

**3561 Seminar in Speech Pathology**

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**

Standardization, reliability, and validity of language tests. Advanced techniques in diagnosis and remediation of language disorders of children.

**3563 Disorders of Voice**

Diagnosis and management of organic and hyperfunctional voice disorders.

**3564 Neurological Disorders of Communication**

Etiology, diagnosis, and treatment of communication disorders related to cerebral palsy, mental retardation and other manifestations of brain-injured children.

**3565 Advanced Audiology**

Assessment of auditory function by utilizing conventional and special hearing tests and measurements.

**3566 Medical Audiology**

Differential diagnosis as related to the site of lesion and medical implications.

**3567 Conservation of Hearing**

Public school and industrial hearing conservation programs.

**3568 Seminar in Audiology**

Group discussion of selected areas in clinical or industrial audiology or audio prosthetics. May be taken more than once with a change in area of emphasis.

**3569 Advanced Clinical Practicum in Speech Pathology**

Supervised clinical practicum in providing services for the speech and language impaired.

**3571 Hearing Aids**

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**

May be taken more than once with a change in area of emphasis.

**3573 Advanced Clinical Practicum in Audiology**

Supervised clinical practicum in providing audiological services.

**3574 Problems and Projects in Audiology**

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****ECONOMICS AND FINANCE**

236 Business Building  
(915) 747-5245

CHAIRPERSON: Timothy P. Roth

PROFESSOR EMERITUS: Paul D. Zook

GRADUATE FACULTY: Brannon, Brown, James, Roth, Schauer,  
Smith, Sprinkle, Tollen

**MASTER OF ARTS DEGREE IN ECONOMICS****Departmental Requirements**

I. Prerequisites for the graduate program are Economics 3302 (National Income Analysis), Economics 3303 (Intermediate Economic Analysis), Finance 3320 (Money and Banking), or their equivalents, and three hours of Statistics.

II. Completion of Economics 3501 (Research Methodology), Economics 3502 (Microeconomic Theory), and Economics 3503 (Macroeconomic Theory), or their equivalents.

III. Completion of one of the following plans:  
Plan 1. The student may elect a thirty semester hour program, at least twenty-one hours of which must be work in graduate courses, including the thesis, for which six hours of credit is allowed.

Plan 2. The student may elect a thirty-six hour program, including a minimum of twenty-one graduate hours in economics. The student must present a minimum of two suitably bound research papers, which may be drawn from previous graduate courses in economics.

to a committee charged with the responsibility of conducting a final examination. The student must successfully complete Economics 3595 (Seminar in Applied Economic Research).

Plan 3. The student may elect a thirty-six hour interdisciplinary program, including a minimum of eighteen hours of graduate work in economics. The hours taken outside of economics will represent a logical, related program of study which will be approved by the graduate advisor. The student will have an option of writing a thesis or presenting two suitably bound research papers, which may be drawn from graduate courses in economics, to a committee charged with the responsibility for conducting a final examination.

The Department of Economics and Finance also participates in the Master of Business Administration degree, the requirements of which are found under "Business Administration" in this catalog.

For Undergraduate and Graduate Students

### ECONOMICS

- 3334 Regional Economics (3-0)
- 3335 Urban Economics (3-0)
- 3352 Economics of Transportation (3-0)
- 3368 Economy of Mexico (3-0)
- 3372 Mathematical Economics (3-0)
- 3373 Introduction to Econometrics (3-0)
- 3390 Comparative Economic Systems (3-0)
- 3395 The Soviet Economy (3-0)
- 2495-6495 Selected Problems in Economics

### FINANCE

- 3330 Commercial Bank Management (3-0)
- 3412 Current Issues in Banking (3-0)
- 3418 Financial Statement Analysis (3-0)
- 3425 International Finance (3-0)
- 3428 Central Banking (3-0)
- 2495-6495 Selected Problems in Finance

For Graduate Students Only

### ECONOMICS

*Prerequisite:* Twelve semester hours of advanced courses in economics or consent of the instructor.

#### 3501 Research Methodology

Concentrated study of data gathering methods, research design and analytical and statistical techniques used in economic research.

#### 3502 Microeconomic Theory

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.

#### 3503 Macroeconomic Theory

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.

#### 3510 Economic History

A survey of the main trends in European industry and commerce since 1800, with attention to related developments outside Europe.

#### 3511 Managerial Economics

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.

#### 3512 The Economic Environment

An evaluative study of the determinants of levels of national income, employment, and prices.

#### 3520 Monetary and Fiscal Policies and Problems

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.

#### 3530 Regional and Urban Economics

A survey course designed to acquaint the student with the theory, methodology, and problem areas of the field. Emphasis is given the theories of location, spatial organization, government policies towards stagnation or urban decay, and techniques of analysis.

#### 3540 Labor Economics

A study of the theory of wage determination, the structure and role of labor organizations, and the interaction of labor, industry and government.

#### 3550 Industrial Organization and Policy

Selected topics in the structure, conduct, regulation of business and public policy toward business.

#### 3560 International Economics

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.

#### 3565 Economic Development

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.

#### 3566 Latin American Economics

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.

#### 3570 Advanced Quantitative Methods in Economics

Correlation and regression analysis, auto correlation, elements of linear algebra, simultaneous equation problems will be treated in order to analyze linear models, index problems and treat mathematical programming, and game theory. The purpose of the course is to master the quantitative methods necessary to understand current economic literature.

#### 3580 Development of Economic Thought

An interpretative survey of principal doctrines in the field of economic theory and policy since the middle of the 18th century.

#### 3595 Seminar in Applied Economic Research

Performance of supervised research studies on selected economic problems. Emphasis is on practical, career oriented research.

#### 3598 Thesis

#### 3599 Thesis

### FINANCE

#### 3511 Financial Management

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.

#### 3515 Securities Analysis

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:* Finance 3511 or consent of instructor.

#### 3518 Capital Formation, Analysis, and Budgeting

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.

#### 3520 Seminar in the Theory of Finance

This course is designed to provide a perusal of recent literature as well as an in-depth study of major theoretical concepts in the field of Finance. Specific topics to be covered are at the discretion of the instructor to accommodate emphasis change in literature.

## 34 / PROGRAMS OF STUDY

### 3522 International Finance

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.

### 3525 International Financial Management

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:* Finance 3511 or consent of the instructor.

## EDUCATIONAL ADMINISTRATION

712 Education  
(915) 747-5355/5382

CHAIRPERSON: Robert R. Dunwell  
PROFESSOR EMERITUS: William G. Barber  
GRADUATE FACULTY: G. Brooks, R. Dunwell, N. Kelly, Lindahl, Wholeben

The Department currently offers coursework leading to the degree Master of Education (M.Ed.) in three areas: Educational Administration, Elementary Supervision, and Secondary Supervision; however, course and program requirements are in the process of being revised, and interested applicants should check with the Department for a current list of degree program requirements.

The Department currently offers coursework leading to certification by the Texas Education Agency in the following areas: Professional School Supervision, Professional Mid-Management School Administrator, and Professional School Superintendent; however, course and program requirements are in the process of being revised, and interested applicants should check with the Department for a current list of certificate program requirements.

For Graduate Students Only

*Prerequisite:* Twelve semester hours of advanced courses in Education and a bachelor's degree.

### 3502 Problems in Educational Administration and Supervision

A course in research in Educational Administration and Supervision. The student will select an area to research independently and write a term paper.

### 3524 Public School Supervision (3-0)

The study of leadership for instructional improvement; the roles of supervisors, consultants, and other administrators. The study of group dynamics, the change process, observational techniques, interaction analysis, teacher-supervisor interviews, evaluation.

### 3526 Public School Finance (3-0)

The study of public school revenue, budget preparation and administration, accounting procedures, record keeping and school bonds.

### 3527 Administration of Special, Career, Compensatory, Reading and Vocational Education Programs (2-1)

The study of special programs from an administrative or supervisory viewpoint. Field experience in one program required.

### 3529 The School Plant (3-0)

The study of all facets of the school plant: budgeting, planning and maintenance.

### 3530 Public School Law (3-0)

A study of the constitutional provisions, legislation, court decisions, and regulations governing the public schools with special reference to Texas.

### 3533 Field Experience and Internship in Educational Administration (1-4)

On-the-job practicum in public school administration for superintendency trainees. *Prerequisite:* Master's degree and enrollment in the superintendency certification program.

### 3534 Field Experience and Internship in Educational Administration (1-4)

On-the-job practicum in public school administration for mid-management trainees. *Prerequisite:* Master's degree and enrollment in the mid-management certification program.

### 3535 Fundamentals of Public School Administration (3-0)

Basic administrative concepts and processes; organization of public school administration; roles of the superintendent and other central office personnel; relationship of the local school district to the Texas Education Agency, federal educational agencies and other educational institutions.

### 3536 Organization and Administration of Schools (3-0)

Problems confronting the elementary and secondary school principal will be studied; teacher schedules, classroom schedules, staff meetings, organization of non-teaching personnel, supervision, curriculum development, student welfare and other related areas.

### 3537 Community Education (3-0)

The study of community education as an emerging movement in public education. The administrator's role in the conceptualizing, developing and implementing of community education.

### 3538 Field Experience in Elementary or Secondary Supervision

On-the-job practicum experience in public school supervision at the elementary or secondary level. *Prerequisite:* Completion of all other required courses in the professional elementary or secondary school supervision certification plan.

### 3539 Trends in Educational Administration and Supervision (3-0)

An in-depth examination of current issues impacting the management of educational institutions. An analysis of such issues as multicultural education, collective bargaining, formulation of educational policy, equity of educational opportunity, management of objectives, regionalism and cooperatives in education, the rural-urban dichotomy and politics in education.

### 3540 Central Office Administration (3-0)

The study of critical aspects of central office administration. For example: problem areas involving personnel, programs, budget, planning, evaluation, school board relationships, state and federal influences, public relations and the overall administration of a school district.

### 3550 Graduate Workshop In Educational Administration and Supervision (3-0)

(Area of study will be designated.)

## EDUCATIONAL PSYCHOLOGY AND GUIDANCE

701 Education Building  
(915) 747- 5300

CHAIRPERSON: Bonnie S. Brooks  
GRADUATE FACULTY: Ainsa, B. Brooks, Davis, Duran, Hamilton, Morgan, L. Natalicio, Paulson, C. Walker, J. Walker

### GRADUATE PROGRAMS AND PLANS

The Department of Educational Psychology and Guidance offers the M.Ed. or M.A. degree in the following areas:

1. Counseling, Plan I — School Counseling Emphasis
2. Counseling, Plan II — Agency Counseling Emphasis
3. Educational Diagnostician
4. Special Programs

Post-baccalaureate level endorsements are offered in the following areas:

1. Early Childhood for the Handicapped
2. Visually Impaired

**Admission Requirements:** Students seeking admission to any of the graduate programs in the Department must complete the following prior to the semester in which they plan to first enroll:

1. Take the Graduate Record Examination
2. Complete Graduate School Admissions Paperwork and qualify for admission to The Graduate School
3. Schedule an appointment with the Departmental Graduate Advisor (915) 747-5300
4. Complete Departmental Admissions Paperwork, including (a) an autobiography, (b) a list of references and (c) a background data sheet.

**Program Descriptions and Requirements**

**COUNSELING, PLAN I — SCHOOL COUNSELING EMPHASIS (M.Ed. — 36 semester hours)**

This plan is intended primarily for students who have concentrated their previous academic work in the area of professional education. Completion of this program meets Texas Education Agency requirements for the Professional School Counseling Certificate if the following conditions are met: (1) the individual must have a valid Texas provisional or professional teaching certificate, and (2) the individual must have three years of successful teaching experience.

**Program Requirements:**

*Prerequisites:*

- Ed P 3400 — Elementary Educational Statistics
- Ed P 3402 — Bilingual/Bicultural Factors in Learning
- Ed P 3420 — Introduction to Guidance
- Ed P 3425 — Special Education for the Classroom Teacher (The above courses must be completed with a minimum G.P.A. of 3.0)

Program Requirements (listed in the order in which they should be completed):

- Ed P 3539 — Group Counseling: Theory and Process
- Ed P 3535 — Principles of Psychological Testing
- Ed P 3518 — Techniques of the Psychological Interview
- Ed P 3519 — Organization and Administration of Guidance Services
- Ed P 3520 — Socio-Economic Information in Guidance
- Ed P 3502 — Research Methods in Educational Psychology
- Ed P 3522 — Supervised Practicum in Counseling
- Ed P 3523 — Advanced Practicum

Plus six semester hours of elective graduate work in Educational Psychology (listed for graduate credit) and six semester hours credit for a minor in a related field as approved by the graduate advisor.

**COUNSELING, PLAN II — AGENCY COUNSELING EMPHASIS (M. Ed. — 36 semester hour)**

This plan is intended primarily for students who have concentrated their previous academic work in one of the behavioral sciences or education, and do not seek a Texas Professional Certificate in School Counseling. The program prepares individuals for employment in community agency settings. For information about Counseling Licensure and/or Certification as Associate Psychologist, please see the Departmental Graduate Advisor.

**Program Requirements:**

*Prerequisites:*

- Ed P 3400 — Elementary Educational Statistics
- 9 semester hours of upper division work in the behavioral sciences or education.  
(The above courses must be completed with a minimum G.P.A. of 3.0)

Program Requirements (listed in the order in which they should be completed):

- Ed P 3539 — Group Counseling: Theory and Process
- Ed P 3541 — Theories of Counseling
- Ed P 3518 — Techniques of the Psychological Interview
- Ed P 3522 — Supervised Practicum in Counseling
- Ed P 3523 — Advanced Practicum
- Ed P 3502 — Research Methods in Educational Psychology
- \*Ed P 6580 — Internship

Plus six semester hours of elective graduate work in Educational Psychology (listed for graduate credit) and six semester hours credit for a minor in a related field as approved by the graduate advisor.

\*The student should plan to devote one full-time semester to the completion of the internship, which is the final course in the M.Ed. sequence.

**EDUCATIONAL DIAGNOSTICIAN (M.Ed. — 36 semester hours)**

This plan is intended primarily for students who have concentrated their previous academic work in special education. Completion of this program meets Texas Education Agency requirements for the Professional Educational Diagnostician Certificate if the following conditions are met: (1) the individual must have a valid Texas provisional or professional teaching certificate, and (2) the individual must have three years of successful teaching experience.

**Program Requirements:**

*Prerequisites:*

Completion of 12 semester hours of upper division work in special education, three of which must be a survey course or its equivalent. The courses must be completed with a minimum G.P.A. of 3.0. Program Requirements (Ed P courses listed in the order in which they should be completed):

- Ed P 3500 — Introduction to Statistics
- Ed P 3535 — Principles of Psychological Testing
- Ed P 3545 — Characteristics of Language/Learning Disabilities
- Ed P 3536 — Individual Mental Testing
- Ed P 3502 — Research Methods in Educational Psychology
- Ed P 3540 — Seminar — Theories of Learning
- Ed P 3521 — Independent Study of Special Education
- Ed P 3524 — Differential Diagnosis
- \*Ed P 6580 — Internship
- Ed C 3531 — Bilingual/Bicultural Curriculum Design and Development

Ed C 3534 — Clinical Diagnosis of Reading Difficulties

\*The student should plan to devote one full-time semester to the completion of the internship, which is the final course in the M.Ed. sequence.

**SPECIAL PROGRAMS (M. Ed. — 36 semester hours)**

Students whose professional needs are not met by the above M.Ed. programs may plan special programs. Please see the Departmental Graduate Advisor for assistance.

**THESIS PROGRAMS (M.A. — 36 semester hours)**

THESIS, PLAN I (no minor)

24 semester hours of graduate work in Educational Psychology, 21 semester hours at the 3500 level.

Ed P 3598

Ed P 3599

THESIS, PLAN II (a minor)

12-18 semester hours of graduate work in Educational Psychology

6-12 semester hours in a related discipline as approved by the graduate advisor.

Ed P 3598

Ed P 3599

**ENDORSEMENT PROGRAMS** (leading to endorsements to teaching certificates approved by the Texas Education Agency). Students may wish to obtain post-baccalaureate endorsements to their provisional teaching certificates. An endorsement represents a specialized field of study and expertise, and may enable the individual to secure a teaching assignment in that area of specialization. To obtain an endorsement, one need not be formally admitted to the Graduate School. Following are the endorsements available in the Department of Educational Psychology and Guidance.

**EARLY CHILDHOOD FOR THE HANDICAPPED****Program Requirements:**

- Ed P 3321 — The Education of Exceptional Children  
 Ed P 3425 — Special Education for the Classroom Teacher  
 Ed P 3451 — Curriculum of Early Childhood Education  
 Ed P 3318 — Physical Education for the Pre-school, Kindergarten Child, and Primary Grade Child

**VISUALLY HANDICAPPED****Program Requirements:**

- Ed P 3321 — The Education of Exceptional Children  
 Ed P 3405 — Methods and Materials for Education of Visually Impaired  
 Ed P 3406 — Visually Handicapped Youth — Psychological, Social and Educational Implications  
 Ed P 3407 — Communication Skills for Visually Impaired Students  
 Ed P 3408 — Seminar in Education of Visually Impaired

For Undergraduate and Graduate Students

- 3400 Elementary Education Statistics  
 3401 Psychology of the Kindergarten Child  
 3405 Methods and Materials for Education of Visually Impaired  
 3406 Visually Handicapped Youth — Psychological, Social and Educational Implications  
 3407 Communication Skills for Visually Impaired Students Including Blind/Multi-Handicapped  
 3408 Seminar in Education of Visually Impaired  
 3410 The Gifted and Talented Student  
 3420 Introduction to Guidance  
 3421 Psychology of Mental Retardation  
 3422 Curriculum, Materials and Methods of Teaching the Mentally Retarded  
 3428 Introduction to Counseling  
 3429 Practicum: Handicapped Learner

For Graduate Students Only

*Prerequisite:* Twelve semester hours of advanced courses in Education or the equivalent and a bachelor's degree.

**3500 Introduction to Statistics (3-0)**

Study of fundamental statistical concepts, to include probability distributions, sampling distribution and certain non-parametric procedures. Introduction of experimental design and applied statistical research procedures.

**3502 Research Methods in Educational Psychology (3-0)**

A course emphasizing educational research at all levels. The student identifies a problem, formulates hypotheses, selects procedures, develops bibliographic references and prepares a research prospectus. *Prerequisite:* Ed.P. 3400.

**3505 The Construction and Use of Achievement Examinations — Seminar (3-0)**

Covers the theory of testing and provides practical experience in both critical analysis and construction of tests for classroom use. The student will be allowed to devote his attention exclusively either in the elementary school level or to the secondary.

**3508 Workshop in Guidance and Counseling — Seminar (3-0)**

Study of current issues and problems in guidance and counseling. Students will choose their problems and those with allied interests will be grouped together to facilitate individual research. Instructor will supervise this research.

**3514 Guidance in The Elementary School (3-0)**

The purpose and scope for guidance at the elementary level with emphasis placed upon the function of guidance in relation to children's needs and development, the work of guidance personnel, and teachers roles in relation to prevention of problems, techniques and skills of diagnosis and counseling which can be used by counselors, experienced teachers and beginning elementary teachers.

**3516 The Psychology of Individual Differences (3-0)**

The study of individual differences in intelligence, school achievement, vocational aptitudes, personality, interests and attitudes, study of varieties of group differences; and study of methods used in studying human differences.

**3517 Psychology of Personality Development (3-0)**

Study of mental hygiene, and the nature and development of personality, and personality theory and assessment.

**3518 Techniques of the Psychological Interview**

A study of the basic principles of interviewing. Emphasis on types of interviews, content and processes in interviewing and counseling, interviewing leads, practice in various techniques of interviewing and counseling and specific types of vocational, educational and personal interview problems. *Prerequisite:* 12 graduate semester hours, including Ed.P. 3539.

**3519 Organization and Administration of Guidance Services (3-0)**

A study of problems of supervision, organization and administration of guidance services. Problems of staffing, finances, effective interpersonal relationships, community participation, in-service education, and evaluation of the guidance program.

**3520 Socio-Economic Information in Guidance — Seminar (3-0)**

Educational, occupational, and social information and its use in counseling and guidance.

**3521 Independent Study of Special Education — Seminar (3-0)**

This course offers opportunities for study in any one of the following special education areas: orthopedic handicaps, visual handicaps, auditory handicaps, giftedness, mental retardation.

**3522 Supervised Practice in Counseling — Seminar**

Actual practice under supervision in applying the principles, tools and techniques used in either the counseling program or the school psychology program. Student will work with clients — referrals for counseling or students and parents with school difficulties. Supervision and instruction will be carried out in a clinical setting under a qualified faculty member.

**3523 Advanced Practicum in Counseling (2-3)**

Advanced supervised experience in the application of counseling principles and techniques to work with clients. Emphasis will be placed on the articulation of the conceptual context in which counseling takes place. *Prerequisite:* Ed.P. 3522 and 3518.

**3524 Differential Diagnosis (3-0)**

Diagnostic interpretation of various standardized tests and other procedures commonly used in a school setting. Emphasis will be placed on applying data to correct learning problems, disabilities, and the development of potentials. *Prerequisite:* Ed.P. 3500, 3535, 3536.

**3535 Principles of Psychological Testing (3-0)**

Study of the principles of psychological testing purposes, methods and procedures. Study, evaluation and use of educational and psychological tests in the evaluation and guidance of students.

**1536 to 6536 Individual Mental Testing for General and Special Abilities (3-0)**

Administration, observation, demonstration and critical evaluation of testing procedures. Preparation of reports, both professional and individual, will be stressed. Basic tests will be Stanford-Binet Intelligence Scale and two of the Wechsler Tests (WAIS, WISC-R, WPPSI). If taken for more than three semester hours the student will be guided to learn those individual tests which will be most useful in the student's work or research activities. *Prerequisite:* Ed.P. 3400 and 3535.

**3537 Independent Graduate Study — Seminar (3-0)**

*Prerequisite:* Permission of the Graduate Advisor.

**3538 Mental Hygiene in Education (3-0)**

Psychological principles, theories, and practices examined and applied to the individual school, family, and community mental health problems. Implications of school practices for mental health.

**3539 Group Counseling: Theory and Process**

Study of history, principles, theory and techniques of group counseling as applied to human relations. Emphasis will be placed on the acquisition and practice of the technical skills unique to group counseling as derived from current research knowledge of group processes and on the articulation of the conceptual underpinnings thereto appertaining.

**3540 Educational Psychology — Seminar: Theories of Learning (3-0)**

Discussion of types of learning theory, behavioristic, cognitive, and functional. Student reports and discussion of primary source material — Thorndike, Tolman, Watson, Skinner, Guthrie, Robinson, Ausubel, mathematical learning theory, information learning theory, and neurophysiology of learning. Discussion of the relation of psychoanalytic, phenomenological, Piagetian, and Brunerian approaches to learning theory.

**3541 Theories of Counseling (3-0)**

A study of the various counseling theories and their application to the counseling process.

**3542 Computer Methods in Education and the Behavioral Sciences (3-0)**

Application of computers to various problems in education and the behavioral sciences with emphasis on data processing machines, programming languages, and utilization of existing program libraries for data analysis. *Prerequisite:* Ed.P. 3500 or the equivalent.

**3545 Characteristics of Language/Learning Disability Children (3-0)**

A study of the various theoretical, etiological, sociological and behavioral approaches to teaching the language/learning disabled child.

**3550 Workshop in Educational Psychology and Guidance**

(Area of study will be designated.)

**3555 Aging and Human Behavior (3-0)**

Survey of the life span with emphasis on development and problems of adjustment in maturity and old age. Attention to such issues as perception, learning, motivation, intelligence, achievement, personality and other aspects of normal and pathological aging.

**3556 Mental Health and Aging (3-0)**

Mental health needs of the elderly, the relationship between physical and mental health, social and biological factors affecting the mental health of the elderly and aspects of primary prevention.

**3570 Advanced Statistics (3-0)**

Review of experimental design. Study of tests of hypothesis, linear regression and analysis, correlation analysis, multiple variate analysis. Introduction to research operation related to computers. *Prerequisite:* Ed.P. 3400 or 3500.

**1580-6580 Internship**

Supervised experience in public schools and/or in selected agencies and institutions. *Prerequisite:* Permission of the graduate advisor.

**3598 Thesis****3599 Thesis****ELECTRICAL ENGINEERING**

301B Engineering Science Complex  
(915) 747-5470

CHAIRPERSON: Stephen Riter

GRADUATE FACULTY: Austin, Gibson, Grande-Moran, Jarem, Liu, Manoli, McDonald, Pierluissi, Riter, Schroder, Singh, Smith, Williams

The Electrical Engineering Department offers an undesignated Master of Science with a major in Engineering, a Master of Science with a major in Electrical Engineering, and an Electrical Engineering major with an option in Computer Engineering. The specific courses of study in the Electrical Engineering major include computer engineering, electromagnetics, power systems, communications, control, and instrumentation systems. All students are required to

take at least 15 hours of graduate level coursework in Electrical Engineering; six of the 15 hours must be chosen from Electrical Engineering 3500, 3501, or 3502. Thesis and non-thesis programs are available under this degree. Students enrolled in a thesis program normally take 24 hours of coursework plus Electrical Engineering 3598-99, Thesis. Non-thesis students follow a 36 hour program which includes credit for Electrical Engineering 3590-91, Graduate Projects.

A student holding a Bachelor of Science with a major in Electrical Engineering 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 Electrical Engineering and at least 12 hours in the particular area of sub-specialization. The work in the major field includes credit for Electrical Engineering 3590, Graduate Projects. Possible areas of sub-specialization are Business Management, Computer Science, Bioengineering or others, as approved by the student's graduate committee.

For Undergraduate and Graduate Students

3340 Electronics II (3-0)

3347 Electromagnetic Energy Transmission and Radiation (3-0)

3369 Digital Systems Design I (3-0)

3376 Microcomputer Instrumentation (3-0)

1376 Microcomputer Instrumentation Laboratory (0-3)

3385 Energy Conversion (3-0)

3441 Communication Systems (3-0)

3442 Digital Systems Design II (3-0)

1442 Laboratory for Electrical Engineering 3442 (0-3)

3450 Solid State Physical Electronics (3-0)

3458 Biomedical Instrumentation (3-0)

3464 Systems and Controls (3-0)

3473 Minicomputers (3-0)

3474 Operating System Design (3-0)

3478 Microprocessors and Interfacing (3-0)

1478 Laboratory for Electrical Engineering 3478 (0-3)

3480 Microwave Communications (3-0)

3481 Electro-Optical Engineering (3-0)

3484 Probabilistic Methods in Engineering and Science (3-0)

3482 Antenna Engineering (3-0)

3486 Power Systems Analysis (3-0)

3487 Computation Techniques for Power Systems Analysis (3-0)

3495 Special Topics in Electrical Engineering (3-0)

For Graduate Students Only

**3500 Advanced Mathematics for Engineers I (3-0)**

Integral equations, probability, random variables, basic random processes, classical optimization techniques. *Prerequisite:* Math 3335 and 3436 or equivalent.

**3501 Advanced Mathematics for Engineering II (3-0)**

Fundamental mathematical concepts of linear differential equations, linear transformations, vector analysis, Fourier series and integrals, partial differential equations and complex variables. *Prerequisite:* Math 3335 and 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.

**3507 Modern Control Theory I (3-0)**

State space techniques (continuous case); controllability and observability, Lyapunov's second method; Pontryagin's principle of optimality and dynamic programming, the method of steepest descent; and other optimization techniques.

## 38 / PROGRAMS OF STUDY

### 3514 Individual Studies

Conferences, discussions, and/or research on advanced phases of engineering problems conducted under the direct supervision of a faculty member. Only one enrollment permitted for credit toward Master of Science degree.

### 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.

### 3516 Active Circuits Analysis (3-0)

Analysis of active networks, network sensitivity, filter synthesis and design, and immittance simulation.

### 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.

### 3518 Power System Analysis I (3-0)

Equivalent circuits and characteristics of multi-winding transformers grounding and mutual coupling. Load flow studies. Analysis of balanced and unbalanced conditions in multiphase systems. Sequence impedances of equipment.

### 3523 Communication Theory (3-0)

Transmission of information over noisy channels, coding for reliable transmission, error-detecting and error-correcting codes, modulation schemes.

### 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.

### 3527 Optimal Control Theory (3-0)

Properties of optimal systems, the minimum time, minimum fuel, and minimum energy problems application of optimization techniques to system design.

### 3543 Microwave Engineering (3-0)

An introduction to the fundamentals of microwave engineering topics, including waveguide transmission, impedance transformation and matching, passive microwave elements, resonant cavities, microwave networks and periodic structures.

### 3546 Atmospheric Processes (3-0)

The fundamental principles of atmospheric physics including structure and composition, radiative transfer, wave propagation and atmospheric circulation.

### 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 signals.

### 3573 Computer Architecture (3-0)

Selected topics in computer hardware design such as micro-programming, pipeline and multiprocess configurations, memory architectures, and array processing. Prerequisite: EE 3473 and 3369.

### 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 micro-processors.

### 3576 Data Acquisition and Processing (3-0)

Advanced topics in data acquisition, storage, and communications.

### 3590-91 Graduate Projects

Individual design or research under the supervision of a faculty member. A written report is required. Required of all student on the non-thesis option.

### 1595 Graduate Seminar (3-0)

Required of all graduate students during each semester of enrollment as a graduate student. Discussion of various topics by faculty, graduate students, and speakers from industry and other institutions. Not applicable for credit toward degree requirements.

### 3596 Advanced Topics (3-0)

One or more advanced topics in electrical or computer engineering. The subject area may vary from year to year. May be repeated for credit.

### 1597-6597 Graduate Research

Studies of contemporary research topics in electrical or computer engineering.

### 3598 Thesis

### 3599 Thesis

## ENGLISH

111 Hudspeth Hall  
(915) 747-5731

CHAIRPERSON: Lawrence J. Johnson

PROFESSORS EMERITI: Lurline Coltharp, Charles L. Sonnichsen

GRADUATE FACULTY: Bledsoe, Boley, Burlingame, Crumley, Day, Esch, Gallagher, Gingerich, Gladstein, Johnson, Leach, Melendez-Hayes, Meyers, Mortimer, Schwalm, Stafford, Standiford, Taylor, Ullman, West

### M.A. DEGREE IN ENGLISH

The English Department offers three master's degree options: British and American Literature, Creative Writing, and Professional Writing and Rhetoric.

### BRITISH 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 prepares students for teaching in secondary schools and at junior colleges. It also prepares students for admission to Ph.D. programs in British and American Literature.

Prerequisites: (1) a bachelor's degree; (2) combined score of 1000 or more on the GRE verbal and analytical tests; (3) 18 hours of advanced level English courses.

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 from English 3551-56.
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 a graduate research paper for expansion and revision under the supervision of a director, English department reader, and an outside reader.
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 equips students for careers as writers: many succeed in publishing works produced in the course of their study. The program also prepares students to teach writing or to pursue more advanced degrees.

*Prerequisites:* (1) a bachelor's degree; (2) a combined score of 1000 or more on the GRE verbal and analytical tests; (3) 9 hours of advanced level Creative Writing courses; (4) 9 hours of advanced level literature coursework.

**Requirements:** 30 semester hours of coursework, English 3598-99, and an oral examination.

1. **Core Curriculum** (21 hours): English 3500 or 3513; two courses from among English 3501-06; 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 Option stresses discourse theory, textual analysis, and practical writing. The core curriculum includes courses in linguistics, the theory of rhetoric, analysis of texts, informative and persuasive writing, and literary discourse. There is, moreover, sufficient flexibility to allow students to fashion degree programs suitable to their individual interest. Within the program there is also an English Education Track designed for secondary English/Language Arts teachers. The Professional Writing and Rhetoric Option prepares students for careers as teachers and professional writers as well as for further academic study.

*Prerequisites:* (1) a bachelor's degree; (2) a combined score of 1000 or more on the GRE verbal and analytical tests; (3) 18 semester hours of advanced level courses in Liberal Arts, 9 hours of which must be completed in English, including Advanced Composition or the equivalent (may be waived upon consent of Director of Graduate Studies after presentation of evidence of advanced writing skills).

**Requirements:** 33 semester hours of coursework, English 3597, and an oral examination.

### 1. Core Curriculum:

- (a) Professional Writing and Rhetoric (24 hours):  
Research Methods: English 3500  
Rhetorical Theory: English 3510; Speech 3531 or 3532  
Language Theory: Linguistics 3509 or 3519  
Informative Discourse: English 3512 or 3515 (when topic is appropriate)  
Persuasive Discourse: English 3511 or 3515 (when topic is appropriate)  
Literary Discourse: at least 3 hours from English 3501-3506, 3550-3556, 3560; up to 3 hours from English 3513, 3566-68.

or

- (b) Professional Writing and Rhetoric/English Education (27 hours):

Research Methods: English 3500

Rhetorical Theory: English 3510; Speech 3531 or 3532  
Language Theory: Linguistics 3509, 3519, or English 3545 (when topic is appropriate)

Informative/Persuasive Writing: English 3511, 3512, or 3515 (when topic is appropriate)

Literary Discourse: at least 3 hours from English 3501-3506, 3525, 3550-3556; up to 3 hours from English 3520, 3566-68

English Teaching Methods: English 3545 (one repetition as topic varies).

2. **Electives** (6-9 hours): Electives may include any course listed above that is not being counted as part of the required hours; other approved electives include Linguistics 3508, 3570, 3573, Speech 3491, 3541, 3543, 3550, 3590, Curriculum and Instruction 3408; 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 supervised experience in addressing, responding to, and resolving an academic or commercial 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. **Petition of Candidacy:** At the end of the first semester of full-time study, or upon completion of the first 12 hours of graduate work, each student must submit to the Office of the Dean a Petition of Candidacy signed by the Departmental Graduate Advisor. The Petition shall show the courses taken and the additional courses required by the department before graduation. Petitions which show an incomplete grade or a GPA below 3.0 cannot be approved. Copies of the Petition of Candidacy are available in the Office of the Dean.

### 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.

## 40 / PROGRAMS OF STUDY

### 3502 British Literature 1485-1660 (3-0)

Survey of representative writers, literary trends, and the social and intellectual background from the early Renaissance through 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, early Naturalism, 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 distinguishable 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 of a particular genre of professional writing, such as biography, historiography, news and feature writing, and translation. May be repeated once when the topic varies.

### 3520 Literary Criticism: Theory and Practice (3-0)

A survey of the basic critical texts and argument 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.

### 1350-3530 Topics in Composition (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. Student may enroll for 1 to 3 hours; the course may be repeated; grading will be pass/fail. *Prerequisite:* English 3510 or 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.

### 1550 Summer Writer's Conference (3-0)

One week intensive seminar, directed by visiting distinguished writers in such genres as poetry, fiction, and screenplay writing.

### 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 through 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 preparing and submitting the practicum paper. Required of Professional Writing and Rhetoric majors.

### 1597 Master of Arts Research Paper (British and American Literature Option)

The student submits a graduate research paper for expansion and revision under the supervision of a director, English department reader, and an outside reader.

### 3598 Thesis

### 3599 Thesis

## GEOLOGICAL SCIENCES

201C Geology  
(915) 747-5501

CHAIRPERSON: G. Randy Keller, Jr.

PROFESSORS EMERITI: John M. Hills, William S. Strain

GRADUATE FACULTY: Clark, Cornell, Dyer, Goodell, Hoffer, Hoover, James, Keller, LeMone, Lloyd, Marston, Peebles, Pingitore, Powers, Roy, Schmidt

### 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 — GEOLOGY

**Departmental Requirements** — Students must have accomplished the equivalent of the BS degree requirements in geology, including those required courses in supporting disciplines. A satisfactory score on the Geology Subject (Advanced) test of the Graduate Record Examination (GRE) is also required for admission. For the MS degree program, students must present 30 hours including a thesis (6 hours). At least 21 hours must be in courses numbered 3500 or above. As part of the 30 hour program, 6 hours at the upper-division level are required in a supporting (minor) field such as Mathematics, Chemistry, Biology, Physics, Economics, Geophysics, Civil Engineering, Botany, Zoology, Statistics, Computer Science or Metallurgical Engineering. At least 3 hours of the supporting field must be done in residence. All candidates are required to enroll in Geology 1501 every semester they are in residence. All candidates are required to pass satisfactorily an oral examination concerning their thesis investigation.

#### M.S. DEGREE — GEOPHYSICS

**Departmental Requirements** — Students must have accomplished the equivalent of the BS requirements in geophysics, including the required courses in supporting disciplines. A satisfactory score on the appropriate Subject (Advanced) test of the Graduate Record Examination (GRE) may also be required for admission. For the MS degree program, students must present 30 hours including a thesis (6 hours). At least 21 hours must be in courses numbered 3500 or above. As part of the 30 hour program, 6 hours are required in a supporting (minor) field such as Physics, Mathematics, Computer Science, Geology, Civil Engineering, or Electrical Engineering. Up to 12 hours of courses in these disciplines may be counted and at least 6 of these hours must be at the 3500 level. At least 3 hours of the supporting field must be done in residence. All candidates are required to enroll in Geology 1501 every semester they are in residence. All candidates are required to pass satisfactorily 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 by taking the 12-hour summer remedial courses (6501-6502) plus field camp (6465). Thereafter, these students can proceed to the 30 hours of coursework in the selected area, as shown above.

The department is currently seeking approval to offer the Master of Science degree in both geobiology and geochemistry. Students entering the proposed geobiology program will be required to have a B.S. degree in geology with the geobiology option or the equivalent, and students entering the proposed geochemistry program will be required to have a B.S. degree in geology with the geochemistry option or the equivalent. Interested students should contact the department for details regarding degree requirements.

### DOCTOR OF GEOLOGICAL SCIENCES

**Requirements for Admission** — The Graduate Record Examination in Geology must be taken by all incoming graduate students. Students aspiring to the doctorate 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, civil engineering, or metallurgical 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 Geological Sciences from an accredited institution, or (2) holds a bachelor's degree in Earth Sciences from an accredited institution and has no deficiencies in science courses required for the B.S. degree in Geological Sciences at U.T. El Paso and has completed 30 hours of post-bachelor's study in Geology, 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 Doctor of 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.

A student must complete 6 hours of courses in a relevant supporting field, 3 hours of which must be at the graduate level.

**Internship** — Each doctoral candidate is required to have, or to gain, practical, professional experience equivalent to at least nine months of work in the petroleum or mining industries, or with an applied branch of the federal or state geological surveys, or with similar industries or agencies which use applied geology at a professional level. This requirement may be fulfilled by full-time employment for a period of nine months or during summer employment. The student's doctoral committee will evaluate the adequacy of the internship.

**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, two professors of geology, and one other scientist or engineer — all of whom are members of the graduate faculty and are approved by the Dean of the Graduate School.

The Graduate Advisor will appoint a Comprehensive Examination Committee to administer the Comprehensive Examination.

**Examinations** — The department's Comprehensive Examination Committee shall administer a comprehensive examination at least once each year. The examination will consist of geological sciences as well as coverage of a special field selected by the student.

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.

## 42 / PROGRAMS OF STUDY

**Dissertation** — A doctoral dissertation dealing with an application-oriented problem is required. This dissertation must demonstrate the candidate's capacity for originality and independence in recognizing a practical, 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 supervising committee. This will be published in *American Dissertation Abstracts*.

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 Doctor of Geological Sciences 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 the doctorate may be altered in successive catalogs, but the student is bound only by the requirements in force at the time of admission. Within an eight year limit, the student may choose to fulfill the requirements of any subsequent catalog.

**Departmental Requirements** — Doctoral candidates in Geological Sciences who intend to specialize in Geology, Geophysics, Geochemistry, or Geobiology must have an MS 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 the 12-hour summer remedial course (6501, 6502) plus Field Camp (6465) plus any other coursework recommended by the Graduate Studies Committee. Thereafter 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

3308 Remote Sensing  
3310 Geomorphology  
3322 Principles of Geochemistry  
3324 Geochemical Prospecting  
3325 Sedimentation  
3432 Exploration Geophysics, Seismic Methods (formerly 3332)  
3434 Exploration Geophysics, Non-Seismic Methods (formerly 3334)  
3454 Paleozoic & Mesozoic Vertebrate Paleontology  
1455 Vertebrate Paleontology Techniques

3456 Cenozoic Vertebrate Paleontology  
1457 Advanced Vertebrate Paleontology  
4458 Geology Applied to Petroleum  
3462 Stratigraphy  
3464 The Geology of Groundwater  
3470 Economic Mineral Deposits  
3472 Computer Applications in the Natural Sciences  
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

### 3510 Advanced Invertebrate Paleontology (2-3)

A comprehensive analysis of the faunal taxonomy and paleoecology of the geologic systems. Professional methods of collecting and preparing invertebrate fossils will be stressed. *Prerequisite:* Geol. 4320 or permission of instructor.

### 3520 Paleozoic Biostratigraphy (2-3)

Classification, paleogeography, and paleontology of the stratigraphic units of the marine Mesozoic and Cenozoic. *Prerequisite:* Geol. 4320 and permission of instructor.

### 3530 Paleobotany of Benthic Algae and Higher Plants (2-3)

Study of the morphology, paleoecology, biostratigraphy, taxonomy and evolution of higher plant macroflora in terrestrial systems. Paleophycological studies will concentrate on paleoecological interpretation and biostratigraphic application of the benthic calcareous algae in marine systems. *Prerequisite:* Graduate standing in Geology or Biology, or permission of instructor. Laboratory Fee: \$4.00

### 3534 Paleophycology (2-3)

Study of microscopic fossil algae including mineral and organic-walled phytoplankton. Morphology, taxonomy, classification, biostratigraphy and paleoecology of these organisms will be covered. Laboratory will stress techniques of collection, preparation and study. *Prerequisite:* Graduate standing in Geology or Biology, or permission of instructor.

### 3535 Micropaleontology (3-3)

Study of animal microfossils including foraminifera, ostracoda, and conodonts, emphasizing morphology, taxonomy, paleoecology, and biostratigraphy. Laboratory will stress techniques of collection, preparation, and study. *Prerequisite:* Geol. 3214, or equivalent. Laboratory Fee: \$4.00

### 3536 Palynology (2-3)

Study of the morphology, classification, biostratigraphy and paleoecology of fossil, sub-fossil and recent spores and pollen. Laboratory will stress techniques of collection and preparation of ancient to recent polymorphs. *Prerequisite:* Graduate standing in Geology, Biology or Anthropology. Laboratory Fee: \$5.00

## PETROLOGY

### 3540 Advanced Carbonate Petrography (2-3)

Thin-section and hand-specimen studies of carbonate rocks with emphasis on environmental interpretation, porosity formation, and potential reservoir characteristics. *Prerequisite:* Geol. 3325, 3541, or permission of instructor.

### 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. *Prerequisite:* Geol. 3325 and permission of instructor.

### 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: \$4.00

**3545 Advanced Igneous Petrology (2-3)**

Study of igneous rocks and processes in the light of field, theoretical, and experimental considerations. Laboratory studies include the interpretation of petrologic data and petrographic work on plutonic and volcanic rocks. *Prerequisite:* Geol. 3315 or equivalent; Chemistry 3351-52 recommended. Laboratory Fee: \$4.00

**3546 Metamorphic Petrology (2-3)**

Observation, theory, and experimental data in the interpretation of textures and mineral assemblages of metamorphic rocks. An introduction to the theoretical aspects of metamorphic petrology including graphic representation of phase equilibria, and an introduction to diffusion and heat flow. *Prerequisite:* Geol. 3315 or equivalent. Laboratory Fee: \$4.00

**GEOPHYSICS****3551 Electrical Methods in Geophysics (3-0)**

Theory and application of electrical and electromagnetic techniques for geophysical exploration. Includes resistivity, magnetotelluric and electromagnetic methods to determine the electrical properties and hence geological parameters for exploration targets. *Prerequisite:* Physics 3441, or Electrical Engineering 3321, or consent of instructor.

**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. *Prerequisite:* 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 I (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. *Prerequisite:* Geol. 3432, Math 3436 and Physics 3351, or consent of instructor.

**3555 Seismology II (3-0)**

Mathematical treatment of plane waves in homogeneous, laminated, granular, and porous media. Effect of fluid content. Measurements of attenuation in rocks and review of loss mechanisms. Reflection at plane boundaries. Propagation along cylindrical boreholes. Radiation from simple seismic sources. *Prerequisite:* Geol. 3554 or Equivalent.

**1556-3556 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 Geothermics (3-0)**

Principles of heat conduction in solids, emphasizing the measurement of the thermal properties of geologic materials. Heat flow from the interior of the earth and the distribution of heat sources. Geothermal energy and exploration. *Prerequisite:* Math. 3326 or permission of instructor.

**3558 Advanced Seismic Prospecting (2-3)**

A survey of the most recent techniques and developments in seismic prospecting with an emphasis on digital processing. The mathematical and physical basis for techniques such as convolution, correlation, and the calculation of synthetic seismograms will be established. Laboratory will stress computer programming of the techniques studied during lectures. *Prerequisite:* A working knowledge of FORTRAN and Math 3326, or consent of the instructor.

**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, crustal evolution and tectonic models. *Prerequisite:* Math 3212 or equivalent or permission of instructor.

**1563-3563 Special Problems in Geophysics**

*Prerequisite:* Graduate standing and permission of instructor.

**3610 Special Problems, Geophysics**

For Doctoral students only.

**GENERAL GEOLOGY****1562-3562 Special Problems in Geology**

*Prerequisite:* Graduate standing and permission of instructor.

**3561 Advanced Historical Geology (3-0)**

*Prerequisite:* Senior or graduate standing and permission of instructor.

**3564 Depositional Environments and Systems (3-0)**

Analysis of layer geometry, sedimentary processes and rock types, diagnostics of major depositional environments and systems. Occurrence of natural resources in depositional systems. *Prerequisite:* Geol. 3325 or equivalent or permission of instructor.

**3565 Tectonics and Sedimentation (3-0)**

Sedimentary basin evolution within a plate tectonic framework is discussed from the standpoint of siliclastic and carbonate sedimentologic/stratigraphic, and diagenetic variations. Field trips are included. *Prerequisite:* Geol. 3325 or permission of instructor.

**3566 Seismic Stratigraphy (2-3)**

Interpretation of geologic parameters from seismic reflection data. Emphasis on recognition and mapping of stratigraphic units and lithologic facies. Comparison of reflection characteristics and geologic resolution. *Prerequisite:* Geol. 3564 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.

**3568 Evaporite Geology (3-3)**

Evaporite deposits are important as mineral sources, as a lithology associated with hydrocarbon basins, and for applied purposes such as oil storage and radioactive waste isolation. The processes of evaporite formation, deformation, and diagenesis will be examined. Methods of evaporite investigation will be covered in lab and lecture. *Prerequisite:* Geol. 3462, or consent of instructor.

**3570 Geotectonics (3-0)**

Extensive readings on selected topics in and a broad review of the major principles and theory of geotectonics. *Prerequisite:* Geol. 4323.

**3571 Advanced Structural Geology (3-0)**

The theory of rock deformation, stress-strain theory applications to geology, computerized model and tectonic analysis. *Prerequisite:* Geol 4323.

**3572 Geology of the Western United States (3-0)**

General stratigraphy, structure, geomorphology and economic geology of each of the conterminous United States west of the 103rd meridian. *Prerequisite:* Structural geology (4323), summer field course (6465) and graduate standing.

**3575 Quantitative Techniques in the Geological Sciences (3-0)**

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.

**3576 Applied Geochemistry (2-3)**

Application of geochemical principles and techniques to prospecting for commercial mineral deposits. *Prerequisite:* Geol. 3324 or permission of instructor.

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### 3580 Analytical Methods in Geology

Theory and application of x-ray diffraction, x-ray fluorescence, atomic absorption, differential thermal analysis, and spectrofluorimetry to chemical analyses of geological materials. *Prerequisite:* Graduate standing, and/or permission of instructor. Laboratory Fee: \$3.00

### 1589-6589 Graduate Research in Geological Sciences

Cannot be used to satisfy minimum degree requirements. Grade of S or U. *Prerequisite:* Graduate standing and permission of instructor.

### 3590 Seminar in Geology (3-0)

Seminar sections (non-concurrently) in paleontology and stratigraphy, mineralogy, petrology, and geochemistry; structural geology and geomorphology; economic geology, and subsurface correlation. *Prerequisite:* Graduate standing and permission of instructor. May be repeated for credit when topics vary.

### 3598 Thesis

### 3599 Thesis

For Doctoral Students Only

### 3805 Special Problems, Geology

### 3620 Dissertation

### 3621 Dissertation

### 1896-6696 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.

### 6501-02 Advanced General Geology (6-0)

A sequence of courses designed to remedy deficiencies in the geologic background of science or engineering students who did not major in the Geological Sciences on the undergraduate level. Physical and historical geology, mineralogy, petrology, sedimentation, structural geology, and plate tectonics will be taught. The rigorous treatment of this material will include lectures, problem solving, laboratory activities, and field work. No prior geology courses required, but a science or engineering background is necessary.

## ECONOMIC GEOLOGY

### 3593 Genesis of Mineral Deposits (2-3)

Field and laboratory studies of mineral deposits emphasizing geochemical and mineralogical relationships to geology and mineral resource evaluation. Microscopy, X-ray, chemical, and computer studies. *Prerequisite:* Geol. 3580, 4591, 4592 and Metallurgical Engineering 3412 suggested.

### 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:* Geol. 4591 or 4592, or permission of instructor.

### 3595 Economic Geology of Fuels (3-1)

Origin, distribution, processing and economic aspects of coal, uranium, oil shale, tar sands, and geothermal resources in terms of energy supplies. *Prerequisite:* Geol. 3470 or equivalent, or consent of instructor.

### 3596 Mineral Economics (3-0)

Economic characteristics of mineral resources, economic analyses as applied to the mineral industries; problems related to mineral development and financing. *Prerequisite:* Graduate standing and permission of instructor.

### 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:* Geol. 3470 or permission of instructor.

### 4591 Industrial Rocks and Mineral Deposits (3-2)

Study of the geologic and economic factors and techniques involved in finding, evaluating, producing, and marketing industrial rocks and minerals. Mine visits and Laboratory required. *Prerequisite:* Geol. 3470 or permission of instructor.

### 4592 Metallic Mineral Deposits (3-2)

Study of the geology and origin of metalliferous deposits; field excursion and reflected light laboratory work are required. *Prerequisite:* Geol. 3470, or permission of instructor.

## HEALTH AND PHYSICAL EDUCATION

801C Education Building  
(915) 747-5430

CHAIRPERSON: Brian J. Kelly

GRADUATE FACULTY: Hardin, Harris, Kelly, Mason

The Master of Science degree in Health and Physical Education emphasizes the needs of the student wishing to pursue research and to continue professional education beyond the master's degree level.

The Master of Education degree in Health and Physical Education is primarily directed toward the student teaching Health and Physical Education in elementary or secondary schools.

### DEPARTMENTAL REQUIREMENTS FOR MASTER OF SCIENCE DEGREE

Candidates for the M.S. degree are required to complete satisfactorily Ed.P. 3500, P.E. 3502 and P.E. 3505, six semester hours of approved work outside the department, six semester hours of thesis, and nine semester hours of graduate physical education coursework for a total of 30 semester hours.

An oral defense of the thesis, satisfactory to the department graduate faculty, must be made before the degree will be awarded.

### DEPARTMENTAL REQUIREMENTS FOR MASTER OF EDUCATION DEGREE

Candidates for the M.Ed. degree are required to complete a total of thirty-six semester hours of coursework. At least twenty-seven must be 3500 level and must include Ed.P. 3500, P.E. 3502, and P.E. 3505 plus a 3500-level health education course. Six semester hours of the advanced or graduate coursework must be taken as a minor area outside the Department.

A comprehensive examination will be required during the last semester of attendance, and a research paper of acceptable quality must be submitted to the graduate committee before the M.Ed. degree will be awarded.

No more than nine hours of advanced undergraduate coursework can be counted toward the degree.

For Undergraduate and Graduate Students

### HEALTH EDUCATION

- 3301 Community Hygiene
- 3302 Elementary School Health Education
- 3401 Health Education in the Secondary School
- 3402 Field Experiences in Health Education
- 3404 Public Health Administration I
- 3405 Public Health Administration II

### PHYSICAL EDUCATION

- 3303 Measurement in Health and Physical Education
- 3304 Current Methods and Materials in Physical Education in Secondary Schools
- 3305 Current Methods and Materials in Physical Education in Secondary Schools
- 3311 Organization and Administration of Physical Education
- 3312 Kinesiology
- 3318 Physical Education for the Pre-school, Kindergarten Child, and Primary Grade Child
- 3320 Current Methods and Materials for Elementary Schools (Intermediate Level)
- 3410 Health and Physical Education Seminar
- 3414 Special Physical Education
- 3415 Advanced Athletic Training
- 4301 Exercise Physiology

For Graduate Students Only

*Prerequisite:* Twelve semester hours of advanced courses in Health and Physical Education and a bachelor's degree.

**3502 History, Philosophy, and Professional Literature in Health and Physical Education (3-0)**

The 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.

**3504 Curriculum Construction in Health Education (3-0)**

The health education curriculum at all public school levels will be studied with emphasis on curriculum as recommended by the Texas Education Agency.

**3505 Research Methods (3-0)**

Designed to familiarize the student with the basic forms of research employed in health and physical education. Emphasis will be given to: experimental, descriptive, historical, and philosophical research with direction given to library techniques.

**3506 Scientific Basis of Physical Education (3-0)**

Designed to approach at an advanced level of kinesiological, mechanical, physiological and psychological aspects of physical education. *Prerequisite:* P.E. 3312 or equivalent.

**3507 Administration and Supervision of Health and Physical Education (3-0)**

Administration problems and supervisory techniques in health and physical education.

**3508 Sociological and Psychological Foundations of Physical Activity and Sport (3-0)**

The study of socio-psychological processes, principles, and factors affecting man's behavior in physical activity and sport. Investigation is made of current socio-psychological problems with implications for physical education and athletic coaching.

**3509 Advanced Topics in Health and Physical Education (3-0)**

This course will emphasize individual problems in the field of health and physical education. The course may be repeated once for credit.

**3510 Seminar: The Teaching of Family Life and Sex Education (3-0)**

A study of biological, behavioral and cultural aspects of human sexuality. Emphasis is centered on teacher understanding and the development of methods and materials for all grade levels.

**3511 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.

**3513 Seminar: Problems in Content and Method in Health Instruction (3-0)**

A course for experienced teachers that emphasizes flexibility and changes in content and method to meet the abilities of students.

**3514 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 required.

**3515 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.

**3516 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.

**3517 Administration of Recreation Programs (3-0)**

Organization and administration of recreation programs in communities and educational institutions. Analysis of planning programs, legal problems, public relations, personnel administration, areas and facilities, and finance and business procedures.

**3518 Problems in the Organization and Administration of Athletics (3-0)**

Problems in managing the affairs of athletic programs: including intramural sports, interscholastic and intercollegiate athletics. Consideration will be given to policies, contest management, facilities and equipment, finances and budgets, scheduling, safety, public relations and legal liability.

**3519 Physical Education in the Elementary School (3-0)**

A study of the organization, administration and curricular content of elementary school physical education with emphasis on the various teaching approaches involved.

**3550 Workshop in Problems in Health and Physical Education (3-0)**

**3551 Advanced Workshop in Problems in Health and Physical Education (3-0)**

**3598 Thesis**

**3599 Thesis**

## HISTORY

334 Liberal Arts  
(915) 747-5508

CHAIRPERSON: Carl Jackson

PROFESSOR EMERITUS: W. H. Timmons

GRADUATE FACULTY: Bailey, Clymer, Fuller, Jackson, Kawashima, Knight, Martin, Martinez, Ruiz, Schalk, Thurston

GRADUATE SCHOOL REQUIREMENTS: Graduate students in history should be familiar with the graduate school requirements listed in the present catalog.

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 History 3581 and 6 additional hours of graduate seminars in history, 9 hours of graduate studies courses in history, and History 3598-3599. It is recommended that History 3581 be taken before enrolling in another seminar.

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.

As part of the total 30 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.

**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.

**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 History 3583 and two of the following: History 3575, 3576, 3581, and 3591. Other seminars may be substituted when approved by 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 graduate courses, 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 from among the following courses — History 3575, 3576, 3581, 3583, and 3591. Other seminars may be substituted with the permission 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 substitute 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 The 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 U.S. Since 1933 (3-0)
- 3309 The Chicano (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 Thought: From Puritan to Pragmatist (3-0)
- 3315 Twentieth Century American Thought (3-0)
- 3316 Southwest Frontier (3-0)
- 3317 History of Texas since 1821 (3-0)
- 3319 The Old South (3-0)
- 3320 The New South (3-0)
- 3321 The Great West to 1840 (3-0)

- 3322 The Great West since 1840 (3-0)
- 3325 History of Mass Media in America (3-0)
- 3327 American Attitudes toward the Indian, Black, and Chicano; An Historical Perspective (3-0)
- 3328 History of Hispanic Peoples in the United States (3-0)
- 3329 History of American Women (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)
- 3342 The Spanish Borderlands (3-0)
- 3343 The U.S.-Mexico Border since 1900 (3-0)
- 3344 Latin America: The Colonial Period (3-0)
- 3345 Latin America: Reform and Revolution (3-0)
- 3347 South America since 1810 (3-0)
- 3449 History of Mexico to 1900 (3-0)
- 3350 The Mexican Revolution (3-0)
- 3351 Tudor England (3-0)
- 3352 The English Revolution (3-0)
- 3354 England to 1547 (3-0)
- 3355 England since 1547 (3-0)
- 3359 History of Religion in the West (3-0)
- 3360 The Ancient World (3-0)
- 3362 The Medieval World (3-0)
- 3364 The Age of Renaissance (3-0)
- 3365 The Age of the Reformation (3-0)
- 3366 The Age of Absolutism, 1650-1789 (3-0)
- 3367 The French Revolution and Napoleonic Eras (3-0)
- 3368 Nineteenth Century Europe, 1815-1900 (3-0)
- 3369 Twentieth Century Europe, 1900 to the Present (3-0)
- 3374 Modern Germany since 1815 (3-0)
- 3378 European Intellectual History from the Renaissance to the French Revolution (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)
- 3399 History and Historians (3-0)
- 3410 Historical Research and Writing for Undergraduates (3-0)
- 3490 Directed Study (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.

**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 of 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, Nazism, 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.



**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.

**3535 Oral History: Methodology and Application (3-0)**

Interviewing strategies, transcription and editing practices, and discussions of the uses and abuses of oral interviews are integral components of this course. Students will engage in direct field work to achieve competency in oral history techniques.

**3540 Teaching History in Secondary and Elementary Schools (3-0)**

An examination of the major problems and alternative methods in the teaching of history at the elementary and secondary levels. Focuses on history as a discipline in the humanities and social sciences, and history as a part of the social studies school curriculum. Term project required.

**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 sources, with students expected to write a substantial seminar paper based on the research.

**3575 The Chicano (3-0) +**

Exploration of an important theme or topic in Chicano history. Typical areas of focus include politics, labor relations, the family, women, economics, ethnic relations, and migration.

**3576 United States-Mexico Diplomatic Relations (3-0) +**

Exploration of an important theme or topic in the diplomatic relations of the United States and Mexico. Typical topics might include the diplomacy of the Mexican-American War, diplomatic relations during the Porfiriato, diplomacy of the Mexican Revolution, relations during the first and second world wars, and immigration.

**3580 History of the Americas (3-0) +**

Comparison of the historical experience of two or more Western hemisphere nations. Typical topics include slavery and race relations, comparative frontiers, and economic development in the Americas.

**3581 Historical Method 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, the mechanics of the research paper, and the problems of historical composition.

**3582 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.

**3583 The U.S.-Mexican Border (3-0) +**

Focuses on an important theme or topic that relates to the history of the U.S.-Mexican border region. Topics that might be studied include the delimitation and maintenance of the border, international relations, ethnic relations, the Mexican Revolution, prohibition, economic development, and migration.

**3584 Colonial and Revolutionary America (3-0) +**

Research and writing on suggested topics in the various aspects of early American society, 1607-1789, with class discussion of student papers.

**3585 History of American Foreign Relations (3-0) +**

Exploration of an important theme or topic in American diplomatic history. Past topics have included American overseas expansion in the 1890s, the origin and development of the Cold War, and the United States and the decolonization of empire in Asia in the 1940s.

**3586 American Intellectual History (3-0) +**

Exploration of key thinkers, movements, periods, and ideas in nineteenth and twentieth century American thought. Typical topics might include American transcendentalism, popular thought in the 1890s, radical thought in the 1920s and 1930s, counter cultural movements, and the twentieth century influence of Asian religions.

**3587 Modern America (3-0) +**

Social, economic, and political problems in United States history in the post-centennial years, the Progressive period, and the 1920s.

**3588 American South (3-0) +**

Consideration in depth of a designated topic relating to the American South.

**3589 Civil War and Reconstruction (3-0) +**

Focuses on a major theme or topic during the years 1850-1877. Typical topics might include party systems, military history of the Civil War, secession, and political-military relations.

**3590 Texas History (3-0) +**

Research and writing on selected topics in various aspects of Texas history.

**3591 History of Mexico (3-0) + #**

Examination of a topic or time period in the history of Mexico. Examples of topics and time periods that might be studied include the colonial period, the 19th century, the Mexican Revolution, relations with the United States, and contemporary Mexico.

**3592 American West (3-0) +**

Research and writing dealing with topics in the frontier as a part of the national experience from the colonial period into the early twentieth century.

**THESIS AND INDEPENDENT RESEARCH****3593 Independent Research**

(Open only to Plan II and Plan IV graduate students in history in the final semester of work).

**3595-6595 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.

# A reading knowledge of Spanish is required.

**INTERDISCIPLINARY STUDIES****MASTER OF ARTS IN INTERDISCIPLINARY STUDIES**

203 Worrell Hall  
(915) 747-5213

PROGRAM DIRECTOR: David Hall

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.

## 48 / PROGRAMS OF STUDY

### 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 three 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

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 for credit when the topic varies.

#### 3560 Contemporary Issues

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 for credit when topic varies.

### M.A.I.S. Final Project

#### 3593 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 a 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.

## MASTER OF SCIENCE IN INTERDISCIPLINARY STUDIES

213 Physical Science  
(915) 747-5176

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, Atmospheric Environmental Studies, Environmental Science, Resource Management, Engineering Management, curricula in Computer Applications, Science Education, 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 to 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 normally will 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.

### Specific 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 made from courses listed under the various individual departmental offerings in this catalog.

## LINGUISTICS

136 Liberal Arts  
(915) 747-5767

CHAIRPERSON: Charles Elerick

PROFESSORS EMERITI: Lurline Coltharp, Jacob Ornstein-Galicia,  
John McCarty Sharp

GRADUATE FACULTY: Amastae, Blansitt, Coleman, Cotton, Elerick,  
D. Natalicio, Past

M.A. Degree in Applied English Linguistics

**Admission to Program:** BA degree with major in Linguistics, English, or Modern Languages, or BS in Education with a teaching field in English, Modern Languages, or Bilingual Education; or approval of the Committee on Graduate Studies.

**M.A. Degree Requirements:** Thirty semester hours including the thesis (3598-3599), of which a maximum of six hours may be 3400-level courses. A minor of six to nine hours may be approved, but is usually not recommended. A written comprehensive examination is required of all candidates and must be taken before Ling. 3598.

For Undergraduate and Graduate Students

- 3401 Methods of Foreign Language Instruction (3-0)  
 3440 Child Language Acquisition and Development (3-0)  
 3448 Analyses of Second Language Acquisition (3-0)  
 3454 Psycholinguistics (3-0)  
 3471 Studies in Linguistics (3-0)  
 3472 Contrastive Linguistics: Spanish/English (3-0)  
 3473 The Spanish Language in the Americas (3-0)  
 3480 Language Universals (3-0)  
 3481 Spanish/Linguistics/English Translation I (3-0)  
 3482 Spanish/Linguistics/English Translation Practicum I (3-9)  
 3490 Studies in the Spanish Language (3-0)  
 3491 Spanish/Linguistics/English Translation II (3-0)  
 3492 Spanish/Linguistics/English Translation Practicum II (3-9)

For Graduate Students Only:

**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 Linguistics (3-0)**

The structure of modern English from the viewpoint of a number of recent grammatical models.

**3519 English Historical Linguistics (3-0)**

A study of the changes in English. The focus is on the language, not the literature.

**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 (3-0)**

A study of recent research in language typology and universals.

**3585 History of the Spanish Language (3-0)**

The development of the language from Vulgar Latin to modern Spanish, with selected readings from different periods.

**3588 Bilingualism (3-0)**

Study of social and linguistic aspects of bilingualism.

**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.

## MANAGEMENT

205 College of Business  
 (915) 747-5496

CHAIRPERSON: David B. Stephens

GRADUATE FACULTY: Dougherty, Kohl, Sheppard, Stephens, Thakur, Wieters

At present, the Management Department does not offer a graduate level degree, but it does participate in the Master of Business Administration degree, the requirements of which are found under "Business Administration" in this catalog.

For Undergraduate and Graduate Students

### COMPUTER INFORMATION SYSTEMS

- 3480 Advanced Business Computer Applications (3-0)  
 3482 Management Information Systems (3-0)  
 3490 Management of the Data Processing Function (3-0)  
 1391-3391 Computer Information System Practicum (1-0, 2-0, 3-0)  
 4391-6391 Computer Information System Practicum (4-0, 5-0, 6-0)

### MANAGEMENT

- 3405 International Management (3-0)  
 3418 Management for Technical Professionals (3-0)  
 3419 Management Laboratory (3-0)  
 3422 Operations Planning and Control (3-0)  
 3424 Production Management Seminar (3-0)

For Graduate Students Only

### COMPUTER INFORMATION SYSTEMS

#### 3515 Systems Management

Coverage of the management of systems projects through the systems life cycle. Topics studies include: PERT/CPM, technological forecasting, project management, creative problem solving, feedback generation, and project selection and evaluation.

#### 3517 Software Product Engineering Management (3-0)

A study of the management methodologies for the planning, design, construction, evaluation, documentation, distribution and maintenance of computer application software. Topics include software as a product, the phase-function matrix, hierarchical decomposition, interface management, software quality, programming productivity, software testing, correctness proofs, standards and procedures.

### MANAGEMENT

#### 3511 Organizational Management Seminar

Study of the basic processes of organization and management. Study of structural elements, behavior within structure, and behavior among structures. The decision-system approach will be used.

#### 3512 Labor Relations and Collective Bargaining (3-0)

An examination and appraisal of collective bargaining processes, public policy issues, and major labor relations problems.

#### 3513 Labor Relations in the Public Sector (3-0)

An examination of the development and practice of collective bargaining between federal, state, and local governments and their employees.

#### 3520 Macro-Organizational Behavior (3-0)

The review of current research findings and case studies designed to provide a more comprehensive understanding of the behavior of complex organizations as entities interacting with their external and internal environments and the implications of these interactions toward a better understanding of organizational effectiveness.

#### 3521 Micro-Organizational Behavior (3-0)

The study of the effective functioning of individuals and groups, and intergroup interactions within simple and complex organizations through the application of traditional management concepts and use of case studies.

## 50 / PROGRAMS OF STUDY

### 3522 Advanced Personnel Theory

An investigation into the behavioral foundations of the instruments of modern personnel management. Building of appropriate testing, training, performance evaluation, interviewing and/or wage and salary instruments designed to correct organizational deficiencies will be stressed.

### 3523 Management Science Seminar

A discussion of management cases involving quantitative aspects, computer evaluation, and management information systems.

### 3524 Business and Society

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

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.)

### 3598 Thesis

### 3599 Thesis

## MARKETING

230 College of Business  
(915) 747-5185

CHAIRPERSON: J. Robert Foster

GRADUATE FACULTY: English, Foster, George, Hasty, Martin, Palmore, Watkins, Whistler

At present the Marketing Department does not offer a graduate level degree, but it does participate in the Master of Business Administration degree, the requirements of which are found under "Business Administration" in this catalog

For Undergraduate and Graduate Students

### ADMINISTRATIVE SERVICES:

- 3497 Business Report Writing (3-0)
- 3498 Improving Instruction in Secretarial Studies (3-0)
- 3499 Business Education Seminar (3-0)
- 3450 Business Education Workshop (3-0)

### MARKETING:

- 3490 Organizational Marketing (3-0)
- 3498 Marketing Measurements and Analysis (3-0)

### STATISTICS:

- 3498 Statistical Survey Techniques (3-0)
- 3499 Regional Analysis, Methods and Principles Seminar (3-0)

For Graduate Students Only

### ADMINISTRATIVE SERVICES:

#### 3550 Problems in Business Education (3-0)

Consideration of current problems in business education based upon the interests and needs of the students.

#### 3597 Business Research and Report Writing (3-0)

Organization and preparation of reports of the types used in business. Techniques of collecting, interpreting and presenting information useful to management.

### MARKETING:

#### 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.

#### 3598 Thesis

#### 3599 Thesis

### STATISTICS:

#### 3511 Quantitative Methods in Business (3-0)

Basic mathematical techniques employed in the solution of management problems, including probability theory and tests of hypotheses.

## MATHEMATICAL SCIENCES

124 Bell Hall  
(915) 747-5761

CHAIRPERSON: Eugene F. Schuster

GRADUATE FACULTY: Boyer, Burch, Foged, Gray, Gregory, Guthrie, Kaigh, Lifschitz, Narvarte, Nymann, Schuster, Srinivasan

### 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 the 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 3521, 3531, 3541, and 3551 in their program. For students desiring the M.S. degree in statistics, 3580 and 3581 are required. 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. All students are required to take Math 3571 after completing at least 24 hours of their program. A comprehensive examination is required.

For Undergraduate and Graduate Students

- 3300 History of Mathematics
- 3319 Elementary Number Theory
- 3323 Linear Algebra
- 3325 Introduction to Algebra
- 3327 Applied Algebra
- 3328 Foundations of Mathematics
- 3330 Probability
- 3335 Applied Analysis
- 3341 Introduction to Analysis
- 3353 Mathematical Programming

- 3380 Sampling Techniques
- 3381 Nonparametric Statistical Methods
- 3425 Modern Algebra
- 3426 Modern Algebra
- 3429 Numerical Analysis
- 3436 Applied Analysis II
- 3437 Complex Analysis
- 3441 Real Analysis I
- 3442 Real Analysis II
- 3443 Advanced Topics from Differential Equations
- 3480 Statistics I
- 3481 Statistics II

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. *Prerequisite:* Mathematics 3326 and 3323. Mathematics 3335 and 3436 are desirable, but not necessary.

**3512 Applied Mathematics II (3-0)**

See Mathematics 3511.

**3521 Advanced Abstract Algebra I (3-0)**

Groups, rings, fields, modules, with an introduction to homological methods. *Prerequisite:* Mathematics 3425 or its equivalent as approved by the instructor.

**3522 Advanced Abstract Algebra II (3-0)**

A continuation of Mathematics 3521. *Prerequisite:* Mathematics 3521 or its equivalent as approved by the instructor.

**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. *Prerequisite:* The analysis equivalent of Mathematics 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. *Prerequisite:* The linear algebra equivalent of Mathematics 3323 and a working knowledge of the FORTRAN programming language.

**3531 Real Variables I (3-0)**

Measurable sets and functions, Lebesgue-Stieljes integration, Baire categories,  $L_p$  spaces and various types of convergence. *Prerequisite:* Mathematics 3441 or its equivalent as approved by the instructor.

**3532 Real Variables II (3-0)**

A continuation of Mathematics 3531. *Prerequisite:* Mathematics 3531 or its equivalent as approved by the instructor.

**3541 General Topology (3-0)**

A study of topological spaces, compactness, connectedness, metrization, and function spaces. *Prerequisite:* Mathematics 3328 or its equivalent as approved by the instructor.

**3542 Algebraic Topology (3-0)**

An introduction to algebraic methods in topology. Topics include homotopy, covering spaces, homology, and manifolds. *Prerequisite:* Mathematics 3328 and 3425 or their equivalents as approved by the instructor.

**3551 Complex Variables I (3-0)**

Complex integration and the calculus of residues. Analytical continuation and expansions of analytic functions. Entire, meromorphic, and periodic functions. Multiple-valued functions and Riemann surfaces. *Prerequisite:* Mathematics 3441 or its equivalent as approved by the instructor.

**1570-3570 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.

**3571 Seminar for Teachers in Mathematics (3-0)**

This course will take a sophisticated look at various topics in the pre-university mathematics curriculum. May be repeated as content varies. May not be counted in fulfilling the requirements for the M.S. degree.

**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:* Mathematics 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:* Mathematics 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. *Prerequisite:* 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. *Prerequisite:* 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:* Statistics 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:* Mathematics 3585 or consent of the instructor.

**3589 Special Topics in Statistics (3-0)**

Various topics in probability and statistics not included in the regular courses will be discussed. May be repeated once for credit as the content changes. *Prerequisite:* 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. *Prerequisite:* Mathematics 3280 or equivalent and Mathematics 3330.

**3591 Time Series Analysis (3-0)**

Identification, estimation, and forecasting of stationary and nonstationary models; spectral analysis, analysis of trend and seasonal variation; Box-Jenkins methodology. Computer packages for time series data analysis will be employed. *Prerequisite:* Mathematics 3330.

**3592 Statistical Computing (3-0)**

A study of stochastic simulation and select numerical methods used in statistical software. *Prerequisite:* A high level programming language, linear algebra, and Statistics 3480 or equivalent.

**3598 Thesis****3599 Thesis**

## MECHANICAL AND INDUSTRIAL ENGINEERING

101 Engineering Science Complex  
(915) 747-5450

CHAIRPERSON: Robert L. Reid

GRADUATE FACULTY: Bhaduri, Craver, Dowdy, Edwards, Hawkins, Herrera, McLean, Reid, Swift

The Mechanical and Industrial Engineering Department offers an undesignated Master of Science with a major in 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. Thesis and non-thesis options are available under the last two 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 3596-3597, Graduate Project, and is open only to part-time students whose work schedule prohibits doing a thesis.

A student holding a Bachelor of Science with a major in either Mechanical or Industrial Engineering 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 3596, Graduate Project. Possible areas of sub-specialization are Business Management, Computer Science, Mathematics or others, as approved by the student's graduate committee.

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 Controls Systems
- 3442 Introduction to Hybrid Computation
- 3455 Gas Dynamics
- 3456 Application of Solar Energy
- \*3464 Senior Analysis
- 3487 Aerodynamics
- 3491 Noise Control
- \*4465 Dynamic Response
- \*4451 Heat Transfer

### INDUSTRIAL ENGINEERING

None of these courses may be applied toward the degree of Master of Science in Industrial Engineering.

- 3432 Safety Engineering
- 3484 Industrial Layout
- 3485 Statistical Quality Control & Reliability
- 4491 Production and Inventory Control
- 3492 Probabilistic Operations Research
- 3493 Engineers and Managing
- 4466 Senior Design

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: \$4.

#### 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 3326 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:* ME 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:* ME 4451 or permission of instructor.

#### 3506 Advanced Fluid Mechanics I (3-0)

Survey of the principle 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, Helmholtz theorem, Crocco's theorem, steam function, potential flow, conformal transformation, theory of lift, wave phenomena in fluids. *Prerequisite:* ME 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:* ME 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 ME 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:* ME 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:* ME 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:* ME 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 hypersonic flow; normal and oblique shocks; methods of characteristics; mixed flows; hodograph method; compressible laminar and turbulent boundary layers. *Prerequisite:* ME 3455 or 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:* ME 3238 or equivalent.

**1594-6594 Graduate Research in Mechanical Engineering**

Variable credit research topics in ME. *Prerequisite:* Permission of instructor.

**1595-3595 Graduate Seminar**

Conferences, discussions and/or research, individual or collective, on advanced phases of engineering problems conducted under the direct supervision of a faculty member. Variable credit, and may be repeated for credit to total 6 credits. *Prerequisite:* Permission of instructor.

**3596-97 Graduate Project (3-0)**

Individual research, design, or analysis under the supervision of a member of the graduate faculty demonstrating the application of mechanical engineering technique to a problem of major scope. A written report is required of a student selecting the report option in lieu of thesis. *Prerequisite:* Permission of graduate advisor.

**3598 Thesis****3599 Thesis****Industrial Engineering****3551 Quantitative Methods (3-0)**

Engineering statistical and numerical methods used in the analysis and management of industrial systems. The use, rather than the theoretical development, is emphasized. *Prerequisite:* Permission of instructor.

**3552 Statistical Quality Control and Reliability II (3-0)**

Continuation of IE 3485. Variables sampling plans, economic design of sampling plans, reliability mathematics, system reliability. *Prerequisite:* IE 3485 or permission of instructor.

**3554 Advanced Engineering Economy (3-0)**

Capital budgeting, income tax considerations, probabilistic engineering economy, utility theory, current economy topics. *Prerequisite:* IE 3326 or permission of instructor.

**3555 Current Topics in Industrial Engineering (3-0)**

Selected topics of current interest in industrial engineering. May be repeated for credit when topic varies. *Prerequisite:* Permission of instructor.

**3556 Advanced Operations Research Methods (3-0)**

Use and sensitivity analysis of deterministic and probabilistic linear and non-linear mathematical programming; search techniques for one and two variable functions. *Prerequisite:* IE 3389 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 projects. *Prerequisite:* Knowledge of FORTRAN and permission of instructor.

**3558 Advanced Industrial Optimization (3-0)**

Man-machine system optimization, queueing and inventory systems and their sensitivity, production scheduling, line balancing.

**1594-6594 Graduate Research in Industrial Engineering**

Variable credit research topics in IE. *Prerequisite:* Permission of instructor.

**1595-3595 Graduate Seminar (3-0)**

Conferences, discussion and/or research, individual or collective on current and/or advanced IE problems conducted under the supervision of a graduate faculty member. *Prerequisite:* Permission of instructor.

**3596-97 Graduate Project (3-0)**

Individual research, design, or analysis under the supervision of a member of the graduate faculty demonstrating the application of industrial engineering technique to a problem of major scope. A written report is required of students selecting the report option in lieu of a thesis. *Prerequisite:* Permission of graduate advisor.

**3598 Thesis****3599 Thesis****METALLURGICAL ENGINEERING**

M201 Engineering Science Complex  
(915) 747-5468

CHAIRPERSON: Walter W. Fisher

GRADUATE FACULTY: Bronson, Fisher, Mutso, Stafford

The Metallurgical Engineering Department offers an undesignated Master of Science with a major in Engineering and a Master of Science with a major in Metallurgical Engineering. Specific courses of study in the Metallurgical Engineering major include extractive, physical and process metallurgy. All students are required to take Metallurgy 3501, 3502, and 4503. Thesis and non-thesis programs are available under this degree. Students enrolled in a thesis program normally take 24 hours of coursework plus Metallurgical Engineering 3598-99, Thesis. Non-thesis students follow a 36 hour program which includes credit for two Metallurgical Engineering 3595, Graduate Seminar, courses.

A student holding a Bachelor of Science with a major in Metallurgical Engineering 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 Metallurgical Engineering 3595, Graduate Seminar. Possible areas of sub-specialization may consist of Business Management, Operations Research, Structural Mechanics or others, as approved by the student's graduate committee.

For Undergraduate and Graduate Students

3302 Mineral Engineering  
3309 Physics of Materials  
3314 Advanced Materials Concepts  
3315 Metallurgical Process Fundamentals  
4304 Process Metallurgy I  
4305 Process Metallurgy II  
4306 Physical Metallurgy I  
4307 Physical Metallurgy II  
3404 Electrometallurgy  
3409 Corrosion  
3412 Microscopy  
3413 X-Ray  
3416 Failure Analysis  
3420 Metallurgy of Less Common Metals  
4405 Materials Fabrication  
4415 Mechanical Metallurgy  
4418 Metallurgical Design

For Graduate Students Only

**3501 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.

**3502 Transport Processes in Metal 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 metallurgical processing.

**4503 Structural Characterization in Metal Systems (3-3)**

Theory and application of techniques for characterizing chemical and microstructural features of solid materials. Techniques that will be stressed include reflected and petrographic light microscopy, transmission and scanning electron microscopy and x-ray diffraction. Conventional and specialized sample preparation techniques will be covered for both metal and non-metallic specimens.

**3504 Deformation and Fracture Mechanics (3-0)**

The understanding and prevention of fracture of engineering materials in service depends upon integration of basic concepts in materials science and solid mechanics. The fundamentals of these two disciplines are applied to topics such as tensile response of materials, dislocation theory, slip, fracture mechanics, cyclic stress and strain fatigue, fatigue crack propagation and environmentally assisted fracture. Offered in alternate years.

## 54 / PROGRAMS OF STUDY

### 3505 Metallurgical Process Analysis (3-0)

The underlying principles of metal extraction and refining processes will be explored in depth using thermodynamics, kinetics, surface phenomenon, electrochemistry, non-aqueous and aqueous equilibria, and mathematical modeling. Offered in alternate years.

### 4506 High Temperature Behavior of Metals (3-3)

A study of mechanical behavior and metallurgical reactions in materials at elevated temperature. Topics will include creep, fracture, precipitation and oxidation. Offered in alternate years.

### 3508 Corrosion and Oxidation in Metals Systems (3-0)

Electrochemical theory will be applied to aqueous corrosion, high temperature corrosion and oxidation, and methods for metal protection. Offered in alternate years.

### 3545 Manufacturing and Fabrication Techniques (3-0)

Topics may include welding, powder metallurgy, casting, forming, heat treatment, high energy rate forming, composite materials and the effects that fabrication has on mechanical and physical properties. Offered in alternate years.

### 1596 Graduate Colloquium (3-0)

Colloquium is to be taken each semester that a student is enrolled in the graduate program. Up to 3 credits can be applied to the degree.

### 1595-3595 Graduate Seminar

Conferences, discussions and/or research, individual or collective, on advanced phases of engineering problems including a formal written report, conducted under the direct supervision of a faculty member. Variable credit, and may be repeated for credit to total 6 credits. *Prerequisite:* Permission of instructor.

### 3598 Thesis

### 3599 Thesis

## MODERN LANGUAGES

226 Liberal Arts  
(915) 747-5281

CHAIRPERSON: Ralph W. Ewton, Jr.

PROFESSORS EMERITI: Jacob Ornstein-Galicia, John McCarty Sharp

GRADUATE FACULTY: Aguilar, Aldana, Armengol, Bagby, Beyer,

Ewton, Ford, Garcia, Kluck, Manley, D. Natalicio, Perez, Russell, Teschner

The Department of Modern Languages offers the M.A. degree in Spanish. Requirements for admission to the program are:

1. Fulfillment of general admission requirements for graduate study.
2. A satisfactory score on the Advanced Spanish Test of the Graduate Record 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 M.A. degree.

Program for the M.A. in Spanish:

PLAN I (NON-THESIS OPTION)

#### Requirements:

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. 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.
3. Complete course 3202 (fourth semester) in a second foreign language with a grade of at least B, or demonstrate equivalent proficiency.

#### PLAN II (THESIS OPTION)

#### Requirements:

1. Complete 36 credit hours of work. The thesis (Spanish 3598-3599) counts for six hours. The remaining 30 hours must include the appropriate options chosen from "Required Courses and Subject Areas" listed below. With the approval of the Committee on Graduate Studies, a minor in a related field may be offered.
2. Complete Spanish 3598-3599, Thesis. A prospectus outlining the proposed thesis must be approved by the Committee on Graduate Studies. The thesis will be defended orally.
3. Complete course 3202 (fourth semester) in a second foreign language with a grade of at least B, or demonstrate equivalent proficiency.

#### 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, 3555, 3556, or 3557)
2. One course in Twentieth Century (Spanish 3565, 3568, 3570, or 3572)

(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 3309 (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 3309 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 3557
3. A second course in Hispanic linguistics

For Undergraduate and Graduate Students

#### FRENCH

3401 Methods of Foreign Language Instruction  
3487 Poetry  
3488 Prose  
3489 Theater  
3490 Topics in French

#### GERMAN

3401 Methods of Foreign Language Instruction  
3487 Poetry  
3488 Prose  
3489 Theater  
3490 Topics in German

#### PORTUGUESE

3490 Topics in Portuguese

#### SPANISH

3309 Structure of Spanish  
3401 Methods of Foreign Language Instruction  
3402 Spanish for Teachers  
3424 The Literature of Mexico  
3428 Golden Age Drama  
3432 Golden Age Prose  
3435 Nineteenth Century Spanish Novel  
3439 The Short Story  
3441 Modern Drama  
3458 Twentieth Century Spanish Drama  
3459 Translation  
3460 Spanish American Novel



- 3461 Don Quixote  
 3463 Spanish American Poetry  
 3467 The Essay  
 3472 Contrastive Linguistics: English-Spanish  
 3473 The Spanish Language in the Americas  
 3477 Spanish Poetry  
 3490 Topics in Spanish

For Graduate Students Only

## FRENCH

- 3590 Topics in French (3-0)

## GERMAN

- 3590 Topics in German (3-0)

## 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 1442 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.

### 3525 Spanish-American Theatre (3-0)

Spanish-American theatre from its beginning to the present, with particular emphasis on the contemporary drama.

## SPANISH LITERATURE

### 3551 Medieval Spanish Literature (3-0)

Study of the literature of the Spanish Middle Ages, with selections from works such as the *jarchas*, Poema del Cid, Milagros of Berceo, the Libro de Buen Amor, etc.

### 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, Pedro Calderon de la Barca.

### 3555 Golden Age Prose (3-0)

The evolution of the prose genre in Spain in the sixteenth and seventeenth centuries. Emphasis will be on the novel, with possible reference to didactic, philosophic, or historical works.

### 3556 Golden Age Poetry (3-0)

Representative readings from Spain's major poets of the sixteenth and seventeenth centuries. Garcilaso de la Vega, Fray Luis de Leon, Gongora Quevedo and others.

### 3557 Don Quixote (3-0)

Careful reading and study of Cervantes' masterpiece, and examination of critical opinion regarding it.

### 3561 Nineteenth Century Spanish Poetry and Drama (3-0)

Representative works of poetry and the theater with special emphasis on the Romantic movement.

### 3563 Nineteenth Century Spanish Novel (3-0)

Regionalism, realism, and naturalism in the novel as typified by the works of such authors as Perez Galdos, Pereda, Valera, and Blasco Ibanez.

### 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.

### 3568 Twentieth Century Spanish Drama (3-0)

Study of the major twentieth century Spanish playwrights and their works.

### 3570 Twentieth Century Spanish Novel (3-0)

Readings from the contemporary Spanish novel, with emphasis on works written after the Generation of '98.

### 3572 Twentieth Century Spanish Poetry (3-0)

Readings in the works of modern Spanish poets, from Juan Ramon Jimenez and Federico Garcia Lorca to the present.

## LANGUAGES AND LINGUISTICS

### 3585 History of the Spanish Language (3-0)

The development of the language from vulgar Latin to modern Spanish, with selected readings from different periods.

### 3586 Spanish Dialect Studies (3-0)

Study of regional and social dialects in Spain and Spanish America. May be repeated once for credit when the topic varies.

### 3587 Applied Spanish Linguistics: Research Methods (3-0)

Methods, techniques, and designs of linguistic research including execution of simple research projects.

### 3588 Studies in Bilingualism (3-0)

Study of social and linguistic aspects of bilingualism. May be repeated once for credit when topics vary.

### 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 Linguistics 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 Linguistics 3590.

## MUSIC

301M Fox Fine Arts  
(915) 747-5606

CHAIRPERSON: Richard E. Henderson

GRADUATE FACULTY: Cardon, Chavez, Fountain, Henderson,  
Hufstader, Kress, Palmer, Paul, Stannard, Trimble, Yoss

### 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 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. A satisfactory score in the Music Placement Test, and acceptance by the Music Graduate Committee. Audition on major instrument is required.
3. Completion of the following required courses with a B or above:
 

3 hours	3571	Literature of Vocal Music: Bibliography and Research, OR
	3572	Literature of Instrumental Music: 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.
2. Satisfactory score in the Music Placement Test, and acceptance by the Music Graduate Committee.
3. Completion of the following required courses with a B or above:
 

3 hours	3571	Literature of Vocal Music: Bibliography and Research, OR
	3572	Literature of Instrumental Music: 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
3 hours	3531	Music Education
3 hours	3535	Music Education
4 hours	2581	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)  
3313, 3314 Seminar: Composition (3-0)  
2315, 2316 Form and Analysis (2-0)  
2411 Choral Arranging (2-0)  
2412 Instrumentation and Orchestration (2-0)

UNIVERSITY OF TEXAS AT EL PASO

3413, 3414 Advanced Composition (3-0)  
3415 Pedagogy of Music Theory (3-0)  
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)  
2323 History of Fretted Instruments (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 (3-0)  
3531 Problems in Music Education  
3535 Field Work in Music  
2353, 2354 Music Theatre Workshop (2-0)  
2375 Music Recording and Audio Techniques (2-0)  
2493 Pedagogy of Voice (2-0)  
2494 Piano Pedagogy and Literature (2-1)

For Graduate Students Only

#### 2511 Selected Topics in Music History

Historical examination of important musical documents selected from the Medieval, Renaissance, Baroque, Classic, Romantic and Contemporary periods

#### 2517 Theory of Twentieth Century Music

A study of significant examples of twentieth century literature. Survey of important compositional and analytical systems including those of Schoenberg, Hindemith and Schencker.

#### 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. *Prerequisite:* Twelve semester hours of advanced courses in Music and a bachelor's degree. May be repeated for credit.

#### 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. *Prerequisite:* Twelve semester hours of advanced courses in Music and a bachelor's degree. May be repeated for credit.

#### 3571 Literature of Vocal Music: Bibliography and Research Methods

A study of research methods and materials designed to equip the student for scholarly research in the area of vocal music. Includes research project.

#### 3572 Literature of Instrumental Music: Bibliography and Research Methods

A study of research methods and materials designed to equip the student for scholarly research in the area of instrumental music. Includes research projects.

#### 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.

#### 3598 Thesis

#### 3599 Thesis

#### 2581 Applied Lessons

One half-hour lesson per week. May be repeated for credit.

#### 3581 Applied Lessons

One hour lesson per week. May be repeated for credit.

#### 2591 Applied Lessons for Performance Majors Only

One half-hour lesson per week. May be repeated for credit.

#### 3591 Applied Lessons for Performance Majors Only

One hour lesson per week. May be repeated for credit.

## NURSING

1101 N. Campbell  
(915) 544-1880

DEAN: Eileen M. Jacobi

GRADUATE FACULTY: Brands, Bregg, Corona, J. Dunwell, Jacobi, Kinsinger, Kroska, Lantz, Mayberry, Petrosino, Polk, Pontious, Weitzel

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. Synthesize theoretical formulations from nursing and other disciplines and make applications in the care of patients.
2. Evaluate theoretical formulations used in providing nursing care in a clinical area of concentration.
3. Provide advanced nursing care in an area of clinical concentration.
4. Use research methods to investigate nursing care problems.
5. Use theoretical and conceptual frameworks from nursing and other disciplines to implement the roles of teaching, supervision and administration.
6. Demonstrate professional leadership at the local, state and national level.
7. Continue personal and professional development including doctoral study.

### PROCEDURES AND REQUIREMENTS FOR ADMISSION

Applicants for admission apply to the Office of the Dean of the Graduate School. (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 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 one of the states or territories. Students from other countries must be authorized to practice nursing in their own country.
6. Current cardiopulmonary certification.

Applications are considered on an individual basis and may be reviewed by the 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 12 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 nine credits are chosen in accordance with the thesis or nonthesis options.

Students also select an area of clinical concentration from Medical-Surgical Nursing, Psychiatric-Mental Health Nursing or Maternal-Child Nursing. Within the latter, the student may focus on either maternity or pediatric nursing. In the Medical-Surgical area, a clinical sub-specialist option in cardiovascular nursing is available. All clinical courses include a practicum. Course offerings are contingent upon adequate enrollment.

Teaching and Supervision and Administration are the two functional areas from which students may choose. 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.

### DEGREE PLAN FOR MASTER OF SCIENCE IN NURSING

#### REQUIRED CORE COURSES:

- 3501 — Issues and Problems in Health Care
- \*3505 — Community Health: Community Mental Health Nursing
- \*3510 — Nursing Theories and Processes
- 3570 — Fundamentals of Nursing Research

#### CLINICAL CONCENTRATION:

##### MEDICAL-SURGICAL:

- 3519 — Advanced Human Physiology
- \*3520 — Medical-Surgical Nursing I
- \*3521 — Medical-Surgical Nursing II

##### PSYCHIATRIC-MENTAL HEALTH:

- \*3525 — Psychiatric Mental Health Nursing I
- \*3527 — Psychiatric Mental Health Nursing II
- \*3531 — Psychiatric Mental Health Nursing III

##### MATERNAL-CHILD HEALTH:

- \*3511 — Family Health Care During Pregnancy
- \*3512 — Maternal Intensive Care
- \*3513 — Neonatal Intensive Care

##### NURSING CARE OF CHILDREN:

- \*3515 — Child Health in the Family Setting
- \*3516 — Nursing Care of Ill Children
- \*3517 — Nursing in School Health

##### FUNCTIONAL AREAS:

###### For Students Planning to Teach:

- \*3545 — Curriculum and Instruction in Nursing Education
- \*3547 — Roles and Functions of the Teacher in Nursing

###### 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 the College of Nursing and Allied Health

\*Course includes a practicum

For Graduate Students Only

#### 3501 Issues and Problems in Health Care

Assessment of issues and problems in 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 mental health nursing. Focuses on continuity of health care with emphasis on physiological and psychosocial problems of patients/clients and families. Complex community systems, strategies of primary prevention, social intervention and health maintenance are emphasized. Includes practicum.

**3510 Nursing Theories and Processes**

Focuses on critical analysis of current nursing theories and related nursing process conceptualizations with application to selected clients/patients and families. Includes practicum.

**3511 Family Health Care During Pregnancy**

An analysis and evaluation of theories and concepts used by nurses to promote a high level of wellness for families during the mother's pregnancy. The relationship of the health status of the family after delivery to the health status of the family prior to and during the pregnancy will be analyzed. *Prerequisite:* Core courses. Includes practicum.

**3512 Maternal Intensive Care**

Focuses on the nursing management of the high risk woman during pregnancy, delivery, and postpartum. Nursing measures dealing with psychosociological and physiological factors will be analyzed and evaluated. *Prerequisite:* 3511. Includes practicum.

**3513 Neonatal Intensive Care**

Focuses on the provision of intensive care of the high-risk newborn. Involves analysis and evaluation of nursing measures utilized to maintain or modify adaptive behaviors of neonates and their families. *Prerequisite:* Core courses and consent of instructor. Includes practicum.

**3515 Child Health in the Family Setting**

Nursing management of specific health problems of children in the family. Focuses on the analysis and evaluation of developmental theories in relation to family health. Collaborative roles and relationships with other health team members and program planning are studied. *Prerequisite:* Core courses. Includes practicum.

**3516 Nursing Care of Ill Children**

Nursing management of the acutely or chronically ill child. Factors affecting growth, development and rehabilitation are analyzed and evaluated. *Prerequisite:* 3515. Includes practicum.

**3517 Nursing in School Health**

Evaluation of the nursing process within the school health program. Current issues and trends in school health, administrative patterns and policies, and the nurse's role in an educational setting are analyzed. *Prerequisite:* 3515. Includes practicum.

**3519 Advanced Human Physiology**

Provides opportunities to acquire expanded knowledge related to the normal physiological systems. Relationships between inter and intra cellular metabolism are considered.

**3520 Medical-Surgical Nursing I**

Focuses on the application of nursing conceptual framework to selected clients/patients who manifest deviations from health. Physiological, psychological and sociological concepts basic to advanced nursing are included. *Prerequisite:* 3519 and core courses. Includes practicum.

**3521 Medical-Surgical Nursing II**

Focuses on providing continuity of health care for selected clients/patients/families who manifest deviations from health. *Prerequisite:* Core courses. Includes practicum.

**3525 Psychiatric-Mental Health Nursing I**

Systematic study of the theoretical foundations of psychotherapeutic nursing practice. Work with members of other disciplines. 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:* 3525. Includes practicum.

**3531 Psychiatric-Mental Health Nursing III**

Concentrations is on the multi-problem family in crisis or impending crisis and therapeutic interventions required in these situations. Focuses on cultural aspects of family interactions, dynamics of family functioning, and the use of psychodynamic nursing interventions. *Prerequisite:* 3527. Includes practicum.

**3533 Legal and Leadership Responsibilities in Nursing**

Comprehensive study of ethical and legal processes, the role of the nurse, and the role of the professional organization in resolving legal, ethical and moral issues.

**3535 Nursing Administration**

Theories and principles of administration and management as they are utilized in nursing service supervision and administration. Assessment of management tools and methods related to human resources and health institutions. *Prerequisite:* Core courses. Includes practicum.

**3537 Leadership in Educational Programs in Nursing**

Principles and practices related to leadership in educational programs in nursing. Focuses on accreditation process, faculty and student rights and responsibilities, faculty development and public relations. *Prerequisite:* Consent of instructor. Includes practicum.

**3539 Organizational Approach to Labor-Management Relations**

Focuses on labor-management relations. Analysis of the legal interpretation of pertinent cases will be discussed. *Prerequisite:* Consent of instructor.

**3541 Supervision and Administration of Nursing Services in Health Care Agencies**

Analyzes nursing within the health care system. Focuses on supervision, organization and administration of nursing services for patient/client care. *Prerequisite:* 3535. Includes practicum.

**3545 Curriculum and Instruction in Nursing Education**

Principles, issues and problems of curriculum design in nursing education. Curriculum patterns, programs and strategies in curriculum development and instruction. *Prerequisite:* Core courses. Includes practicum.

**3547 Roles and Functions of the Teacher in Nursing**

Focus is on content delineation, planning, organizing, delivering and evaluating the teaching-learning process in nursing. *Prerequisite:* 3545. Includes practicum.

**3550 Seminar on 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 relationship to health are studied. *Prerequisite:* Core courses.

**3570 Fundamentals of Nursing Research**

An introduction to the methods of scientific inquiry, research design and techniques of data collection, analysis and presentation of data. *Prerequisite:* Course in statistics.

**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:* 3570. Required of all students selecting thesis option.

**1594-6594 Independent Study**

A course designed by the student to meet an individual learning need. *Prerequisite:* Consent of advisor, instructor and Dean. One to six credit hours.

**3598 Thesis****3599 Thesis**

## PHILOSOPHY

203 Worrell Hall  
(915) 747-5213

CHAIRPERSON: David Hall

GRADUATE FACULTY: Haddox, Hall, Robinson, Springer

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 (3-0)

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

Student research under supervision of the faculty. Permission of instructor required.

## PHYSICS

214 Physical Science  
(915) 747-5715

CHAIRPERSON: Rufus Bruce, Jr.

GRADUATE FACULTY: Bernat, Bolen, Bowen, Brient, Bruce, Cook, Dean, Ho, Lawson, Slusher

The Department of Physics offers studies leading to the degrees of Master of Science in Physics with experimental and/or theoretical physics research in acoustics, astrophysics, atmospheric physics and optics, condensed matter physics, energy resources, geophysics, health physics, 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 report being submitted to the department in lieu of a thesis.

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

Some 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 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 are expected to enroll in Geological Sciences 6501 and 6502 during the first summer after they enter the program.

Thesis supervisory committees will have at least two geophysics representatives from the Geological Sciences Department.

For Undergraduate and Graduate Students

The following courses cannot be used as credit toward a graduate degree in physics; however, graduate credit is permitted for other fields of study.

3320 Introduction to Geophysics  
3323 Physical Optics  
3326 Modern Physics II  
2343 Advanced Laboratory Practice  
3351 Analytical Mechanics  
3359 Astrophysics  
3360 Biophysical Mechanics  
3441 Electromagnetics I  
1475-6475 Special Topics in Physical Science for Teachers  
3448 Fundamentals of Acoustics

For Undergraduates and Graduates without distinction as to whether they are working on a master's degree in physics or some other field:

3352 Advanced Mechanics  
3428 Theoretical Geophysics  
3431 Thermal Physics  
3442 Electromagnetics II  
2446 Experimental Physics  
3453 Methods of Mathematical Physics  
3457 Introduction to Quantum Mechanics  
3470 Atmospheric Physics  
3478 Undergraduate Special Topics in Physics  
3432 Statistical Physics

For Graduate Students Only

### 3501 Principles of Geodynamics (3-0)

An extensive mathematical and physical study of geodynamics. Study takes up the geophysical data regarding the earth, mechanics of deformation, effects of the rotation of the earth, orogenesis, dynamics of earthquakes, dynamics of volcanism, and related topics.

## 60 / PROGRAMS OF STUDY

### 3506 Physics of the Upper Atmosphere (3-0)

Upper atmospheric circulation influences on photochemical equilibrium. State changes, involving water vapor, ozone, oxides and ionized and neutral components of the atmosphere and their relation to formation and destruction processes and equilibrium conditions. Interactions between the gravitational, magnetic, flow and plasma fields. Sources, sinks and propagation characteristics relative to a spectrum of wave motions ranging from acoustic waves to diurnal tides. *Prerequisite:* Physics 3470 or equivalent as determined by the instructor.

### 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:* Physics 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:* Physics 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:* Physics 3442. Offered fall semester.

### 3542 Electrodynamics II (3-0)

A continuation of Physics 3541. Offered spring semester.

### 3545 Atmospheric Structure and Dynamics (3-0)

Development of stress tensor; kinematics of fluids; conservation of mass, momentum and energy; continuity, Navier-Stokes, and energy equations. Development of change in state, turbulent, and Coriolis effects; linearized approximations and non-linear prognostic equations.

### 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:* Physics 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:* Physics 3457. Offered spring semester.

### 3585 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:* Physics 3457 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:* Physics 3457 or consent of instructor.

### 3591 Research Problems in Physics (3-0)

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. *Prerequisite:* Submission of the Petition of Candidacy and consent of Chairperson of Supervisory Committee.

### 3593 Special Topics in Physics

Topics to be announced. May be repeated for credit.

### 1595 Graduate Seminar (3-0)

May be repeated for credit up to a total of 3 semester hours.

### 1596-6596 Graduate Research in Physics (1-0, 2-0, 3-0, 4-0, 5-0, 6-0)

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

## POLITICAL SCIENCE

210 Benedict Hall

(915) 747-5227

CHAIRPERSON: Thomas Price

PROFESSOR EMERITUS: Joseph Malchus Ray

GRADUATE FACULTY: Agor, Argyle, Bath, Beasley, Graves, Kruszewski, Neighbor, Peterson, Price, Segal, Staudt, Villarreal, Webking

### ADMISSION

The Department of Political Science follows the requirements specified by the Graduate School for admission.

### 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

**PLAN I — Master of Arts, Thesis:** The Master of Arts with thesis requires thirty (30) credit 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 were prepared. The non-thesis program is recommended for students not intending to continue work toward the Ph.D.

### 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 specialities 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;
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 21 hours of courses in the theoretical, methodological, and technical components of public management science:
  - Political Science 3500 — Administrative Theory
  - Political Science 3501 — Advanced Research Theory
  - Political Science 3502 — Applied 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
2. Completion of an additional 15 hours of approved electives. No more than 6 hours of electives can be at the 3300 and 3400 level.
3. Completion of 6 hours of internship (Political Science 3591 and 3592) during which students will prepare two (2) formal intern reports on approved subjects or a single longer report approved by their advisor and committee.

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 the 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 program should consult with the Director of the MPA program with regard to admission, required courses, approved electives, internship, and petition for candidacy.

### 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 21 hours of core MPA courses, 24 hours of core MBA courses, and 6 hours of MPA internship, 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. The MBA comprehensive examination is required.
7. 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 program by, the Graduate Advisor for M.S. students or the Director of the MPA program for MPA students. This applies not only to the initial registration, but also to all subsequent enrollments.

For Graduate Students Only

ALL SEMINARS may be repeated for credit when the topic varies.

#### 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.

#### 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.

#### 1501 Political Science Laboratory (1-0)

Computer applications of political science data procurement and analysis techniques taught in 3501.

#### 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 micro computers. 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.

#### 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.

#### 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.

#### 3507 Seminar in Administrative Law and Regulation (3-0)

The legal problems of the administrative process, including the uses of administrative direction, fact-finding and hearing procedures, and the methods and scope of judicial review of administrative decisions.

#### 3510 Seminar in American Government (3-0)

Research, writing, and discussion.

#### 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.

#### 3520 Seminar in American Government and the Military (3-0)

Research, writing, and discussion.

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### 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)

Research, writing, and discussion.

### 3525 Seminar in Latin American Studies (3-0)

Research, writing, and discussion.

### 3526 Seminar in Political Parties and Politics (3-0)

Research, writing, and discussion.

### 3528 Seminar in Public Law (3-0)

Research, writing, and discussion.

### 3530 Seminar in International Politics (3-0)

Research, writing, and discussion.

### 3533 Seminar in International Organizations and Law (3-0)

Research, writing, and discussion.

### 3536 Seminar in Political Theory (3-0)

Research, writing, and discussion.

### 3540 Seminar in Foreign Policy Decision Making (3-0)

Research, writing, and discussion.

### 3550 Seminar in Public Administration (3-0)

Research, writing, and discussion.

### 3553 Seminar in Regional and Urban Planning (3-0)

Research, writing, and discussion.

### 3554 Seminar in Urban Politics (3-0)

Research, writing, and discussion.

### 3555 Seminar in Urban Administration (3-0)

Research, writing, and discussion.

### 3580 Selected Problems in Government (3-0)

Research, writing, and discussion.

### 3591-3592 Internship in Public Administration (3-0, 3-0)

### 3598 Thesis (3-0)

### 3599 Thesis (3-0)

## PSYCHOLOGY

212 Psychology  
(915) 747-5551

CHAIRPERSON: Randolph H. Whitworth

GRADUATE FACULTY: Allen, Barrientos, Coleman, Devine, Goggin, Himelstein, Hosch, Lucker, Miller, Moss, Sands, Whitworth

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 course work 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 and six hours of internship. Students may, at their option, elect to include six hours of thesis in the total hours, or they may elect a non-thesis program.

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.

For Undergraduate and Graduate Students

3401 Psychological Testing (2-2)

3410 Clinical Psychology (3-0)

3411 Physiological Psychology (2-2)

3412 Advanced Abnormal Psychology (3-0)

3415 *Experimental Psychology: Social, Personality and Clinical* (3-0)

3416 Psychology of Language (3-0)

3417 Advanced Statistics (3-0)

3420 Learning Theory (3-0)

2424 Psychobiology (2-0)

1424 Laboratory for Psychology 2424 (0-2)

3440 Advanced Industrial/Organizational Psychology (3-0)

3441 Motivation and Emotion (3-0)

3442 Comparative Psychology (3-0)

3452 Independent Research

3454 Seminar in Psychology (3-0)

3460 Basic Correlational Methods (3-0)

For Graduate Students Only

### 1501-6501 Individual Research (0-3)

Student, in conference with a member of the staff, will design and perform an original experiment. Results will be prepared for possible publication in a psychological journal. *Prerequisite:* Permission of instructor.

### 3502 Advanced Experimental Psychology I (3-0)

A survey of experimental methods used in the study of sensory processes and learning.

### 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:* Psychology 3212, or Psychology 3412, or the equivalent.

### 3511 Advanced Statistics: Experimental Design (3-0)

Consideration of problems of analysis and design commonly encountered in psychological research. *Prerequisite:* Psychology 3417 or equivalent.

### 3513 Seminar in Personality Theory (3-0)

Intensive study in selected aspects of the various theories of personality.

### 3514 Seminar in Verbal Learning (3-0)

Advanced studies of verbal learning in the light of advances in psycholinguistics.

### 3515 Seminar in Physiological Psychology (3-0)

An intensive study of current developments and selected topics in the neuro-anatomical and biochemical bases of behavior. *Prerequisite:* Psychology 3411 or permission of instructor.

### 3520 Seminar in Learning Theory (3-0)

Intensive study and analysis of systematic conceptions of the learning process. *Prerequisite:* Psychology 3420 or equivalent.

### 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:* Psychology 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 Seminar in Intellectual and Neuropsychological Evaluation (3-0)

Supervised practice in the administration, scoring, and interpretation of individual tests of intelligence and neuropsychological functions. *Prerequisite:* Permission of instructor. Laboratory Fee: \$5.



**3524 Seminar in Developmental Psychology (3-0)**

An examination of issues pertaining to human development across the life span.

**3525 Seminar in Social Psychology (3-0)**

Intensive study of current issues, theories, and methods in social psychology.

**3530 Seminar in Animal Behavior (3-0)**

A study of the recent literature in animal behavior with emphasis on the behavior of nonhuman primates.

**3547 Seminar in Behavior Modification (3-0)**

Advanced study of conditioning techniques in the treatment of behavior disorders and in the control of human behavior. *Prerequisite:* Psychology 3347 or 3420 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.

**3560-9560 Clinical Internship (0-6)**

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 Psychology 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. *Prerequisite:* Permission of instructor and Psychology 3521 or 3523. Psychology majors only.

**3570-9570 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 Psychology 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. *Prerequisite:* Permission of instructor and Psychology 3521 or 3523. Psychology majors only.

**3598 Thesis****3599 Thesis****RELIGION**

302 Graham Hall  
(915) 747-5236

DIRECTOR: Howard Hallmark

GRADUATE FACULTY: Romero, Williams

Religion does not offer a graduate-level degree, but it regularly offers upper-division undergraduate courses that may be used towards graduate degrees in other disciplines, notably the Master of Arts in Interdisciplinary Studies (upon approval of the M.A.I.S. advisor).

- 3303 Archaeology of the Old Testament (3-0)
- 3304 Christian and Other Religious Traditions in America (3-0)
- 3305 Introduction to Christian Ethics (3-0)
- 3306 Survey of World Religions (3-0)
- 3307 Contemporary Religious Studies (3-0)
- 3308 Psychology of Religion (3-0)
- 3331 The History of Religion in the East (3-0)
- 3359 The History of Religion in the West (3-0)
- 3450 Special Topics in Advanced Biblical and Religious Studies (3-0)

**SOCIOLOGY AND ANTHROPOLOGY**

102 Old Main  
(915) 747-5740

CHAIRPERSON: Howard C. Daudistel

GRADUATE FACULTY: Brown, Daudistel, Eyde, Foster, Gerald, Goodman, Hedderson, Rivera, Stoddard, Young

**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, 3520, or 3580), 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 C grade in coursework taken for graduate credit, and must maintain a 3.00 grade average.

**For Undergraduate and Graduate Students**

- 3301 Sociology of Educational Institutions (3-0)
- 3302 Social Legislation (3-0)
- 3303 Sociology of Urban Life (3-0)
- 3304 The Community (3-0)
- 3311 Methods of Research (3-0)
- 3312 Measurement and Inference in Social Research (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)
- 3340 Military and Industrial Organizations (-0)
- 3341 Special Undergraduate Topics (3-0)
- 3342 Sociology of Deviance (3-0)
- 3346 Sociology of Religion (3-0)
- 3348 Criminology (3-0)
- 3349 The Family as a Social Institution (3-0)
- 3352 Sociology of Poverty (3-0)
- 3355 Contemporary Sociological Theory (3-0)
- 3357 Sociolinguistics (3-0)
- 3360 Institutions and Cultures of Latin America (3-0)
- 3362 Medical Sociology (3-0)
- 3363 Sociology of Aging (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)
- 3404 Socio-Cultural Conditions in Urban Planning (3-0)
- 3422 Political Sociology (3-0)

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- 3425 Social Class and Stratification (3-0)
- 3440 Independent Study (3-0)
- 3447 Population Analysis and Problems (3-0)
- 3455 Social Change and Social Action (3-0)

For Graduate Students Only

### **3504 Seminar in Community Development (3-0)**

A theoretical and empirical analysis of community studies, community planning in a comparative and historical perspective emphasizing the United States, Latin America and Europe.

### **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:* Sociology 3312 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.

### **3527 Seminar in Minority Groups (3-0)**

A theoretical investigation of acculturation, accommodation and assimilation in intergroup contact, analysis of social, cultural and institutional factors affecting prejudice and discrimination.

### **3533 Seminar in Youth Deviancy and Delinquency (3-0)**

Describing and treating delinquency; behavioral factors associated with deviancy; detection, detention, and prevention programs.

### **3540 Seminar in Demography (3-0)**

Causes and consequences of trends in fertility, mortality and migration.

### **1541-6541 Special Graduate Topics (3-0)**

A variable credit graduate 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.

### **3545 Seminar in Comparative Institutions (3-0)**

Social, economic, political and ideological institutions in primitive, preindustrial, and industrial societies, emphasizing sociocultural evolutionary processes.

### **3547 Seminar in Social Impact Assessment (3-0)**

Conducting social impact assessments in planning as mandated by the National Environmental Policy Act.

### **3548 Seminar in Criminology (3-0)**

Social context of criminal law and criminal justice; theories of crime and treatment programs.

### **3550 Seminar in Social Change**

Planned and unplanned social change as related to population growth, technology, environment, etc.; strategies and tactics applicable to cross-cultural and multi-class social action programs.

### **3558 Seminar in the Great Sociological Classics (3-0)**

The ideas of such diverse classic sociologists as Comte, Tocqueville, Marx, Weber, Simmel, Durkheim, and Pareto and their relevance to the contemporary scene.

### **3560 Seminar in Marriage and the Family (3-0)**

A cross-cultural comparison of marriage and family; historical background of these institutions, changing American family arrangements as affected by social and technological changes.

### **1561-6561 Graduate Research and Intern Practicum (3-0)**

A variable credit 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.

### **3563 Seminar on Aging (3-0)**

Social, cultural, institutional and organizational factors affecting health, aging and survivorship.

### **3565 Seminar in Sociology of Education (3-0)**

Application of sociological theory and research to American education, present educational problems and possible solutions.

### **3569 Seminar in Occupations and Professions**

Work in various societies; non-economic functions of occupations in modern societies; processes in selection, socialization and professionalization in occupations and professions; dimensions of leisure.

### **3575 Seminar in Southwestern Cultures**

An anthropological, ethnohistorical and sociological examination of salient Southwestern cultures; Mexican-Americans; Indian societies, Blacks, Orientals, etc.

### **3580 Seminar in Evaluation Research (3-0)**

Evaluation and policy related research; research techniques, including experimental, quasi-experimental; descriptive, and cost-benefit analysis; the impact of political issues on the research process.

### **3581 Seminar in Social Psychology (3-0)**

Comparison of major theories of social psychology, including symbolic interactionism, exchange theory, and cognitive developmental theory; their assumptions and explanatory power.

### **1590-6590 Individual Studies**

### **3598 Thesis**

### **3599 Thesis**

# THE GRADUATE FACULTY

- \***WESTON AGOR**, Professor of Political Science, 1982  
B.A., St. Lawrence University; M.P.A., University of Michigan; Ph.D., University of Wisconsin
- RICARDO D. AGUILAR**, Assistant Professor of Modern Languages, 1977  
B.A., M.A., The University of Texas at El Paso; Ph.D., University of New Mexico
- PATRICIA ADKINS AINSA**, Associate Professor of Educational Psychology and Guidance, 1977  
B.A., The University of Texas at El Paso; M.S., Eastern New Mexico University; Ph.D., University of Colorado at Boulder
- ADELFO ALDANA**, Assistant Professor of Modern Languages, 1977  
B.A., Graceland College; M.A., Ph.D., University of Illinois
- TERRY W. ALLEN**, Assistant Professor of Psychology, 1978  
B.S., M.A., Ph.D., Michigan State University
- JON AMASTAE**, Assistant Professor of Linguistics, 1980  
B.A., University of New Mexico; Ph.D., University of Oregon
- \***HOWARD GEORGE APPLGATE**, Professor in the Department of Civil Engineering, 1970  
B.S., M.S., Colorado State University; Ph.D., Michigan State University
- NOLAN JAMES ARGYLE**, Assistant Professor of Political Science, 1979  
B.S. Weber State College; M.A., University of Utah; Ph.D., Johns Hopkins University
- ARMANDO ARMENGOL**, Assistant Professor of Modern Languages, 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
- \***MICHAEL EVAN AUSTIN**, Professor of Electrical Engineering, 1963  
B.S.E.E., M.S.E.E., Ph.D., The University of Texas at Austin
- \***ALBERTO IAN BAGBY, JR.**, Associate Professor of Modern Languages, 1973  
A.B., Baylor University; M.A., University of Missouri; Ph.D., University of Kentucky
- \***KENNETH KYLE BAILEY**, Professor of History, 1960  
B.A., M.A., Ph.D., Vanderbilt University
- STANLEY EUGENE BALL**, Associate Professor of Curriculum and Instruction, 1964  
B.S., University of Wyoming; M.S., University of Arizona; Ph.D., New Mexico State University
- RYAN J. BARILLEAUX**, Assistant Professor of Political Science, 1983  
B.A., University of Southwestern Louisiana; M.A., Ph.D., The University of Texas at Austin
- MARIE ESMAN BARKER**, Associate Professor of Curriculum and Instruction, 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
- KENNETH EPHRIAM BEASLEY**, Professor of Political Science, 1967  
B.A., M.A., Ph.D., University of Kansas
- JAMES EDGAR BECVAR**, Assistant Professor of Chemistry, 1978  
A.B., College of Wooster; Ph.D., University of Michigan
- ANDREW BERNAT**, Assistant Professor of Computer Science, 1982  
B.S., Harvey Mudd College; M.A., Ph.D., The University of Texas at Austin
- SANDRA STEWART BEYER**, Assistant Professor of Modern Languages, 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. in M.E., State University of Iowa; M.E.S., Johns Hopkins University; Ph.D., Colorado State University
- DENNIS J. BIXLER-MARQUEZ**, Assistant Professor of Curriculum and Instruction, 1978  
B.A., M.Ed., The University of Texas at El Paso; M.A., Ph.D., Stanford University
- SALLY MITCHELL BISHOP**, Associate Professor of Art, 1967  
B.F.A., M.F.A., Wichita State University
- \***EDWARD LEE BLANSITT, JR.**, Professor of Linguistics, 1967  
B.H., Instituto Tecnológico de Mexico; Ph.D., The University of Texas at Austin
- ROBERT TERRELL BLEDSOE**, Associate Professor of English, 1971  
A.B., Harvard University; M.A., University of Kent at Canterbury; Ph.D., Princeton University
- MAX CARLTON BOLEN**, Professor of Physics, 1965  
B.S., Wabash College; M.S., Purdue University; Ph.D., Texas A&M University
- TOMMY J. BOLEY**, Assistant Professor of English, 1967  
B.B.A., North Texas State University; M.A., Ph.D., The University of Texas at Austin
- \***DONALD EDGAR BOWEN**, Professor of Physics, 1966  
B.A., M.A., Texas Christian University; Ph.D., The University of Texas at Austin
- DELMAR LEE BOYER**, Professor of Mathematics, 1965  
B.A., Kansas Wesleyan University; M.A., Ph.D., University of Kansas
- MADLINE BRAND**, Assistant Professor of Drama and Speech, 1968  
B.A., University of Toronto; M.A., Columbia University
- 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
- JEFFEREY T. BRANNON**, Assistant Professor of Economics and Finance, 1982  
B.A., University of New Mexico; M.B.A., University of Tennessee; Ph.D., University of Alabama
- ELIZABETH A. BREGG, R.N.**, Associate Professor of Nursing, 1981  
B.S.N., Columbia University; M.P.H., University of North Carolina
- \***SAMUEL JOHN BRIENT, JR.**, Professor of Physics, 1962  
B.S., Ph.D., The University of Texas at Austin
- \***JOHN RICHARD BRISTOL**, Associate Professor of Biological Sciences, 1970  
B.A., Cornell College; M.A., Ph.D., Kent State University
- ARTURO BRONSON**, Associate Professor in the Department of Metallurgical Engineering, 1968  
B.S., M.S., The University of Texas at El Paso; Ph.D., Ohio State University
- BONNIE SUE BROOKS**, Associate Professor of Educational Psychology and Guidance, 1968  
B.M.E., Milikin University; M.S.Ed., Ed.D., Indiana University
- GARY D. BROOKS**, Associate Professor of Educational Administration and Supervision, 1968  
B.M.E., Milikin University; M.S.Ed., Ed.D., Indiana University
- ELBA K. BROWN**, Associate Professor of Economics, 1978  
B.A., M.A., Texas Tech University; Ph.D., Duke University
- IRVING RAYMOND BROWN**, Assistant Professor of Sociology, 1969  
B.A., The University of Texas at El Paso; M.A., New Mexico State University; Ph.D., University of Missouri
- \***RUFUS BRUCE, JR.**, Professor of Physics, 1966  
B.S., Louisiana State University; M.S., Ph.D., Oklahoma State University
- B. CLAY BURCH**, Associate Professor of Mathematics, 1977  
B.S., North Carolina State University; M.S., Ph.D., Tulane University
- \***ROBERT NORTHCUTT BURLINGAME**, Professor of English, 1954  
B.A., M.A., University of New Mexico; Ph.D., Brown University

\*Senior Member

## 66 / GRADUATE FACULTY

- \***LOU ELLA BURMEISTER**, Professor of Curriculum and Instruction, 1968  
B.A., M.A., Ph.D., University of Wisconsin
- \***RICHARD WEBSTER BURNS**, Professor of Curriculum and Instruction, 1952  
B.A., University of Northern Iowa; M.S., Ph.D., State University of Iowa
- WILLIAM RALPH CABANESS, JR.**, Associate Professor of Chemistry, 1965  
B.A., M.A., Ph.D., The University of Texas at Austin
- \***ALBERT GEORGE CANARIS**, Professor of Biological Sciences, 1970  
B.S., M.A., Washington State University; Ph.D., Oregon State University
- HUGH FREDERICK CARDON**, Associate Professor of Music, 1963  
B.M., M.S., The University of Texas at El Paso; D.M.A., University of Oregon
- CHENG ALLEN CHANG**, Assistant Professor of Chemistry, 1980  
B.S., National Taiwan University; Ph.D., University of Pittsburgh
- ABRAHAM CHAVEZ, JR.**, Professor of Music, 1975  
B.M., The University of Texas at El Paso
- KENNETH F. CLARK**, Professor of Geological Sciences, 1980  
B.S., University of Durham, U.K.; 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
- DOUGLAS W. COLEMAN**, Assistant Professor of Linguistics, 1982  
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A.B., Columbia College; Sc.M., Ph.D., Brown University
- \***MARYDELLE POLK, R.N.**, Assistant Professor of Nursing, 1978  
B.S.N., The University of Texas Health Science Center at Houston; M.S., Texas Woman's University
- \***ROBERTO D. POMO**, Assistant Professor of Drama and Speech, 1981  
B.A., Brigham Young University; M.A., University of California at Davis; Ph.D., University of Utah
- \***SHARON M. PONTIOUS, R.N.**, Assistant Professor of Nursing, 1974  
B.S.N., University of Wisconsin; M.S.N., University of Minnesota; Ph.D., New Mexico State University
- \***DENNIS W. POWERS**, Assistant Professor of Geological Sciences, 1983  
B.A., Iowa State University; Ph.D., Princeton University

\*Senior Member

## 70 / GRADUATE FACULTY

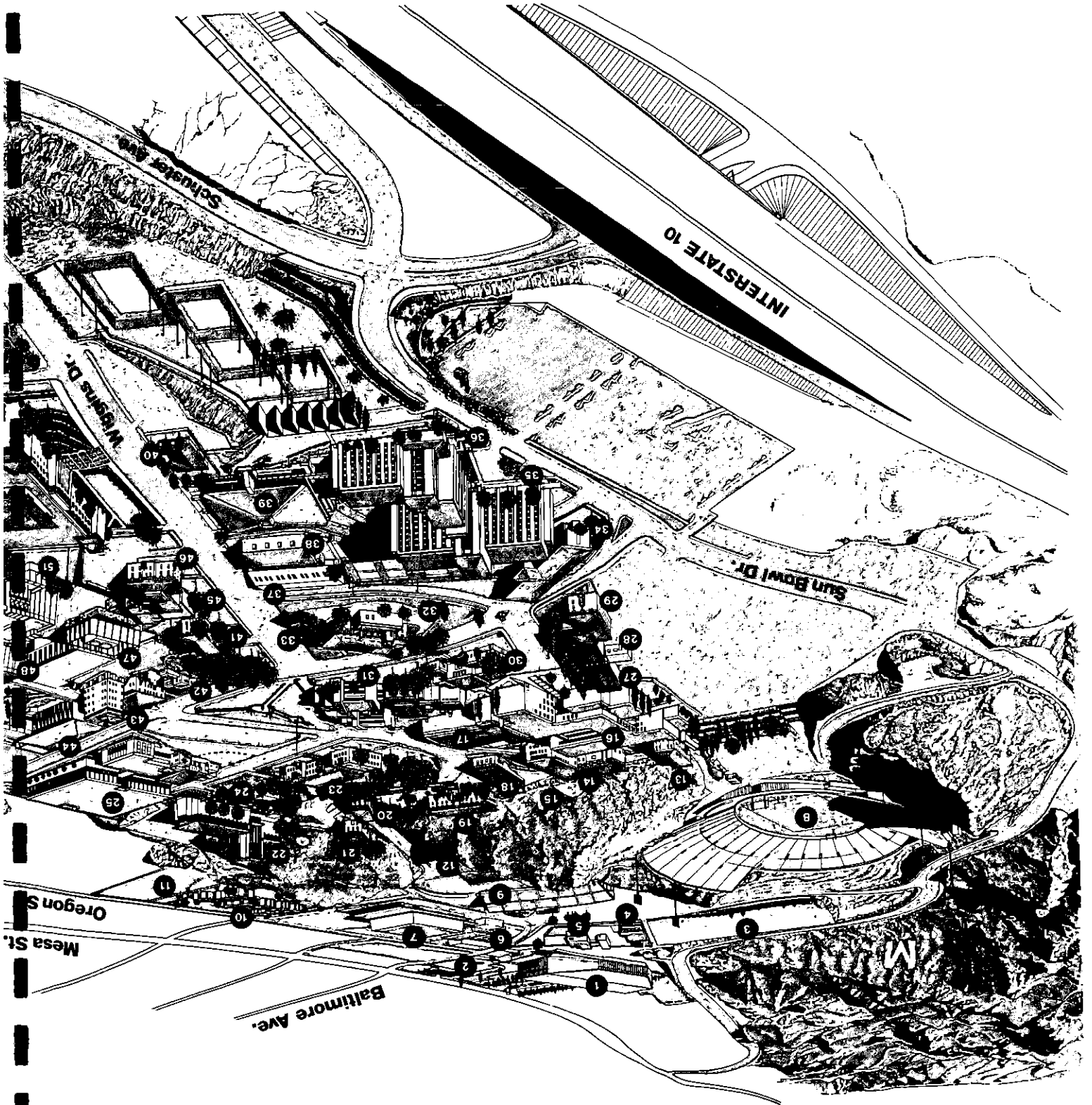
- THOMAS JOSEPH PRICE**, Associate Professor of Political Science, 1970  
B.S., College of Charleston; M.A., University of Chicago; Ph.D., Florida State University
- EPPIE D. RAEL**, Associate Professor of Biological Sciences, 1975  
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- \***JOSEPH MALCHUS RAY**, Professor Emeritus of Political Science; President Emeritus, 1960  
B.A., M.A., Ph.D., The University of Texas at Austin
- KEITH ALLEN REDETZKE**, Assistant Professor of Biological Sciences, 1973  
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- ROBERT L. REID**, Professor of Mechanical and Industrial Engineering, 1982  
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- \***STEPHEN RITER**, Professor of Electrical Engineering, 1980  
B.A., B.S., Rice University; M.S., Ph.D., University of Houston
- \***JULIUS RIVERA**, Professor of Sociology and Anthropology, 1973  
M.A., University of Detroit, Ph.D., Michigan State University
- MARY LOU RIVERA**, Assistant Professor of Drama and Speech, 1981  
B.A., Abilene Christian College; M.A., New Mexico State University; Ph.D., University of Utah
- \***GORDON WESLEY ROBERTSTAD**, Professor of Biological Sciences, 1968  
B.S., M.S., University of Wisconsin; Ph.D., Colorado State University
- PETER ROBINSON**, Associate Professor of Philosophy, 1970  
B.A., University of Massachusetts; M.A., Ph.D., Boston University
- GILBERT C. ROMERO**, Adjunct Assistant Professor of Religion, 1979  
B.A., St. Johns College; Ph.D., Princeton Theological Seminary
- ALBERT CHARLES RONKE**, Assistant Professor of Drama and Speech, 1966  
B.A., M.A., Bowling Green State University
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- \***TIMOTHY PETER ROTH**, Professor of Economics, 1970  
B.S., Albright College; M.A., State University of New York at Binghamton; Ph.D., Texas A&M University
- \***ROBERT F. ROY**, L.A. Nelson Professor of Geological Sciences, 1977  
B.A., M.A., Ph.D., Harvard University
- DAVID BERNARD ROZENDAL**, Associate Professor of Civil Engineering, 1960  
B.S., South Dakota School of Mines and Technology; M.S., University of Minnesota; Ph.D., Purdue University
- VICKI L. RUIZ**, Assistant Professor of History, 1982  
B.S., Florida State University; M.A., Ph.D., Stanford University
- WILLIAM MAURICE RUSSELL**, Professor of Modern Languages, 1964  
A.B., Birmingham-Southern College; M.A., Ph.D., University of North Carolina
- TERRY S. SALINGER**, Assistant Professor of Curriculum and Instruction, 1981  
B.A., Bernard College; M.S., Bank Street College of Education; Ph.D., New Mexico State University
- RICHARD J. SALO**, Assistant Professor of Biological Sciences, 1978  
B.S., Michigan State University; M.S., Wayne State University; Ph.D., University of Wisconsin
- ELLERY STOWELL SCHALK**, Associate Professor of History, 1970  
B.A., Wesleyan University; M.A., Ph.D., University of California at Berkeley
- DAVID ARTHUR SCHAUER**, Associate Professor of Economics and Finance, 1975  
B.S., Jamestown College; M.A., Ph.D., University of Notre Dame
- \***ROBERT HOWARD SCHMIDT, JR.**, Professor of Geological Sciences, 1969  
B.S., M.S., Oregon State University; Ph.D., University of California at Los Angeles
- DARRELL CHARLES SCHRODER**, Associate Professor in the Department of Electrical Engineering, 1971  
B.S., M.S., Ph.D., Iowa State University
- \***EUGENE FRANCIS SCHUSTER**, Professor of Mathematics, 1970  
B.A., St. John's University; M.A., Ph.D., University of Arizona
- DAVID E. SCHWALM**, Assistant Professor of English, 1980  
B.A., Carleton College; M.A., Ph.D., University of Chicago
- AARON LEE SEGAL**, Professor of Political Science, 1981  
B.A., Occidental College; B.Phil., Oxford University; Ph.D., University of California at Berkeley
- RAGNOR J. SEGLUND**, Associate Professor of Accounting, 1982  
B.B.A., M.B.A., University of Michigan; D.B.A., University of Colorado
- EDWARD GRANVILLE SEWELL**, Assistant Professor of Mathematics, 1983  
B.S., Harding College; M.S., The University of Texas at Austin; M.S., Ph.D., Purdue University
- JOHN McCARTY SHARP**, Professor Emeritus of Modern Languages and Linguistics, 1949  
B.A., Westminster College; M.A., Ph.D., University of Chicago
- STEPHEN PAUL SHELTON**, Professor in the Department of Civil Engineering, 1983  
B.S., M.S., Ph.D., University of Tennessee
- I. THOMAS SHEPPARD**, Associate Professor of Management, 1973  
B.S., Florida State University; M.S., The George Washington University; M.A., University of Oklahoma; Ph.D., The University of Texas at Arlington
- \***PHIL A. SIMPSON**, Instructor of Art, 1980  
B.S., Ball State University; M.F.A., Southern Illinois University
- VIJAY P. SINGH**, Associate Professor in the Department of Electrical Engineering, 1983  
B.S., Indiana Institute of Technology; M.S., Ph.D., University of Minnesota
- HAROLD SCHULTZ SLUSHER**, Assistant Professor of Physics, 1957  
B.A., University of Tennessee; M.S., University of Oklahoma
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B.S., M.S., Ph.D., University of Arizona
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B.A., University of Minnesota; M.A., Ph.D., Harvard University
- WILLIAM CAJETON SPRINGER**, Associate Professor of Philosophy, 1968  
B.A., Loyola University of Los Angeles; M.A., Gregorianum, Rome; Ph.D., Rice University
- RICHARD L. SPRINKLE**, Assistant Professor of Economics and Finance, 1982  
B.S., M.A., Central Missouri State University; Ph.D., University of Arkansas
- \***V.K. SRINIVASAN**, Associate Professor of Mathematics, 1970  
B.A., M.A., M.Sc., Ph.D., Madras University, India
- STEPHEN W. STAFFORD**, Associate Professor of Metallurgical Engineering, 1976  
B.S., The University of Texas at El Paso; Ph.D., Rice University
- TONY JASON STAFFORD**, Professor of English, 1964  
B.A., Wake Forest University; M.A., The University of Texas at El Paso; Ph.D., Louisiana State University
- LESTER A. STANDIFORD**, Associate Professor of English, 1973  
B.A., Muskingum College; M.A., Ph.D., University of Utah
- NEIL STANNARD**, Assistant Professor of Music, 1981  
B.A., University of Southern California; M.S., The Julliard School of Music; Ph.D., University of Arizona

\*Senior Member

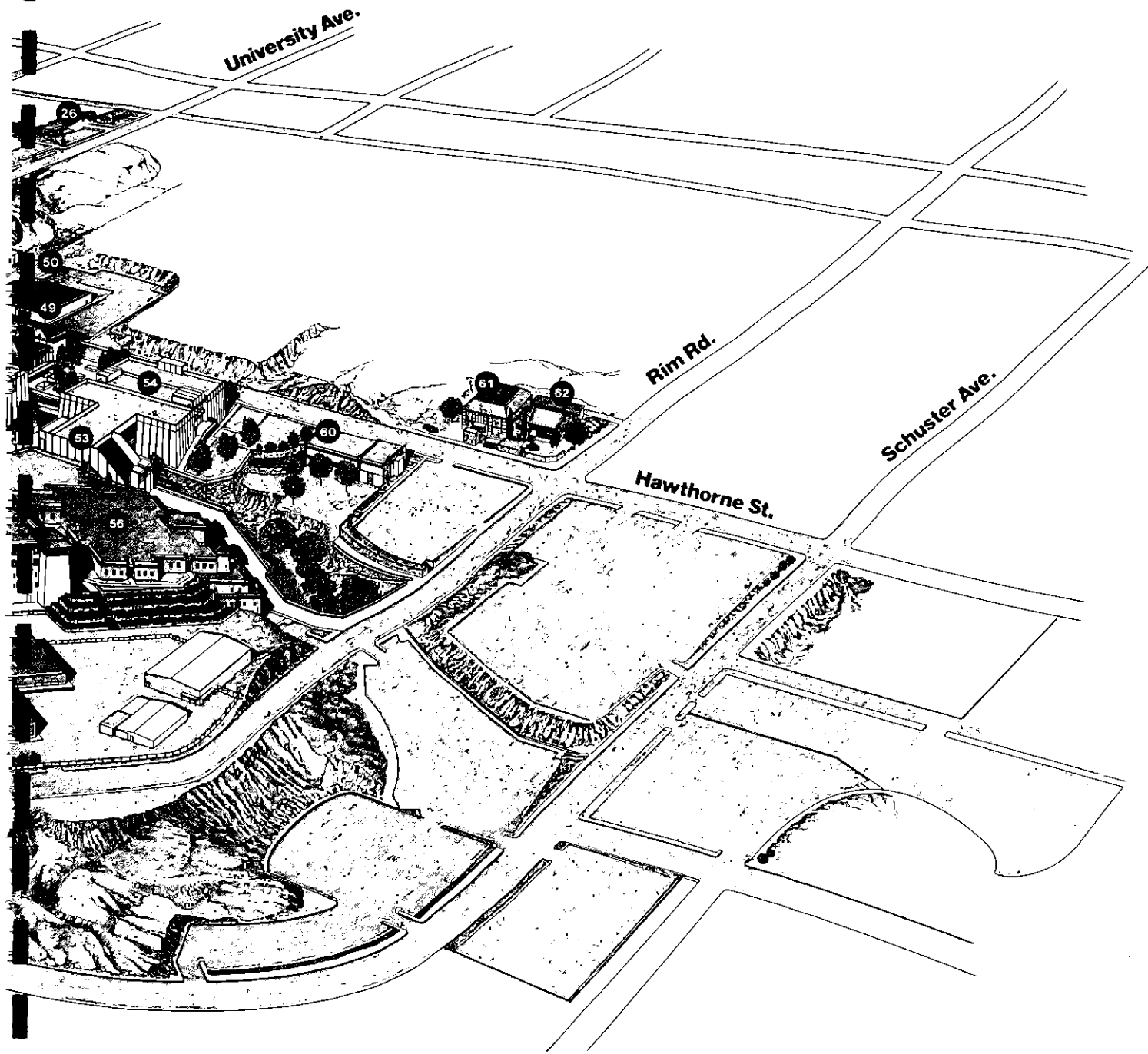


- JOHN W. STARNER**, Assistant Professor of Computer Science, 1982  
B.S., M.A., Ph.D., University of New Mexico
- KATHLEEN A. STAUDT**, Associate Professor of Political Science, 1977  
B.A., University of Wisconsin at Milwaukee; M.A., Ph.D., University of Wisconsin at Madison
- \***DAVID B. STEPHENS**, Professor of Management, 1978  
B.A., Brigham Young University; M.B.A., University of Pittsburgh; Ph.D., The University of Texas at Austin
- \***ELLWYN REED STODDARD**, Professor of Sociology and Anthropology, 1965  
B.S., Utah State University; M.S., Brigham Young University; Ph.D., Michigan State University
- WILLIAM SAMUEL STRAIN**, Professor Emeritus of Geological Sciences, 1937  
B.S., West Texas State University; M.S., University of Oklahoma; Ph.D., The University of Texas at Austin
- ANDREW SWIFT**, Assistant Professor of Mechanical and Industrial Engineering, 1983  
B.S., Union College; M.S., Ph.D., Washington University
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B.S.I.E., M.S.E., Ph.D., University of West Virginia
- \***WALTER FULLER TAYLOR, JR.**, Professor of English, 1968  
B.A., University of Mississippi; Ph.D., Emory University
- \***RICHARD VINCENT TESCHNER**, Associate Professor of Modern Languages, 1976  
A.B., Stanford University; M.A., Middlebury College; Ph.D., University of Wisconsin
- MANAB N. THAKUR**, Associate Professor of Management, 1982  
LL.B., University of Calcutta; M.A., M. Phil., University of London; Ph.D., Brunel University
- RACHELLE RENE THIEWES**, Associate Professor of Art, 1976  
B.A., Southern Illinois University; M.F.A., Kent State University
- ROBERT THURSTON**, Assistant Professor of History, 1983  
B.A., Northwestern University; M.A., Ph.D., University of Michigan
- \***WILBERT HELDE TIMMONS**, Professor Emeritus of History, 1949  
B.A., Park College; M.A., University of Chicago; Ph.D., The University of Texas at Austin
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B.S., M.Ed., The University of Texas at El Paso; Ed.D., Texas Agricultural and Industrial University
- STANISLAUS TING**, Adjunct Assistant Professor of Biology, 1982  
B.S., M.D., University of Rangoon
- ROBERT DOLF TOLLEN**, Associate Professor of Economics and Finance, 1972  
B.A., M.A., West Texas State University; Ph.D., The University of Texas at Austin
- SAM TRIMBLE**, Associate Professor of Music, 1982  
B.A., University of South Florida; M.A., North Texas State University
- LESLIE ULLMAN**, Associate Professor of English, 1979  
B.A., Skidmore College; M.F.A., University of Iowa
- ROBERTO ESCAMILLA VILLARREAL**, Associate Professor of Political Science, 1976  
B.S., M.S., Texas A&I University; M.A., Ph.D., University of Oklahoma
- \***HILMAR ERNEST WAGNER**, Professor of Curriculum and Instruction, 1966  
B.S., Texas Tech University; M.A., Sul Ross State University; Ed.D., North Texas State University
- CARL WALKER**, Professor of Educational Psychology and Guidance, 1965  
B.A., M.A., University of Missouri at Columbia; Ed.D., University of New Mexico
- JIMMY REEVES WALKER**, Associate Professor of Educational Psychology and Guidance, 1958  
B.A., M.A., The University of Texas at El Paso; Ed.D., Oklahoma State University
- DONNA WATKINS**, Assistant Professor of Marketing, 1982  
B.B.A., Sul Ross State University; M.A., Angelo State University; Ph.D., New Mexico State University
- MARK T. WATTS**, Adjunct Assistant Professor of Biology and Chemistry, 1982  
B.S., The University of Texas at El Paso; Ph.D., California State University at Long Beach
- \***ROBERT GRAVEM WEBB**, Professor of Biological Sciences, 1962  
B.S., M.S., University of Oklahoma; Ph.D., University of Kansas
- ROBERT H. WEBKING**, Assistant Professor of Political Science, 1978  
B.A., University of Dallas; M.A., Ph.D., University of Virginia
- MARLENE H. WEITZEL, R.N.**, Associate Professor of Nursing, 1978  
B.S.N., Duchesne College; M.S.N., Catholic University of America; Ph.D., The University of Texas at Austin
- JOHN OLIVER WEST**, Professor of English, 1963  
B.A., Mississippi College; M.A., Texas Tech University; Ph.D., The University of Texas at Austin
- \***JAMES WILLIAM WHALEN**, Professor of Chemistry, 1968  
A.B., M.S., Ph.D., University of Oklahoma
- MARY JANE WHISTLER**, Assistant Professor of Marketing, 1980  
B.A., M.S., Ph.D., University of Oklahoma
- RANDOLPH HOWARD WHITWORTH**, Associate Professor of Psychology, 1960  
B.S., Ph.D., The University of Texas at Austin
- BRENT E. WHOLEBEN**, Associate Professor of Education Administration, 1982  
B.S., St. Bonaventure College; M.Ed., University of Hawaii; Ph.D., University of Wisconsin, Madison
- C. DAVID WIETERS**, Associate Professor of Management, 1979  
B.M.E., Cornell University; M.B.A., University of Rochester; D.B.A., Arizona State University
- DAVID HENRY WILLIAMS**, Associate Professor in the Department of Electrical Engineering, 1978  
B.S.E.E., New Mexico State University; M.S., University of New Mexico; Ph.D., The University of Texas at Austin
- FRANK WILLIAMS**, Adjunct Assistant Professor of Religion, 1976  
A.B., Harvard University; B.D., S.T.M., Nashotah House; B.H.L., Hebrew Union College; D.Phil., Oxford University
- GIFFORD WENDEL WINGATE**, Professor of Drama and Speech, 1964  
B.A., M.A., New York State College for Teachers; Ph.D., Cornell University
- JAMES ALLEN WOOD**, Associate Professor of Drama and Speech, 1966  
B.A., Willamette University; Ph.D., Cornell University
- RICHARD DANE WORTHINGTON**, Associate Professor of Biological Sciences, 1969  
B.A., The University of Texas at Austin; M.S., Ph.D., University of Maryland
- DAVID YOSS**, Assistant Professor of Music, 1982  
B.M., M.A., D.M.A., University of Iowa
- GLORIA A. YOUNG**, Assistant Professor of Sociology, 1979  
B.A., Trinity University; M.A., Ph.D., The University of Texas at Austin
- \***JAMES E. ZAJIC**, Professor of Biological Sciences, 1980  
B.A., University of Kansas; M.S., University of Wisconsin; J.D., Oklahoma City University; Ph.D., University of California

# CAMPUS MAP



- Administration Annex (Development/Alumni) (42)
  - Administration Bldg. (43)
  - Athletics Offices (5)
  - Auxiliary Gym (6)
  - Barry Hall (Dormitory) (35)
  - Bell Hall (46)
  - Benedict Hall (41)
  - Biology Bldg. (51)
  - Burges Hall (Dormitory) (34)
  - Business Administration Bldg. (56)
  - Centennial Museum (32)
  - Central Energy Plant (47)
  - Classroom Bldg. (52)
  - Commons (39)
  - Computer Center (45)
  - Cotton Memorial Bldg. (30)
  - Education Bldg. (22)
  - Engineering Bldg. (54)
  - Fox Fine Arts Center (16)
  - Geology Bldg. (14)
  - Graham Hall (21)
  - Health Service (40)
  - Holiday Hall (12)
  - Housing, Student Family (38)
  - Hudspeth Hall (29)
  - Kelly Hall (Dormitory) (36)
- The College of Nursing and Allied Health is located at 1101 N. Campbell St., corner of Campbell and Arizona Sts.



Field (9)  
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 Library (31)  
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 Construction) (55)  
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Miners Hall (27)  
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 \*Nursing and Allied Health,  
 College of  
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THE UNIVERSITY OF TEXAS  
AT EL PASO



APPLICATION FOR ADMISSION

NON-RESIDENTS OF THE UNITED STATES  
SHOULD COMPLETE THE APPLICATION  
FOR INTERNATIONAL STUDENTS

QUESTIONS 1-12: TO BE ANSWERED BY ALL STUDENTS

The U.S. Social Security Number is used for matriculation and record identification only. If you do not furnish your Social Security Number, a student number will be assigned to you.

1. \_\_\_\_\_  
SOCIAL SECURITY NUMBER

2. \_\_\_\_\_  
Last (Family) Name First Name

\_\_\_\_\_ Middle Name

3. SEX: ( ) Male ( ) Female

4. Current Mailing Address: No. & Street \_\_\_\_\_ Apt. \_\_\_\_\_ County \_\_\_\_\_  
City \_\_\_\_\_ State or Country \_\_\_\_\_ ZIP \_\_\_\_\_ Telephone \_\_\_\_\_

5. Permanent Mailing Address: No. & Street \_\_\_\_\_ Apt. \_\_\_\_\_ County \_\_\_\_\_  
City \_\_\_\_\_ State or Country \_\_\_\_\_ ZIP \_\_\_\_\_ Telephone \_\_\_\_\_

6. Birthdate \_\_\_\_\_ Birthplace \_\_\_\_\_ 7. Your citizenship \_\_\_\_\_

8. Ethnicity: Check one. This item is used to satisfy state/federal reporting requirements ONLY and in no way affects the admission decision.  
 (1) White/Non-Hispanic       (3) Hispanic       (5) American Indian/Alaskan Native  
 (2) Black/Non-Hispanic       (4) Asian/Pacific Islander

9. TERM for which you are applying:  
(Application valid only for this semester)  
 1st Summer Term, 19\_\_\_\_  
 2nd Summer Term, 19\_\_\_\_  
 Fall Semester, 19\_\_\_\_  
 Spring Semester, 19\_\_\_\_

10. UNDERGRADUATE COLLEGE (Circle):  
 2 - Science  
 3 - Business  
 4 - Education  
 5 - Engineering  
 7 - Nursing  
 8 - Liberal Arts

11. GRADUATE STUDENTS (Circle):  
 1 - Post-Baccalaureate Courses  
 2 - 2nd Undergraduate Degree  
 3 - Certification  
 4 - Masters Degree  
 5 - Doctoral Degree

MAJOR: \_\_\_\_\_

Major: \_\_\_\_\_

12. Are you applying to the University as a non-degree student interested only in taking a limited number of courses for your own benefit? ( ) Yes ( ) No If yes, please explain briefly:

QUESTIONS 13-16: TO BE ANSWERED BY ALL STUDENTS WITH FEWER THAN 30 SEMESTER HOURS OF COLLEGE CREDIT

13. High School from which you graduated \_\_\_\_\_  
Name City & State Month & Year

14. Are you applying for the Early Admissions Program for students concurrently enrolled in high school?  
 Yes  No Expected date of graduation \_\_\_\_\_

15. If you did not graduate from high school, have you taken the Test of General Educational Development (GED)?  
 Yes  No Average standard score \_\_\_\_\_ Examination date \_\_\_\_\_

16. Applicants with fewer than 30 semester hours who graduated from high school within the past five years must submit either official SAT or official ACT scores.  
 a. Your SAT scores: Verbal \_\_\_\_\_ Math \_\_\_\_\_ Total \_\_\_\_\_ Examination Date \_\_\_\_\_  
 b. Your ACT Composite score: \_\_\_\_\_ Examination Date \_\_\_\_\_

**QUESTIONS 17-20: TO BE COMPLETED BY ALL STUDENTS WHO HAVE EVER ENROLLED AT A COLLEGE OR UNIVERSITY**

17. Each student must submit a complete, official transcript from EACH school he has attended and cannot disregard any portion of the academic career. List ALL colleges or universities you have attended and give dates of attendance and credit (specify semester hours or quarter hours) received from each. If you are a returning U.T. El Paso student, you must submit an official transcript from each school attended since your last enrollment here.

College or University	State	Dates Attended	Credit
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

18. Are you applying for admission as a transient student for the Summer Sessions only? ( ) Yes ( ) No
19. Indicate your academic status at the last school you attended. ( ) Good Standing ( ) Scholastic Probation ( ) Suspension
20. Have you previously attended U.T. El Paso? ( ) Yes ( ) No
- If yes, name under which you were last enrolled: Last \_\_\_\_\_ First \_\_\_\_\_ Middle \_\_\_\_\_
- Student number \_\_\_\_\_ Dates of attendance: \_\_\_\_\_ to \_\_\_\_\_

**QUESTIONS 21-22: TO BE ANSWERED BY ALL STUDENTS WITH A BACCALAUREATE DEGREE OR ITS EQUIVALENT**

21. College or university from which you received your baccalaureate degree \_\_\_\_\_
- Degree received \_\_\_\_\_ Major \_\_\_\_\_ Date received \_\_\_\_\_
22. What are your GRE scores? \_\_\_\_\_ Date \_\_\_\_\_ GMAT scores? \_\_\_\_\_ Date \_\_\_\_\_

**QUESTIONS 23-28: TO BE ANSWERED BY ALL STUDENTS**

23. IF YOU ARE UNDER 18:
- a. Name of parent or legal guardian \_\_\_\_\_
- b. His/her address \_\_\_\_\_
- Number & Street City & State ZIP
- c. Where has he/she lived during the past 24 months? \_\_\_\_\_

24. IF YOU ARE 18 OR OLDER, indicate where you have lived during the past 24 months.
- | Address | City and State | Beginning Date | Ending Date |
|---------|----------------|----------------|-------------|
| _____   | _____          | _____          | _____       |
| _____   | _____          | _____          | _____       |

25. Are you a Texas resident? ( ) Yes ( ) No If so, how long have you lived in Texas? \_\_\_\_\_
26. Are you, your parent or guardian, or your spouse currently in the U.S. military service? ( ) Yes ( ) No
- ( ) Self ( ) Parent ( ) Guardian ( ) Spouse Expected date of separation \_\_\_\_\_
- Stationed at \_\_\_\_\_ Military Home of Record \_\_\_\_\_
27. Are you a U.S. veteran? ( ) Yes ( ) No Military Home of Record \_\_\_\_\_ Date of Separation \_\_\_\_\_

**NOTE: YOUR APPLICATION, TEST SCORES, COMPLETE OFFICIAL TRANSCRIPTS, AND HEALTH FORM MUST BE RECEIVED BY THE UNIVERSITY BEFORE AN ADMISSION DECISION CAN BE MADE.**

**FORWARD DOCUMENTS TO:**

Office of Admission and Evaluation, 209 Admin. Bldg., The University of Texas at El Paso, El Paso, Texas 79968, for undergraduate admission.  
 The Graduate School, 901 Education Bldg., The University of Texas at El Paso, El Paso, Texas 79968, for graduate admission.

I certify that I have read and understand all the above information and that all questions on this application have been answered completely and correctly.

Signature \_\_\_\_\_

Date \_\_\_\_\_

**STATEMENT OF EQUAL EDUCATIONAL OPPORTUNITY**

With respect to the admission and education of students, with respect to the availability of student loans, grants, scholarships, and job opportunities, with respect to the student and faculty housing situated on premises owned or occupied by the University, The University of Texas at El Paso shall not discriminate either in favor of or against any person on the basis of his or her race, sex, religion, color, creed, age, national origin, physical or mental handicaps.

**Directory for further information and correspondence:**

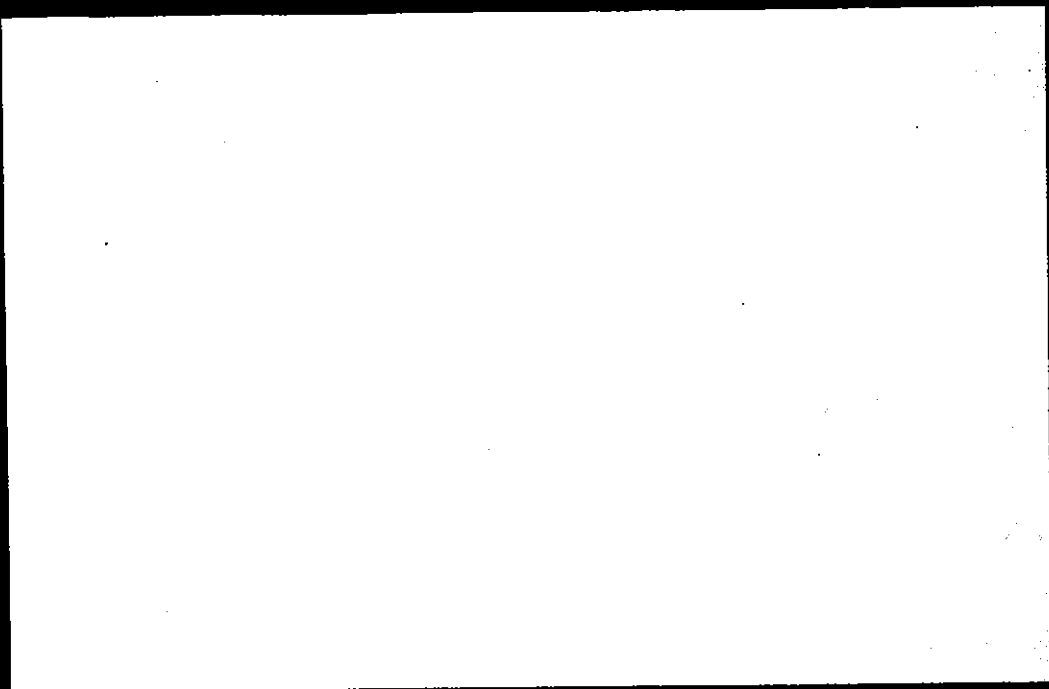
The mailing address for correspondence to all offices:

The University of Texas at El Paso (Department) El Paso, Texas 79968-0001

Location and telephone numbers for academic departments, and for many other offices, are shown in the appropriate section of this catalog. For other numbers, the University directory operator can be reached at (915) 747-5000.

Admission, Graduate	Graduate School 901 Education Building (915) 747-5491
Counseling and Guidance	University Counseling Service 103 West Union (915) 747-5568
Financial Aid	Office of Financial Aid 202 West Union (915) 747-5204
Financial Information	Business Office — Bursar 216 Administration Building (915) 747-5105
Health Service	Student Health Service Wiggins Drive (915) 747-5624
Housing Information	Housing Business Office 101 Kelly Hall (915) 747-5613
Residency	Office of Admission and Evaluation 201 Administration Building (915) 747-5576
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