

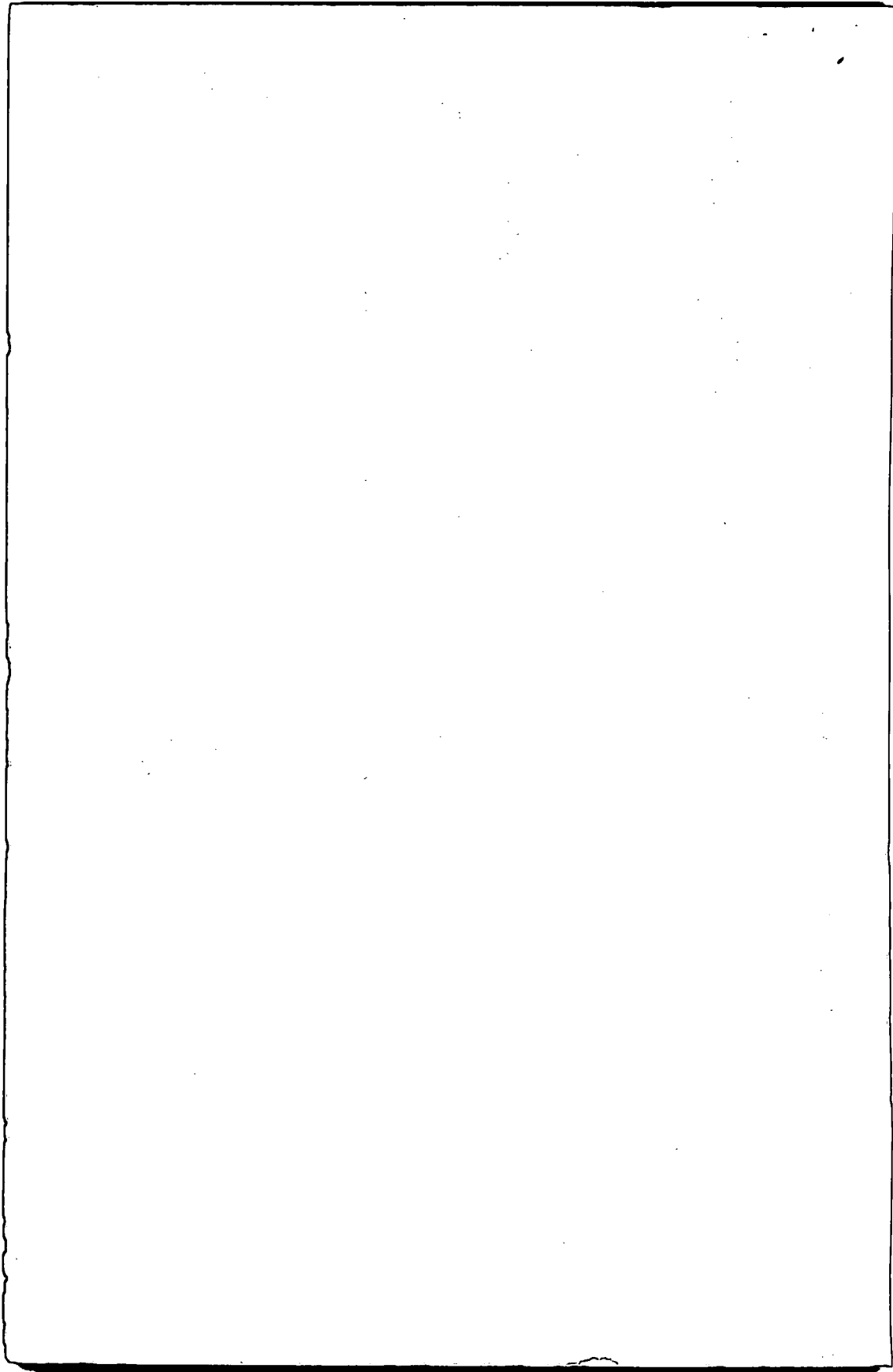
**1969-70**



**THE  
GRADUATE SCHOOL**

**BULLETIN OF  
LAMAR STATE COLLEGE OF TECHNOLOGY**

**BEAUMONT, TEXAS**



BULLETIN  
OF  
LAMAR STATE COLLEGE OF TECHNOLOGY

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No. 9

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# GRADUATE SCHOOL

1969-1970



BEAUMONT, TEXAS

The courses, tuition and fees, and other policies explained in this 1969-1970 catalog shall remain in effect, with such conditions and alterations as may be authorized by the Board of Regents, until a new graduate catalog is issued.

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CALENDARS FOR 1969 AND 1970

1969

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## LAMAR STATE COLLEGE OF TECHNOLOGY

## Graduate School Calendar for 1969-70

## Fall Semester, 1969

Sept. 15	Monday	1 p.m.	Registration for the fall semester.
		6 p.m.	Registration of evening students.
16	Tuesday	8 a.m.	Continued registration.
		6 p.m.	Continued registration of evening students.
17	Wednesday	8 a.m.	Continued registration.
		6 p.m.	Continued registration.
		6:15 p.m.	Evening classes begin.
18	Thursday	8 a.m.	Classes begin.
			Late registration (penalty fee charged).
22	Monday	8 p.m.	Last day for registration or adding courses.
Oct. 28	Tuesday	8 p.m.	Last day for dropping or withdrawing without penalty.
Nov. 12	Wednesday		Foreign Language Examination.
26	Wednesday	10 p.m.	Thanksgiving holidays begin.
28	Friday		Last date for filing application for graduation in January (Graduate Dean's office).
Dec. 1	Monday	8 a.m.	Classes resume.
Dec. 1-Jan. 13			Period for Comprehensive Oral Examinations.
Dec. 11	Thursday	1-4 p.m.	Comprehensive Written Examinations.
19	Friday	6 p.m.	Christmas holidays begin.
Jan. 5	Monday	8 a.m.	Classes resume.
Jan. 16-22	Fri.-Thurs.		Final examinations—fall semester.

## Spring Semester, 1970

Jan. 27	Tuesday	8 a.m.	Registration for spring semester.
		6 p.m.	Registration of all evening students.
28	Wednesday	8 a.m.	Continued registration.
		6:15 p.m.	Evening classes begin.
29	Thursday	8 a.m.	Classes begin.
			Late registration (penalty fee charged).
Feb. 2	Monday	8 p.m.	Last day for registration or adding courses.
Mar. 11	Wednesday	8 p.m.	Last day for dropping or withdrawing without penalty.
Mar. 18	Wednesday		Foreign Language Examination.
20	Friday	6 p.m.	Spring holidays begin.
			graduate work in the subject chosen as the graduate major. For a

Mar.	30	Monday	8 a.m.	Classes resume.
Apr.	6-May 12			Period for Comprehensive Oral Examinations.
Apr.	7	Tuesday		Last day for filing application for graduation in May (Graduate Dean's office).
	16	Thursday	1-4 p.m.	Comprehensive Written Examinations.
May	22-28	Fri.-Thurs.		Final examinations—spring semester.
	30	Saturday	8 p.m.	Commencement Exercises.

**Summer Session, 1970**

**First Term**

June	8	Monday	8 a.m.	Registration
			6 p.m.	Registration—evening classes.
	9	Tuesday	7 p.m.	Classes begin. Late registration (penalty fee charged).
	10	Wednesday	7 p.m.	Last date for registration or for adding courses.
	29	Monday	7 p.m.	Last date for dropping or withdrawing without penalty.
July	9	Thurs.	1-4 p.m.	Comprehensive Written Examinations.
	16-17	Thurs.-Fri.		Final examinations—first term.
July	16	Thursday		Last date for filing application for August graduation (Graduate Dean's office).
July	16-Aug. 14			Period for Comprehensive Oral Examinations.

**Second Term**

July	20	Monday	8 a.m.	Registration
			6 p.m.	Registration—evening classes.
	21	Tuesday	7 a.m.	Classes begin. Late registration (penalty fee charged).
	22	Wednesday	7 p.m.	Last date for registration or for adding courses.
	23	Thursday	1-4 p.m.	Comprehensive Written Examinations.
	29	Wednesday		Foreign Language Examination.
Aug.	10	Monday	7 p.m.	Last date for dropping courses or withdrawing without penalty.
Aug.	27-28	Thurs.-Fri.		Final examination—second term.
	29	Saturday	9 a.m.	Commencement Exercises.



LAMAR STATE COLLEGE OF TECHNOLOGY  
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Certified Public Accountant

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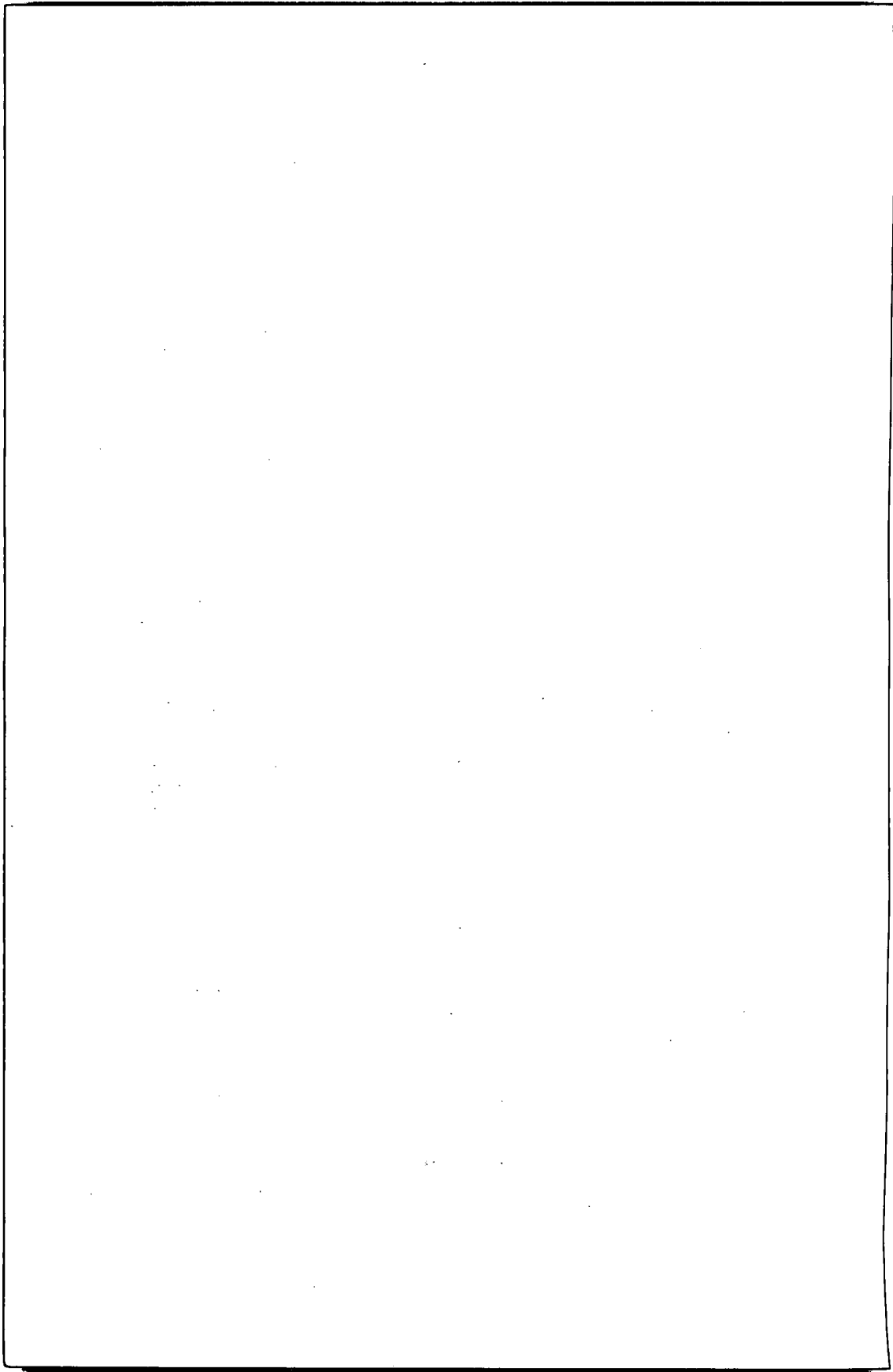
### DIRECTORY FOR CORRESPONDENCE

To obtain prompt attention, address inquiries to the following persons  
or agencies at Lamar Tech Station, Box 10004, Beaumont, Texas 77705

Academic Program—Admissions.....	M. L. McLaughlin Dean, Graduate School
Academic Records and Transcripts.....	Celeste Kitchen Registrar
Graduate Record Examination.....	Joe B. Thrash Placement Office
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Master of Arts—Government.....	Irving Dawson Head, Department of Government
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Research Center.....	Robert A. McAllister Director
Tuition, Fees, Expenses.....	Finance Office
Veterans' Affairs.....	Joe B. Thrash Placement Office

PART I

**GENERAL COLLEGE  
INFORMATION**



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**GENERAL INFORMATION****Location**

Lamar State College of Technology is a state-supported institution located in the center of industrial Southeast Texas at Beaumont. Principal industries in the area are oil refining, shipping, shipbuilding, rubber manufacturing and chemical production. Surrounding the urban communities are ranches and rice farms.

The campus is adjacent to the Beaumont-Port Arthur Highway in southeastern Beaumont. With a population of approximately 130,000, Beaumont has modern schools, churches, and shopping districts to serve the thriving industrial community.

In the metropolitan Beaumont area are the cities of Port Arthur, Orange, Vidor, Port Neches, Nederland and Groves, all within 25 miles and forming the heart of the Gulf Coast area with an estimated population of more than 300,000.

**History**

South Park Junior College was established in 1923. The college was organized and controlled by the South Park Independent School District, and classes were conducted in the South Park High School Building. Enrollment increased from about 125 in 1923 to 300 in 1931.

In 1932, the name of the institution was changed to Lamar College. At this time separate facilities were provided, additional equipment was purchased and new policies were instituted. By 1939, enrollment was approximately 640.

In 1940, Lamar Union Junior College District was created, and Lamar College was separated from the South Park Independent School District. Bonds were voted and new facilities were constructed on the site of the present main campus.

A movement to expand Lamar College into a four-year state-supported school culminated in the creation of Lamar State College of Technology on September 1, 1951. Since that time the curriculum has been expanded and liberalized to include many areas of study, and many additional facilities have been provided. Enrollment has increased until there are now more than 10,000 students.

The College offered graduate work in specified fields beginning in the academic year of 1960-61.

**Government**

The government of the College is vested in a board of nine regents appointed by the Governor and approved by the Senate for terms of six years. The direction of academic affairs is delegated by the Board of Regents to the President, administrative officers, and faculty.

The general policies of the Graduate School are determined and administered by the Graduate Council.

**Accreditation and Approval**

Lamar State College of Technology is fully accredited by the Association of Texas Colleges and Universities and by the Southern Association of Colleges and Schools. The Graduate School is a member of the Council of Graduate Schools in the United States.

The departments of Chemical Engineering, Civil Engineering, Electrical Engineering, Industrial Engineering, and Mechanical Engineering are accredited by the Engineering Council for Professional Development; the department of Chemistry is accredited by the American Chemical Society.

The Texas Education Agency has approved Professional Certification programs in a number of areas.

**The Library**

A new addition to the Library was occupied in the fall of 1966. This addition more than doubled the space of the Library, providing students and faculty with additional seating capacity, reference rooms, individual carrels, study rooms, space for microfilm, readers and film, and a science and engineering area. The Library has holdings of over 170,000 volumes and receives more than 3,000 periodicals. The annual budget is of sufficient size to increase the number of volumes by more than 20,000 per year.

Library hours are as follows:

7:45 a.m. to 11 p.m. Monday through Thursday

7:45 a.m. to 5 p.m., Friday and Saturday

1 p.m. to 11 p.m., Sunday

**Research Center**

The Research Center was formally organized in 1956. It is administered by a director who serves as the chairman of the faculty research committee. All state financed research projects are awarded through the research committee.

The Center also provides means for industrial organizations to obtain faculty assistance in solving their research needs.

**Computer Center**

The college operates a computer center as a service to faculty, administration, students, researchers, and others. The computer center has modern, high-speed digital and analog equipment valued in excess of three-quarters of a million dollars.

**Testing and Placement Service**

The Testing and Placement Center is located in Room 102 of the Administration Annex and is open 8:00 a.m. to 5:00 p.m. Monday through Friday.

This Center provides testing service for entering students and for others who want it. Non-students wishing to use this service pay a fee depending upon the testing program desired.

Placement service is also provided at this Center and is available to all students, faculty, and former students.

**Health Center**

The College maintains a Health Center for the use of students during the long term or summer session.

Two types of service are available: (1) out-patient service for those who have minor ailments but who do not require constant supervision, and (2) infirmary service for those who are in need of the continued attention of the College physician or a registered nurse.

It is not possible for the College to provide unlimited medical service. Special medicines, examinations, treatments, X-ray examinations, and laboratory tests are not furnished by the College. However, no charge is made for care in the Health Center up to ten days each semester. A small fee for drugs, supplies, and special services may be charged students required to remain in the Health Center for more than ten days.

The Health Center, located on East Virginia near Combs Hall, is adequately staffed and equipped for treating acute illnesses and minor injuries. It is not intended that the Center will provide care for students requiring surgery or the services of specialists. In these cases, every effort will be made by the College physician or nurse to notify the parents or guardians of the students' needs.

The College assumes no responsibility for continued medical care for students having chronic diseases. These students should arrange for the care of a private physician located in Beaumont or vicinity.

In the event the Health Center is filled to capacity, the College is not under obligation to provide hospital service elsewhere. However, the Health Center has a sufficient number of beds for all normal needs.

Students who are ill should report promptly to the Center for diagnosis and treatments. They will not be treated in the dormitory or in rooming houses. The College will take appropriate disciplinary action against students who refuse to report for medical advice when ill.

**Veterans Education**

Lamar is approved for educational training under all of the Veterans Educational Assistance programs.

Veterans and their dependents who are interested in attending Lamar under federal laws which provide educational assistance are directed to secure information and aid in planning their college work by consulting the Office for Veteran's Education, Room 102, Administration Annex.

**Loan Funds and Scholarships**

Financial assistance in the form of loans and scholarships is available for a limited number of students. Details may be obtained on request from the Director of Student Financial Aid, Lamar State College, Beaumont, Texas.

**Teaching Fellowships**

A number of Teaching fellowships are available in the various departments of the Graduate School. Application forms and additional information may be obtained from the Dean of the Graduate School.

The stipend for a teaching fellowship varies in accordance with the number of college courses taught, and the student must reduce his academic load in relation to his teaching assignment.

Tuition and fees are not waived for teaching fellows, but non-residents (out of Texas) are not required to pay out-of-state tuition.

**Teacher Certification**

Lamar State College of Technology has been approved by the Texas Education Agency to offer professional certification programs in Elementary, Special and Secondary Education. Specific information concerning certification may be found in the "Education" section of this catalog or may be obtained from the Dean of the School of Education.



FEEES AND EXPENSES

Payment of Fees

Lamar State College of Technology reserves the right to change fees in keeping with acts of the Texas Legislature.

A student is not registered until his fees are paid in full. Payment may be made by check, money order, or currency. Checks and money orders, not in excess of total fees, should be made payable to Lamar State College of Technology and will be accepted subject to final payment.

Fees Summary

Resident Students (Texas)

Semester Hours	Tuition	S.S. Fee	Bldg. Use Fee	Total + Laboratory Fees
12 or more	\$50.00	\$22.00	\$26.00	\$98.00 + Lab Fee
11	47.00	22.00	26.00	95.00 " " "
10	43.00	22.00	26.00	91.00 " " "
9	39.00	22.00	26.00	87.00 " " "
8	35.00	22.00	26.00	83.00 " " "
7	31.00	8.00	13.00	52.00 " " "
6	27.00	8.00	13.00	48.00 " " "
5	23.00	8.00	13.00	44.00 " " "
4	19.00	8.00	13.00	40.00 " " "
3 or less	15.00	8.00	13.00	36.00 " " "

Non-Resident Student (out of Texas)

Semester Hours	Tuition	S.S. Fee	Bldg. Use Fee	Total + Laboratory Fees
12 or more	\$200.00	\$22.00	\$26.00	\$248.00 + Lab Fee
11	183.00	22.00	26.00	231.00 " " "
10	167.00	22.00	26.00	215.00 " " "
9	150.00	22.00	26.00	198.00 " " "
8	133.00	22.00	26.00	181.00 " " "
7	117.00	8.00	13.00	138.00 " " "
6	100.00	8.00	13.00	121.00 " " "
5	83.00	8.00	13.00	104.00 " " "
4	66.00	8.00	13.00	87.00 " " "
3 or less	50.00	8.00	13.00	71.00 " " "

For summer session students the student service fee is \$6.00 per term.

These fees have been approved by appropriate acts of the Legislature of the State of Texas.

**Parking Fee**

Each student who pays the necessary fee is issued a car decal which permits parking on the campus. This decal is numbered and is to be displayed as instructed in official parking and traffic regulations, which are issued when automobiles are registered. Strict observance of traffic and parking regulations is necessary for the safe, orderly flow of vehicles in the campus area.

Charges for parking on campus are made at the time a student is registered. In each instance, a student's parking fee is honored up to the end of the current fiscal year, which is August 31.

Registration of an automobile in September is \$10.00. The February fee is \$6.00. A student registering for the first Summer Session is charged \$4.00, and for the second Summer Session the fee is \$2.00.

Only one registration is required for one school year.

**Returned Check Fees**

If a check is returned unpaid, the student is automatically suspended from college, but may re-enter upon redemption of the check plus payment of the return check fee of \$2.00.

**Special Fees**

Fees for courses for which special plans must be prepared and for which specialists must be secured as instructors will be set for each such course by the college administration subject to the approval of the president.

**Miscellaneous Fees**

Binding Thesis (3 copies) .....	\$15.00
Master's Diploma .....	6.50
Cap, Gown, and Hood Rental (Master's) .....	8.50
Late Registration .....	5.00
Returned Checks .....	2.00
Re-entry Fee .....	5.00
Transcript Fee .....	.50

**Health and Accident Insurance**

Additional health and accident coverage providing protection over and beyond that given by the health center is available at registration for students carrying 9 or more semester hours. The fee is \$25.00 (estimated). For their protection and welfare this (or similar) insurance is required of all foreign students.

**Refund of Fees**

Any student withdrawing officially will receive a refund on tuition, student service, laboratory and private lesson fees according to the following schedule.

**Long Session**

1. During the first two weeks of the semester, 80 per cent.
2. During the third week of the semester, 60 per cent.
3. During the fourth week of the semester, 40 per cent.
4. During the fifth week of the semester, 20 per cent.

**Summer Session**

1. During the first week of the semester, 60 per cent.
2. After first week no refund.

No refunds are made when dropping courses.

Application for refund must be made to the Vice-President of Finance after the student has officially withdrawn, but not later than the end of the current semester or summer session.

It takes about 30 days to process these refunds.

**Fine and Breakage Loss**

All library fines, breakage or loss of equipment charges, or other charges must be paid before a transcript of credit or a permit to re-enter college will be issued.

**Student Responsibility for Residence Classification**

The responsibility of registering under the proper residence classification is that of the student, and if there is any possible question of his right to classification as a resident of Texas, it is his obligation, prior to or at the time of his registration, to raise the question with the Dean of Admissions and have his status officially determined.

Every student who is classified as a resident student but who becomes a non-resident at any time by virtue of a change of legal residence by his own action or by the person controlling his domicile is required to notify the Dean of Admissions.

Students failing to comply with the residency provisions of the state tuition bill (Art. 2645c V.C.S. as amended 1957) are subject to penalties as set forth in the law and/or appropriate disciplinary action.

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**HOUSING****Dormitories**

Lamar dormitories offer the latest features in student housing. They are designed for maximum comfort and are conducive to enrichment through community living. The dormitories are organized into units for purposes of self-government, intramural athletics, and social life, offering opportunities for student growth and development in democratic living. Television, game areas, and lounges are available for leisure-time activities. Each dormitory room has telephone service through the campus switchboard for inter-campus and Beaumont exchange calls. Free self-service laundry facilities are provided for each dormitory.

Brooks (Women), Gentry (Women), Plummer (Men) and Shivers (Men) are the newest additions to campus housing. These four dormitories are centrally heated and air conditioned. Rooms are shared by two students, and each room has its own dressing mirror and lavatory. Students take their meals in the dormitory dining hall.

Campbell (Men), Combs (Men), Morris (Men) and Gray (Women) house three students to each room. Suites of two rooms share a common bath and lavatory facilities. These dormitories are not centrally air conditioned, but a limited number of rooms in Morris and Gray Halls have window units that may be used by students who desire this type of accommodation. An extra charge is necessary for this service. Students living in these dormitories take their meals in the college Dining Hall located conveniently to them.

The charge for room and board for the nine-month term in Brooks, Gentry, Plummer and Shivers Halls is \$880.00 with a five-day meal ticket, and \$925.00 for a seven-day meal ticket. Both are subject to state sales tax.

Board and room for nine-month terms in Campbell, Combs, Gray and Morris Halls is \$770.00 with a five-day meal ticket, and \$815.00 with a seven-day meal ticket, both scales subject to state sales tax.

Complete information on charges for all residence halls, along with meal ticket plans, may be obtained by contacting the Student Housing Office, Lamar Tech Station, Box 10041, Lamar State College of Technology, Beaumont, Texas 77705.

Charges for a full semester may be paid at the beginning of each semester. For the convenience of those who desire, payment may be spread over the semester.

**Apartments for Upper Classmen and Graduate Students**

The college maintains a number of apartment units for senior and graduate students who desire this type of housing facility. These apartments are completely furnished, and each consists of kitchenette, private bath, built-in closets, and combination living room and bedroom area. A central laundry room is available at no extra cost. Charges for room only for the nine-month term are \$350.00. Apartments with air conditioning cost \$20 per semester in addition to regular room charges. For the convenience of students wishing an installment plan, three payments may be made to the Finance office.

**Apartments for Married Students**

A limited number of accommodations for married students are located on the campus and are operated by the college. Although ample for a couple, these apartments are not large enough to permit occupancy by children.

These apartments rent for \$630.00 for the nine months period. This rental includes all utilities except telephones. For the convenience of students who wish to pay rentals by the month, the charges may be arranged in nine equal payments of \$70.00 each.

Some of these apartments are air-conditioned from April 15 to October 15. An additional \$10 per month is charged for this service. Rent refunds will not be made to students who move out during any month.

**Reservations**

To reserve an apartment or a room in the dormitories, direct a request to the Student Housing Office, Lamar Tech Station, Box 10041, Lamar State College of Technology, Beaumont, Texas 77705. A check for \$20 must accompany the reservation request. Room reservations may be cancelled with full refund until three weeks prior to the first day of classes. No refund will be made on cancellations received after this date. Dormitory residents will be refunded deposits, less any breakage charges, at the end of the year. The \$20 deposit will not be refunded if the student moves from the dormitory at any time other than at the end of the semester—or any other reason; this includes the student who is dropped from school for disciplinary reasons.

All unclaimed rooms will be declared vacant and the deposit forfeited at 6:00 p.m. on the last day of registration, unless the student gives written instructions to hold the room for a longer period.

**COLLEGE REGULATIONS****Course Numbering**

Semesters of a course are numbered separately, and each number contains three or more figures. The first digit indicates the rank of the course: 1 means that it is for freshmen; 2, for sophomores; 3, for juniors; 4, for seniors; and 5, for graduates. The second figure indicates the number of semester hours credit. The third figure (or figures) indicates the order in which the course is taken. The letter a, b, c, or d following course numbers indicates partial credit in each case; full credit for such numbered courses will be granted only when the series is complete.

**Changing Schedules**

No course may be added, changed or dropped without the permission of the department head of the student's major field. Usually a course may not be added after the first week of the semester (first two days of summer session). See college calendar.

**Dropping Course**

A student may drop a course without penalty during the first six weeks (three weeks of the summer session) of the semester.

For drops after this penalty free period, grades are recorded as **Drop** or **F** indicating that the student was passing or failing at the time of the drop.

A student may not drop a course within three days of the beginning of the final examination week.

**Withdrawals**

A student wishing to withdraw for the remainder of a semester, or term, should fill out a Withdrawal Petition in triplicate, after clearing all financial obligations, and returning all uniforms, books, laboratory equipment, and other materials to the point of original issue.

The Withdrawal Petition is signed by the Dean of the Graduate School and, together with a withdrawal notice for each class, is then presented to the Registrar by the student.

On application before the end of the semester or summer term, the Vice-President of Finance will return such fees as are returnable according to the schedule shown under the "Fees" section of the Catalog Bulletin. This refund is made only to the person withdrawing and if requested before the end of the current semester or summer term.

If a withdrawal is made before the end of the first six weeks (three weeks of summer term) or if the student is passing at the time of withdrawal, a grade of "W" is issued for each course so affected. A grade of "F" is issued for all courses not being passed at time of withdrawal after this penalty-free period.

A student may not withdraw within three days of the beginning of final exam week.

A student who leaves without an official withdrawal will receive a grade of "F" in all courses and will forfeit all returnable fees.

#### **Enforced Withdrawal Due to Illness**

The Director of the Health Center and the Vice-President of Student Affairs on the advice of competent medical personnel may require withdrawal, or deny admission, of a student for health reasons (mental or physical).

#### **Discipline**

It is assumed that any student eligible for admission to the College is familiar enough with the ordinary rules of conduct for ladies and gentlemen to need no definite discipline regulations. The College reserves the right to place on disciplinary probation or to dismiss any student at any time for sufficient cause.

Possession or use of alcoholic liquors on the campus is forbidden by law, and the guilty student is subject to immediate dismissal as well as criminal prosecution. Possession or use of such liquors at any college-sponsored function as unacceptable behavior.

#### **Penalty for False Statements**

A student who makes a false statement to any college official or on any official form submitted to the College is subject to immediate dismissal.

#### **Official Summons**

An official summons from any administrative office takes precedence over all other college activities of the student and should be answered promptly on the day and hour designated.

#### **Parking Regulations**

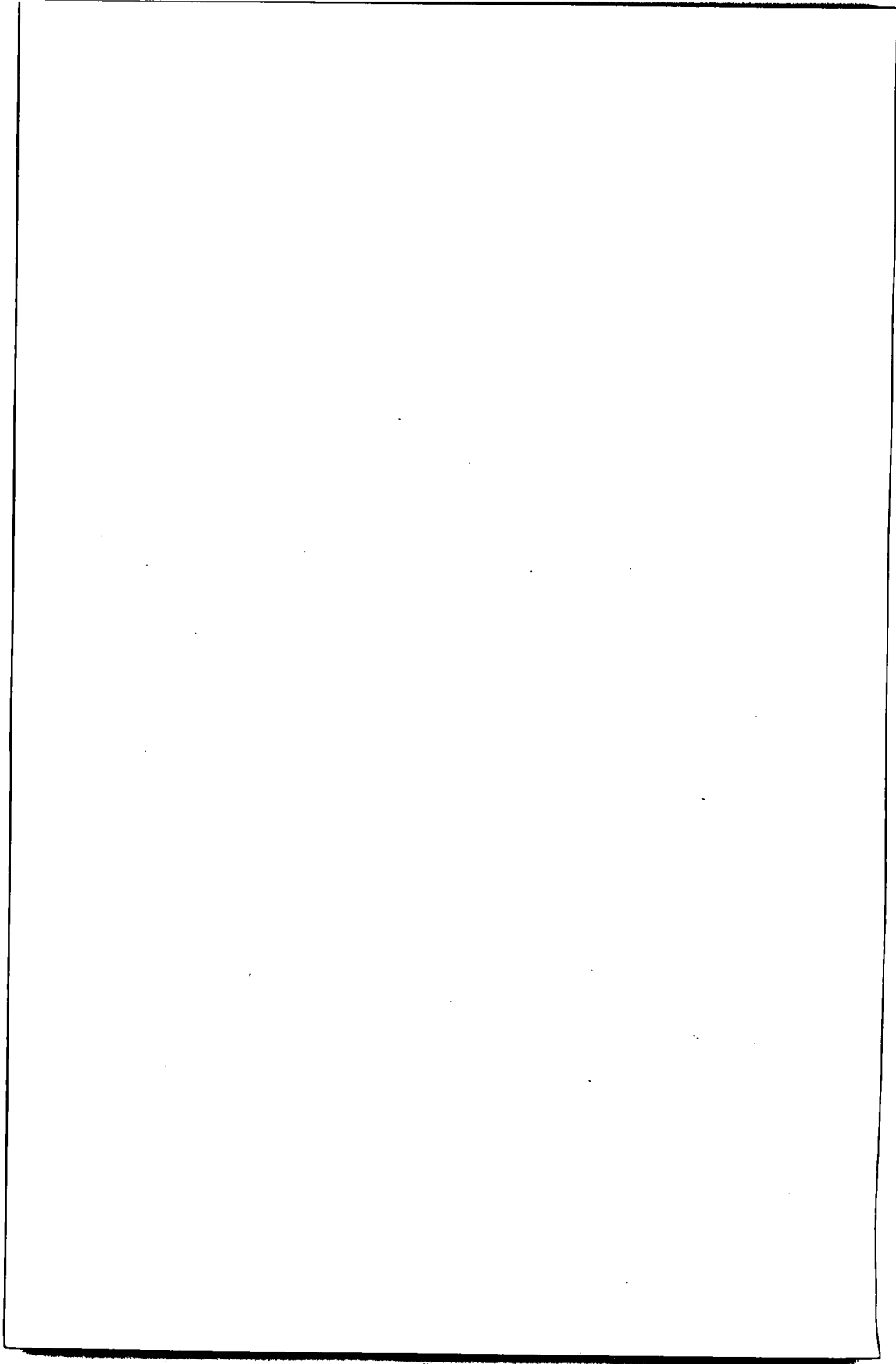
At registration time each student who pays the necessary fee is issued a car decal which permits parking on the campus. This decal is numbered and is to be placed in a specific place on the back window of the car.

#### **Student Debts**

The College is not responsible for debts contracted by individual students or student organizations and will not act as a collection agency for organizations, firms, or individuals to whom students may owe bills.

Students and student organizations are expected to honor contractual obligations promptly.

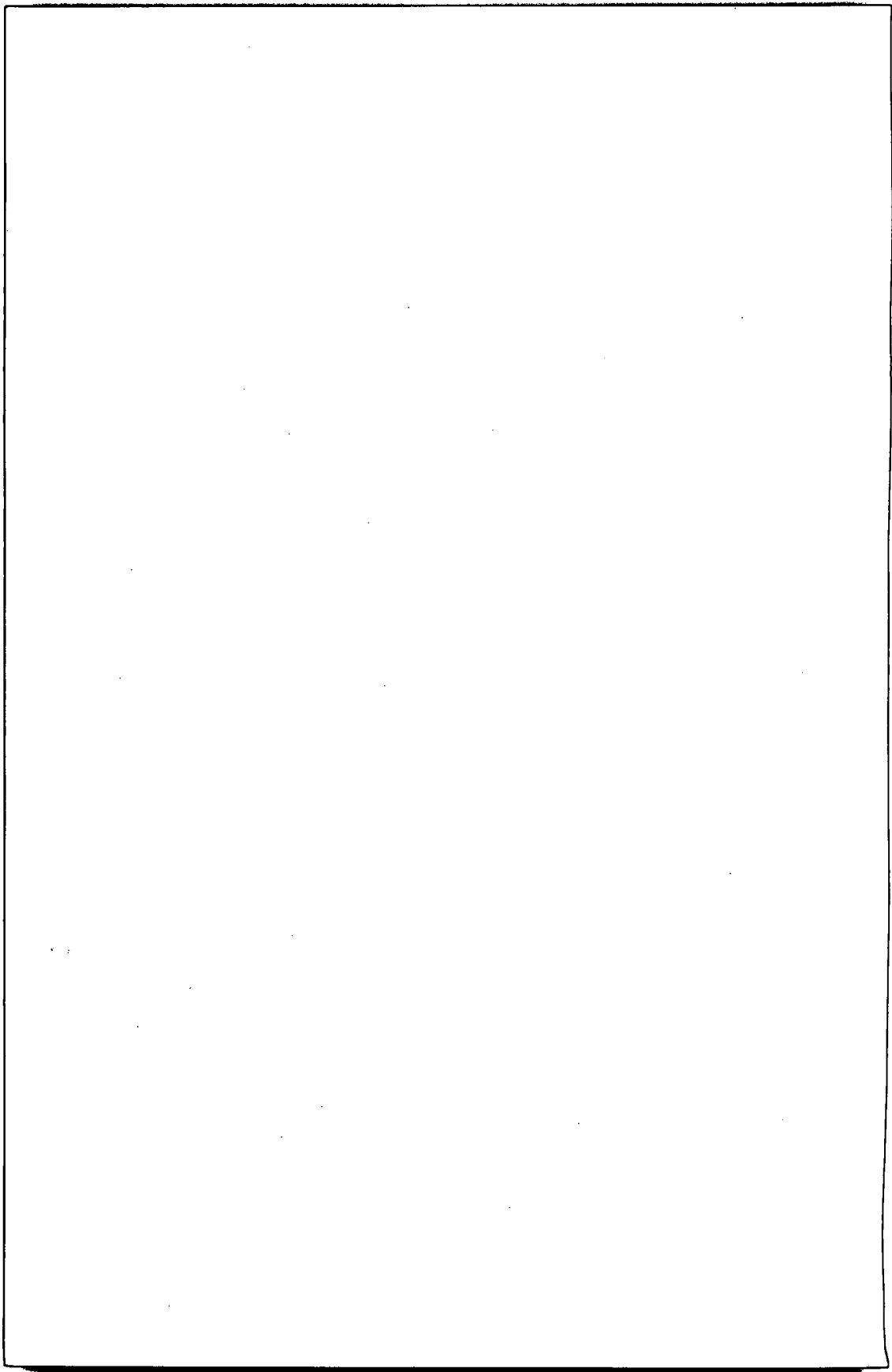
Penalty for failure to clear up these obligations may be: a) No readmission; b) Withholding of grades and transcripts; c) Withholding of degree.





PART II

GRADUATE SCHOOL  
INFORMATION



**THE GRADUATE SCHOOL****History**

The Graduate School was instituted in the fall, 1960, with the offering of the Master of Arts degree in the fields of history and English.

In 1962, master's degrees were begun in mathematics, engineering, and elementary education; in 1965, master's degrees in business administration, chemistry, special education, and secondary education were started; and in 1968, additional master's degrees were authorized in health and physical education, government, and speech.

**Objectives**

The objectives of the Graduate School are as follows:

1. Advancement of knowledge through research.
2. Intensification within a student's chosen field of specialization and allied areas.
3. Development of the student's skill in the methodology of research.
4. Promotion of the power of independent thought by making the student responsible for his own scholarship.

**Degrees Offered****Master of Arts**

Master of Arts in English  
Master of Arts in Government  
Master of Arts in History

**Master of Business Administration****Master of Education**

Master of Education in Elementary Education  
Master of Education in Secondary Education  
Master of Education in Special Education  
Master of Education in Guidance and Counseling

**Master of Engineering****Master of Engineering Science****Master of Science**

Master of Science in Chemistry  
Master of Science in Health and Physical Education  
Master of Science in Mathematics  
Master of Science in Speech Pathology/Audiology

**ENROLLMENT****Admission**

Applicants seeking admission to the Graduate School must present evidence that their academic record and personal attributes indicate the

ability to pursue graduate work successfully. Admission to the Graduate School is administered by the Graduate Council. In general, the policies set forth by this Council for admission are as follows:

1. An applicant must hold a bachelor's degree from an institution approved by a recognized accrediting agency.
2. The following official credentials should be filed with the Dean of the Graduate School at least four weeks before registration.
  - A. Two official transcripts sent directly from each college previously attended.
  - B. Two completed copies of the application for admission to the Graduate School.
  - C. Scores on the aptitude and the appropriate subject matter area of the Graduate Record Examination (sent directly to the Dean of the Graduate School by the Educational Testing Service). The College Testing and Placement Center, located in Room 102 in the Administration Annex, administers the Graduate Record Examination. Application forms and information about the Graduate Record Examination are available at this Center.
3. The applicant's undergraduate grade point average and Graduate Record Examination scores must be above the minimum standard established by the Graduate School. These standards are:
  - A. For regular admission the applicant must have a grade point average of 2.0 (3 point scale) and a satisfactory score on the aptitude section of the Graduate Record Examination.
  - B. An applicant with a grade point average between 1.5 and 2.0 and a satisfactory score on the Graduate Record Examination may be admitted on probation. This probation may be removed after the student completes nine semester hours of graduate work with grades of B or better.
  - C. Upon recommendation by the major department, an applicant with a grade-point average below 1.5 may be admitted on probation if his scores on the Graduate Record Examination are exceptionally high.
  - D. Information concerning minimum standards for the Graduate Record Examination may be obtained from the Dean of the Graduate School.
4. A student who wishes to pursue graduate work in any area for which he has not had the prerequisites will be required to make up deficiencies as prescribed by the Graduate Council. In general, the student is required to have a minimum of twenty-four semester hours (twelve of which must be on the junior-senior level) of undergraduate work in the subject chosen as the graduate major. For a minor, twelve semester hours of undergraduate work are required.

5. Admission to the Graduate School does not imply candidacy for a master's degree.
6. The Dean of the Graduate School will notify the applicant of his admission to the Graduate School. All transcripts, certificates, etc., become the property of the Graduate School and are not returnable.

#### Special Students

An applicant who wishes to register for graduate work without enrolling in a degree program may do so under the following conditions:

1. He must hold a bachelor's degree.
2. He must be approved for admission by the Dean of the Graduate School.
3. With departmental approval, courses taken by a Special Student may be used for graduate degree credit under the following conditions:
  - (1) If requirements for admission to a degree program are met during his initial semester of enrollment.
  - (2) If requirements for admission are met in a subsequent semester, a maximum of six semester hours previously completed may be approved for degree credit.

#### Registration

1. A student who has been admitted to the Graduate School may register in September or February for the long sessions, or in June or July for the summer terms.
2. An applicant for a graduate degree must be registered during the semester or summer session (one term is considered sufficient) in which the degree is to be awarded.
3. A graduate student who has completed all course work, but is working on his thesis, must be registered if he wishes to obtain professional assistance from a faculty member. He must also be registered during the term or semester when the oral examination is administered.

### GRADUATE SCHOOL REQUIREMENTS

#### General

1. All the course work applied toward a given degree must be completed within a period of six years. Time spent in active military service will not be used in computing the six-year limit.
2. No graduate student is permitted to carry more than fifteen semester hours of graduate work during one semester of the long term nor more than twelve semester hours of graduate work during the summer session of twelve weeks.
3. With the approval of the head of the major department and the Graduate Dean, an undergraduate student within twelve semester hours of Graduation may take not more than six semester hours of graduate courses to be applied toward the master's degree, provided the total academic load does not exceed fifteen semester hours.

4. With the approval of the head of the major department and the Graduate Dean, the student may transfer as much as six semester hours of graduate work (with grades of A or B) completed at another institution.
5. A maximum of three semester hours of extension work taken at this institution may count for graduate credit on a thirty semester hour degree program; six semester hours of extension work may be counted on a thirty-six hour program.
6. A maximum of six semester hours of work done in Institutes may be approved for graduate credit on a degree program.
7. A student must be enrolled in the semester or one term of a summer session in which he receives his degree.
8. A student may be required to drop either from any course or from the College temporarily, or permanently, for any of the following reasons:
  - A. Academic work below the standard as specified by the Graduate Council.
  - B. Academic dishonesty or misconduct on the part of the student.
9. The grading system for graduate students is A, B, C, D, F, I, Drop, Withdrawal—graduate credit being allowed for grades of A, B, and C. An over-all grade-point average of B (2.0) is required for graduation; however, a thesis grade may not be averaged with course grades to provide the required 2.0 average. Incomplete work must be made up within twelve months or the grade of I automatically becomes an F. Under unusual circumstances, the student may apply, through the instructor, for an extension. The extension may be granted by the Dean of the Graduate School.
10. When a graduate student with regular admission status falls more than three grade points below a 2.0 (B) average, he is placed on probation. If he makes progress toward eliminating the grade-point deficiency during the next semester in which he is registered, he is removed from probation. If he does not make progress toward eliminating the deficiency, his case is referred to the Academic Standards Committee of the Graduate School for a recommendation.
11. The student admitted on probation whose grade-point average falls more than three grade points below a 2.0 (B) average is referred to the Academic Standards Committee.
12. Resignation from the Graduate School should be made in writing to the Dean.
13. The College reserves the right to change any of its rules, requirements, or course regulations without notice.

**DEGREE REQUIREMENTS****General**

1. A graduate student must earn thirty to thirty-six semester hours of graduate credit depending upon the plan he is following and must complete a residence requirement of at least one academic year or its equivalent in summer terms.
2. A minimum of eighteen semester hours of the required thirty to thirty-six hours must be courses numbered 500 or above. Courses numbered 300 may be used for graduate credit if extra academic work is required and if prior written approval is secured from the department head, the head of the department in which the work is taken, and the Graduate Dean.
3. All candidates must pass a comprehensive oral examination if a thesis is written. If a thesis is not written, a comprehensive written examination is required.
4. The student must meet the specific requirements as set forth in this Catalog for his particular degree program.

**Master of Arts**

1. Meet all general degree requirements.
2. Complete thirty semester hours of graduate work: eighteen in the major field, six in thesis, six in an approved minor or six additional hours in the major.
3. Present evidence of a reading knowledge of at least one foreign language. This requirement may be satisfied by examination or by submitting college credit equivalent to that required for the degree of Bachelor of Arts in this institution.

**Master of Business Administration**

1. Meet all general degree requirements.
2. Complete thirty semester hours of graduate work as follows: a minimum of twelve semester hours of undifferentiated and specialized course work numbered 500 or above in the major field, six in thesis, and twelve additional hours on the senior or graduate level in the major field.
3. If a thesis is not written, complete thirty-six hours of approved course work.

**Master of Science**

1. Meet all general degree requirements.
2. Complete thirty semester hours of graduate work: fifteen to eighteen semester hours in the major field, six in thesis, and six to nine semester hours in the minor field. On approval by the head of his major department a student may elect to take all of his work in his major field.
3. If a thesis is not required, complete thirty-six hours of approved course work.

**Master of Engineering Science**

1. Meet all general degree requirements.
2. Complete thirty semester hours of graduate work as follows: a minimum of twelve semester hours in engineering courses, six semester hours in thesis, and a minimum of nine semester hours in a combination of science and mathematics.

**Master of Engineering**

1. Meet all general degree requirements.
2. Complete thirty-six semester hours of graduate work or complete thirty hours of graduate work plus a three hour design project.

**Master of Education**

1. Meet all general degree requirements.
2. Earn a minimum of thirty-six semester hours, if a thesis is not planned, including twenty-one semester hours in education and fifteen semester hours in academic subject matter areas for the degree in Elementary Education or Special Education. Twelve hours in education, eighteen hours in one discipline, and six hours in other academic areas should be completed for the degree in Secondary Education. The degree in Guidance and Counseling requires thirty-six semester hours; a minimum of twenty-seven hours has been specified in education, six hours must come from related disciplines, and three hours are elective.
3. Earn a minimum of thirty semester hours, if the thesis is planned, including twelve semester hours in education, six semester hours in thesis, and nine semester hours in academic subject matter areas for the degree in Elementary Education or Special Education. Twelve semester hours in education, including the thesis, twelve hours in one discipline, and six hours in other academic areas should be completed for the degree in Secondary Education.

**ADMISSION TO CANDIDACY**

1. Prior to the time that a graduate student is admitted to candidacy, the head of the major department or a person designated by him acts as the student's adviser.
2. A student may be admitted to candidacy after completing one-half of his course work, excluding the thesis, and after removing all undergraduate deficiencies. During this time he must have demonstrated his ability and inclination to do graduate work.
3. The individual student is responsible for making an application for Admission to Candidacy. This is done in the office of the head of the major department.
4. A departmental recommendation concerning the applicant's degree plan and the appointment of an advisory committee is then submitted to the Dean of the Graduate School. If approved, the student is admitted to candidacy.



5. The advisory committee will include a person designated as the major professor, along with two other members of the faculty.
6. A student must complete at least nine semester hours after admission to candidacy.

#### THESIS REQUIREMENTS

A thesis is required in all Master of Arts degree plans and may be a departmental requirement or option in other programs. A student who is required or elects to write a thesis must:

1. Register for the thesis course after he has been admitted to candidacy and has obtained the approval of the head of the department. The first registration is for Thesis Course 669A, subsequent registrations are for Thesis Course 669B. The grade of "I" is assigned for each registration until the thesis is finally approved.
2. Register for a thesis course each semester or term that he works on the thesis under active supervision, including the term or semester when the oral examination is administered.
3. Secure a copy of the approved manual of instructions for preparing a thesis and follow it explicitly.
4. Write a thesis under the direction of his supervising professor. The thesis must be approved by his advisory committee and the Graduate Dean. Six semester hours of credit will be granted for the successful completion of the thesis. No credit will be reported for the thesis course until the final copy of the thesis has been approved.
5. Submit a single, unbound copy of the thesis to the Dean of the Graduate School at least thirty days prior to the expected date of graduation.
6. Submit three copies (four if a personal copy is desired) of the finished thesis to the Graduate Dean no later than ten days prior to the graduation date.
7. Pay the thesis binding fee to the Lamar Bookstore no later than ten days prior to the graduation date.

#### FINAL EXAMINATION

1. Each candidate for a master's degree is required to pass a final oral or written examination. This examination must be taken at least fifteen days prior to the conferring of the degree.
2. A student presenting a thesis as a part of the degree requirement must take an oral examination and must be enrolled in the Graduate School at the time the examination is administered. This examination is confined to the thesis and background subject matter pertaining to the thesis.
3. A candidate not presenting a thesis as a part of the degree requirement must take a written examination.
4. A calendar showing scheduled dates for oral and written examinations is prepared by the Dean of the Graduate School.

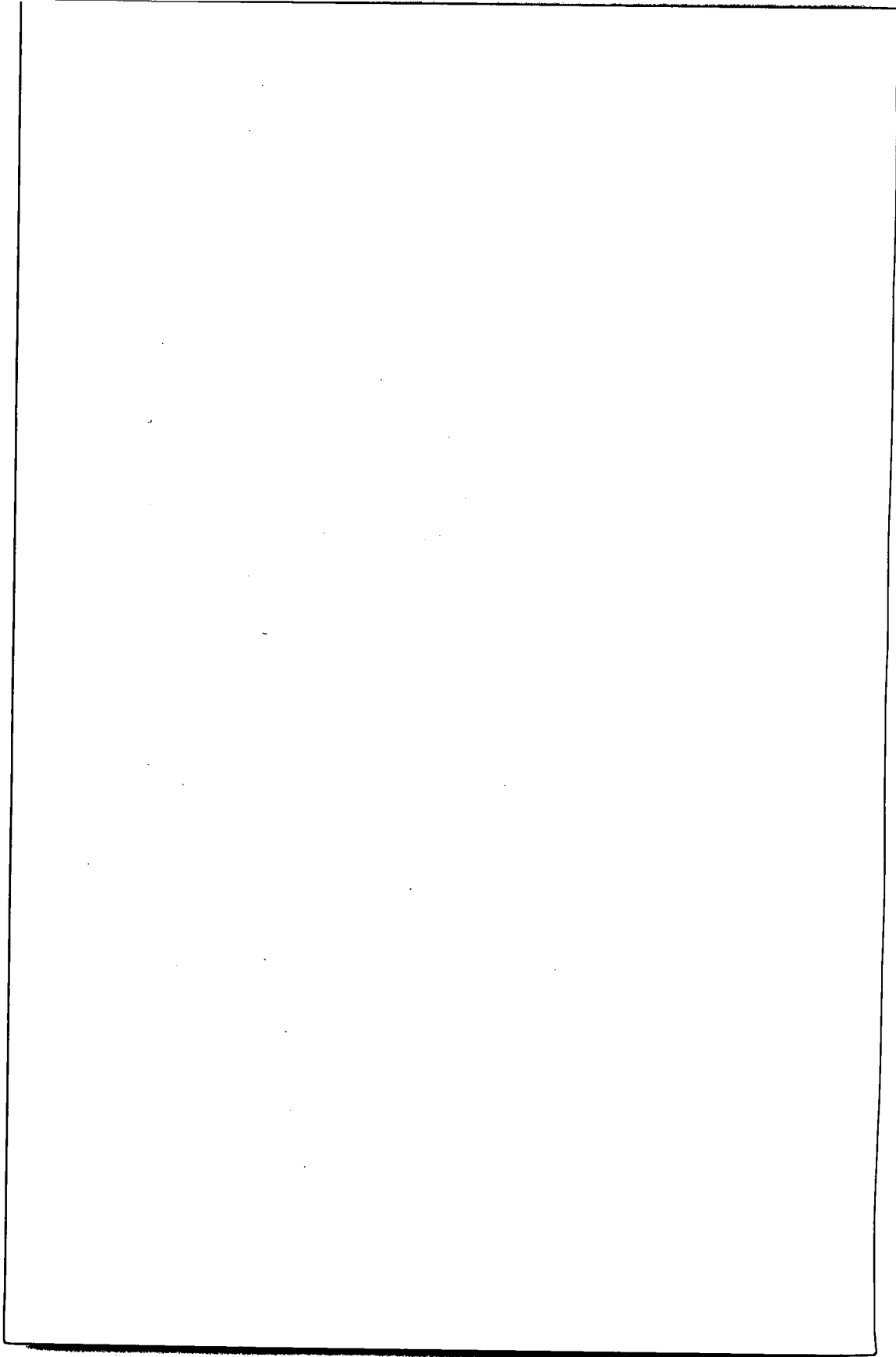
**CONFERRING OF DEGREES**

Degrees earned in the Graduate School are conferred at the annual commencement in June and August. The candidate must be present to receive the degree, unless he has been excused by the Graduate Dean.

1. A candidate for the Master's degree must file an application for graduation in the office of the Graduate Dean. This application must be made in accordance with the calendar published in this bulletin.
2. Requests to receive a degree in absentia must be filed in the Graduate Dean's office at least four weeks before commencement date.

PART III

FIELDS OF STUDY



## DEPARTMENT OF BIOLOGY

The Department of Biology offers the following graduate courses to be used primarily to provide an area of specialization for the degree of Master of Education in Secondary Education, Master of Education in Elementary Education, Master of Education in Special Education, and as support to other advanced degree programs.

## GRADUATE FACULTY

## Members

Professor Edwin S. Hayes  
General biology, cytology

Professor Russell J. Long  
Histology, embryology, natural history

Professor Jed J. Ramsey  
Ornithology and avian physiology

Professor W. Russell Smith  
Microbiology

Professor Henry T. Waddell  
Botany, mycology  
Biology courses will be selected from the following:

531—Seminar in Biological Sciences. Designed to enhance the biological science background of non-science majors. Relevant biological concepts, library research and synoptic reports, lectures by staff on special topics. Class: 3 hours. Credit: 3 semester hours.

532—Mycology. Isolation, cultivation and identification of fungi with special emphasis on those of economic importance. Lecture: 2 hours. Laboratory: 3 hours. Credit: 3 semester hours.

533—Ichthyology. Natural history, taxonomy and ecology of freshwater and marine fish. Lecture: 2 hours. Laboratory: 3 hours. Credit: 3 semester hours.

534—Herpetology. Natural history, taxonomy and ecology of amphibians and reptiles. Lecture: 2 hours. Laboratory: 3 hours. Credit: 3 semester hours.

535—Ornithology. Natural history, taxonomy and ecology of birds. Lecture: 2 hours. Laboratory: 3 hours. Credit: 3 semester hours.

536—Mammalogy. Natural history, taxonomy and ecology of mammals. Lecture: 2 hours. Laboratory: 3 hours. Credit: 3 semester hours.

**SCHOOL OF BUSINESS**

The School of Business offers a program of study leading to the Master of Business Administration degree. Persons seeking admission to this program must meet the general requirements for admission that are outlined in the Graduate Catalog. An applicant must also have completed the equivalent of the following undergraduate courses in business: accounting, six semester hours; business law, three semester hours; business statistics, three semester hours; principles of economics, six semester hours; industrial management, three semester hours; principles of marketing, three semester hours; principles of finance, three semester hours; business communications, three semester hours, or a substitution approved by the Dean of the School of Business.

**Degree Requirements**

The candidate for the Master of Business Administration degree must meet all the Graduate School general degree requirements as listed in this catalog. The student may follow either of two plans. Plan I requires twenty-four hours of course work and a thesis. Plan II requires thirty-six hours of course work, including BA 5312 for students who do not write a thesis. Specific degree requirements are as follows if a thesis is written:

1. Undifferentiated Business Courses—six semester hours selected from the following:
  - Acc 534—Seminar in Accounting
  - BA 530—Seminar in Management
  - BA 531—Seminar in Marketing
  - BA 5310—Advanced Statistical Analysis
  - BA 5311—Seminar in Financial Management
  - BA 5312—Business Research
2. Specialization—six semester hours selected from the following courses:
  - Acc 536—Advanced Accounting Problems
  - Acc 537—Managerial Accounting
  - BA 532—Problems in Business Finance
  - BA 538—Business Problems and Organization
  - BA 539—Quantitative Analysis Control
3. Six hours Thesis:
  - 669A-669B—Thesis in Business Administration
4. Six hours selected from the following courses in economics:
  - Eco 430—Government and Business
  - Eco 436—Business Cycles
  - Eco 437—Intermediate Theory
  - Eco 438—Macro Economics
  - Eco 4370—Seminar in Economic Problems
  - Eco 4371—Managerial Economics
  - Eco 530—Seminar in Monetary and Fiscal Policy
  - Eco 531—Advanced Macroeconomics
  - Eco 533—Contemporary Literature and Thought
  - Eco 534—Seminar in Labor Economics

5. Approved electives—six semester hours in business administration or economics. If a thesis is not written, eighteen hours of approved courses must be completed in addition to those selected from 1, 2, and 4 above.

#### **Requirements for Applicants With Degrees in Non-business Fields**

Students whose baccalaureate degrees are in non-business fields may earn the Master of Business Administration degree by completing sixty semester hours of work in the School of Business. The first year of work (30 semester hours) will consist of the following undergraduate core courses or their equivalents. Descriptions of these courses may be found in the undergraduate catalog of this institution.

Acc 231 and 232—Principles of Accounting

BA 331—Business Law

BA 332—Principles of Finance

BA 334—Marketing

BA 335—Industrial Management

BA 432—Business Statistics

Eco 231 and 232—Principles of Economics

Business Communications—three semester hours (or a substitution approved by the Dean of the School of Business)

Requirements for the second year of work leading to the MBA degree for non-business majors are as outlined above for business graduates.

#### **GRADUATE FACULTY**

##### **Members**

Professor Richmond O. Bennett  
Accounting, Business Administration

Professor Walter W. Bennett  
Business Administration

Professor Richard T. Cherry  
Business Administration, Economics

Professor C. D. Kirksey  
Business Administration

Professor J. D. Landes  
Accounting, Business Administration

Associate Professor Mietzl Miller  
Economics

Associate Professor Sam F. Parigi  
Economics

Professor Charles A. Partin  
Economics

**Associate Members**

Associate Professor H. A. Barlow  
Accounting

Assistant Professor Alfred F. Steiert  
Business Administration

Accounting courses will be selected from the following list:

**534—Seminar in Accounting.** A course designed to broaden the student's concept of current accounting theory and problems. Class: 3 hours. Credit: 3 semester hours.

**536—Advanced Accounting Problems.** An intensive study of accounting techniques and problems with emphasis placed on the concepts of income determination, asset valuation, and cost analysis. Contemporary developments are reflected through a study of research materials and professional publications. Class: 3 hours. Credit: 3 semester hours.

**537—Managerial Accounting.** Application of accounting data in decision-making; cost analyses as applied in the development of budgets and standards; accounting as a tool for cost control and pricing; case problems. Class: 3 hours. Credit: 3 semester hours.

Business administration courses must be selected from the following:

**530—Seminar in Management.** A course designed to broaden the student's concept of the field of management other than functional specialization; analysis of present and possible future problems in organization; labor-management relations; governmental and organizational relationships; responsibility of management, local and national. The student's ability to analyze, judge trends, and consider varying influences is developed through practice with actual cases. Research papers are presented by each student for critical analysis and discussion. Class: 3 hours. Credit: 3 semester hours.

**531—Seminar in Marketing.** An intensive study of specific marketing problems with emphasis on research methodology and marketing problems; a critical evaluation of research procedures and utilization of research findings; promotional programs. Prerequisite: approval of professor. Class: 3 hours. Credit: 3 semester hours.

**532—Problems in Business Finance.** A comprehensive study of how financial problems affect all areas of business management. The case study approach is utilized in order to stimulate analysis and discussion of forms of organization, promotion of new firms, short-term and long-term sources of funds and financing, dividend policies, mergers, refinancing and recapitalization, reorganization, and comprehensive financial planning. Prerequisite: BA 5311. Class: 3 hours. Credit: 3 semester hours.

**538—Business Problems and Organization.** Managerial decision-making in the areas of marketing, finance, production, and labor-management relations. General management perspectives are stressed in determining objectives, establishing policies, and planning and organizing the use of facilities, materials, and manpower; motivation of individuals and groups. The case-study approach is utilized. Class: 3 hours. Credit: 3 semester hours.



**539—Quantitative Analysis Control.** A course designed to cover the interrelationships of production, distribution, and finance. The problems and situations confronting top and middle management are critically examined. Quantitative tools and techniques of accounting, statistics, and mathematics are employed to provide a framework for analysis and decision-making. Prerequisite: approval of professor. Class: 3 hours. Credit: 3 semester hours.

**5310—Advanced Statistical Analysis.** Further development of the application of statistical methods to the process of making decisions in the face of uncertainty. The use of quantitative methods and models for management is emphasized. Topics include multiple correlations, sampling theory, queuing theory, and statistical quality control. Prerequisite: BA 432 and mathematical competence. Class: 3 hours. Credit: 3 semester hours.

**5311—Seminar to Financial Management.** A study of selected topics in financial management, including capital budgeting and optimum financial structure. Research papers are presented by each student for critical analysis and discussion. Class: 3 hours. Credit: 3 semester hours.

**5312—Business Research.** The student will design and carry out an individual research project under the supervision of a faculty member. Emphasis will be placed on research design and methodology, sources of business and economic data, and the use of quantitative techniques to achieve substantive research results.

**669A-669B—Thesis.** Prerequisite: Admission to candidacy for the master's degree. Credit: 6 semester hours.

Economics courses must be selected from the following:

**430—Government and Business.** Regulation and restriction of business enterprises by government. Regulatory bodies; anti-trust laws; public utilities; transportation; government ownership. Class: 3 hours. Credit: 3 semester hours.

**436—Business Cycles.** The nature and causes of business cycles. Cyclical theories; business fluctuations; forecasting stabilization; current problems. Class: 3 hours. Credit: 3 semester hours.

**437—Intermediate Theory.** Economic analysis and methodology. Distribution theory; price theory; imperfect competition and monopoly; national income analysis. Class: 3 hours. Credit: 3 semester hours.

**438—Macro Economics.** A descriptive-analytical approach to the dynamic forces that influence the aggregate level of economic activity. Income and employment determinants; levels of income and employment; stabilization theory; investment and income relationship; monetary and fiscal policies. Class: 3 hours. Credit: 3 semester hours.

**4370—Seminar in Economic Problems.** An advanced level survey of current economic problems, methods, and empirical studies. Subject matter will be varied from semester to semester and will encompass the field of economic inquiry. Class: 3 hours. Credit: 3 semester hours.

**4371—Managerial Economics.** A study in depth of the principles and techniques of economic analysis applicable to the problems of business management; demand analysis and forecasting; costing; pricing; capital budgeting and related problems. Class: 3 hours. Credit: 3 semester hours.

**530—Seminar in Monetary and Fiscal Policy.** A study of the theory and practice of monetary management and the taxing-borrowing-spending programs of the government as they affect growth, output, employment, prices and resource allocation. Prerequisite: Principles of Economics—6 semester hours and graduate standing. Class: 3 hours. Credit: 3 semester hours.

**531—Advanced Macroeconomics.** A study in depth of the dynamic forces reacting to determine the aggregate level of economic activity: employment, output, and income; prices, cycles, and growth. Prerequisites: Macroeconomics—3 semester hours and graduate standing. Class: 3 hours. Credit: 3 semester hours.

**533—Contemporary Literature and Thought.** Readings, special projects, studies, and research in the current professional literature. The student will become acquainted with learned journals, economists, their current thinking, present issues and emphases in the field. Class: 3 hours. Credit: 3 semester hours.

**534—Seminar in Labor Economics.** Lectures, readings and research projects on contemporary labor issues and theory. Man-power development programs, collective bargaining, productivity, composition of the labor force, and labor legislation. Class: 3 hours. Credit: 3 semester hours.

**535—Seminar in Economics.** A seminar for non-majors with considerable emphasis placed on independent study and student research. Nature and scope of economics; structure and workings of the American economy; international economics; economic problems and issues. Class: 3 hours. Credit: 3 semester hours.

**DEPARTMENT OF CHEMISTRY**

The Department of Chemistry offers a program of study leading to the Master of Science degree in Chemistry. Those seeking admission to this program must meet the general requirements as set forth in this catalog for admission to the Graduate School. In addition, the applicant must offer the substantial equivalent of the courses in general chemistry, inorganic chemistry, analytical chemistry, organic chemistry, and physical chemistry required of undergraduate students in the first three years of the chemistry curriculum. The applicant must also have completed one year of college physics and mathematics through integral calculus.

Students working towards the graduate degree in chemistry will take a set of four proficiency examinations, one in each of the fields of chemistry: analytical, inorganic, organic, and physical. These examinations are taken on entrance and are offered in the fall and again during the beginning of the spring semester. The results of these examinations are used for orientation and guidance.

**Degree Requirements**

The candidate for the M.S. degree in Chemistry must meet all the Graduate School general degree requirements as listed in this catalog. Additional specific degree requirements are as follows:

1. Fifteen to eighteen semester hours of course work in Chemistry which must include Chemistry 531, 533, 535 and 537 and at least one 500 level Selected Topics course in Chemistry.
2. Presentation of a thesis.
3. Six to nine additional semester hours of senior or graduate work in an approved field of study.
4. A reading knowledge of one of the following modern foreign languages: German, French, or Russian.

**GRADUATE FACULTY****Members**

Professor Harold T. Baker

Physical Chemistry, radiochemistry

Professor Margaret D. Cameron

Organic Chemistry

Professor Ewin A. Eads

Inorganic Chemistry

Professor Roger E. Yerick

Analytical Chemistry, radiochemistry

**Associate Members**

Assistant Professor Kenneth L. Dorris

Physical Chemistry

Assistant Professor Mary Jean George

Biochemistry

Assistant Professor Keith C. Hansen

Organic Chemistry

Assistant Professor J. Dale Ortego

Inorganic Chemistry

The graduate student will select his chemistry courses from the following list:

**433—Modern Physical.** Selected topics in modern physical chemistry. Prerequisite: Chm 432 (or parallel). Class: 3 hours. Credit: 3 semester hours.

**436—Inorganic.** Study of the quantized atom, periodicity, characteristics of the extra-nuclear structure. Valency and the chemical bond, complex ions and coordination compounds. Prerequisites: Chm 432 (or parallel). Class: 3 hours. Credit: 3 semester hours.

**443—Biochemistry.** Principles of biochemistry. Current theories of chemistry as applied to biochemical materials. Prerequisites: Chm 241, 342 (or parallel). Class: 3 hours. Laboratory: 3 hours. Credit: 4 semester hours.

**446—Instrumental Methods of Analysis.** Instrumental techniques in modern analytical chemistry. Theory and practice in optical, electrometric, and chromatographic methods. Prerequisites: Chm 241, 432, (or parallel), Mth 231, Phy 142 or 241. Class: 3 hours. Laboratory: 4 hours. Credit: 4 semester hours.

**531—Advanced Analytical.** Prerequisites: Graduate standing or consent of instructor. Class: 3 hours. Credit: 3 semester hours.

**532—Kinetics.** Rate equations developed by the application of statistical methods to the kinetic theory of gases will be compared with experimental reaction rate determinations. The development and significance of partition functions, the collision theory, and the theory of absolute reaction rates will be presented. May be taken for graduate credit in chemistry or engineering. Class: 3 hours. Credit: 3 semester hours.

**533—Advanced Inorganic.** Prerequisite: Graduate standing or consent of instructor. Class: 3 hours. Credit: 3 semester hours.

**535—Advanced Organic.** Prerequisite: Graduate standing or consent of instructor. Class: 3 hours. Credit: 3 semester hours.

**536—Thermodynamics.** The basic laws of Thermodynamics are derived and their applications to physical phenomena presented. The treatment of the thermodynamics of surfaces, and of systems in gravitational, centrifugal, electric, or magnetic fields is given. The course may be taken for credit in engineering or chemistry. Class: 3 hours. Credit: 3 semester hours.

**537—Advanced Physical.** Prerequisite: Graduate standing or consent of instructor. Class: 3 hours. Credit: 3 semester hours.

**538—History of Chemistry.** The development of chemistry as related to the men of science who contributed to its progress. Prerequisite: Graduate standing. Class: 3 hours. Credit: 3 semester hours.

**5101, 5201, 5301, 5401, 5501, 5601—Chemistry for Teachers.** Designed to advance the professional competence of participants. For each course, a description of the particular area of study will appear in the printed schedule. May be repeated for credit when nature of course differs sufficiently from one previously taken. Class: 1-6 hours and/or laboratory 0-6 hours. Credit: 1-6 semester hours.

**5311—Selected Topics in Analytical Chemistry.** May be repeated for a maximum of 6 semester hours when topic varies. Description of course content will appear in schedule of classes. Prerequisite: Chm 531 or equivalent. Class: 3 hours. Credit: 3 semester hours.

**5331—Selected Topics in Inorganic Chemistry.** May be repeated a maximum of six semester hours when topic varies. Description of course content will appear in schedule of classes. Prerequisite: Chm 533 or equivalent. Class: 3 hours. Credit: 3 semester hours.

**5351—Selected Topics in Organic Chemistry.** May be repeated for a maximum of six semester hours when topic varies. Description of course content will appear in schedule of classes. Prerequisite: Chm 535 or equivalent. Class: 3 hours. Credit: 3 semester hours.

**5371—Selected Topics in Physical Chemistry.** May be repeated a maximum of six semester hours when topic varies. Description of course content will appear in schedule of classes. Prerequisite: Chm 537 or equivalent. Class: 3 hours. Credit: 3 semester hours.

**669A, 669B—Thesis.** Prerequisite. Admission to candidacy for the master's degree. Credit: 6 semester hours.

**SCHOOL OF EDUCATION****Department of Education**

The Department of Education offers programs of study leading to the Master of Education degree and/or certification in Elementary Education, Secondary Education, Special Education, and Guidance and Counseling.

The Department also offers courses to fulfill the Professional Development requirements for a Professional Certificate in Secondary Education in association with graduate degree programs in English and history.

**Master of Education Degree (M.Ed.)****General Requirements:**

1. The student must fulfill the general requirements for admission and the general degree requirements that are stated elsewhere in this Bulletin.
2. The applicant in elementary education must have completed twenty-four semester hours in education, including twelve semester hours in elementary education methods and materials courses.
3. The applicant in special education must have completed a minimum of twenty-four semester hours in education, including six semester hours in special education and twelve semester hours in elementary education methods and materials courses.
4. The applicant in secondary education must have completed a minimum of eighteen semester hours in education and twenty-four hours in the discipline to be pursued at the graduate level, including a minimum of nine hours at the 300 level or higher.
5. The applicant in guidance and counseling must hold a provisional teaching certificate, or its equivalent.
6. The student must have completed a course in supervised student teaching or have taught one year.
7. The student in fields other than guidance and counseling may elect to write a thesis. If so, he is required to complete a minimum of twenty-four hours in addition to a thesis.
8. The student who does not choose to write a thesis must earn a minimum of thirty-six hours of graduate credit.
9. The student who does not write a thesis is required to complete successfully a written examination.

**Degree Plan in Elementary Education**

To meet individual needs, considerable flexibility is allowed in planning the student's program; however, the usual pattern of course work is as follows:

1. Specialization Area. Six semester hours of senior or graduate level courses must be taken in one of the following disciplines: history, English, foreign languages, mathematics, sciences, art, music, speech, or health and physical education.

2. Professional Development. Twenty-one semester hours must be selected from the following courses (eighteen semester hours if the student elects to write a thesis):
  - A. Nine semester hours (or three if the thesis is written) must be selected from the following courses:
    - (1) Edu 530—Structure and Organization of Public Education
    - \* (2) Edu 531—Research
    - (3) Edu 532—Current Issues in Education
    - (4) Edu 533—Contemporary Philosophies of Education
    - (5) Edu 535—The Learning Process
    - (6) Edu 5321—Technology
  - B. Twelve semester hours (or nine if the thesis is written) must be selected from the following courses:
    - (1) Edu 534—Advanced Study in Human Development
    - (2) Edu 536—Problems in Teaching Language Arts and Social Studies
    - (3) Edu 537—The Elementary School Curriculum
    - (4) Edu 538—Problems in Teaching Arithmetic and Science
    - (5) Edu 539—Developmental Reading
  - C. Thesis. Six semester hours credit:
    - (1) Edu 669A-669B—Thesis
3. Resource Area. Nine semester hours must be selected from the following courses (six semester hours if the student elects to write a thesis):
  - A. Bio 531—Seminar in Biological Sciences
  - B. Eco 535—Seminar in Economics
  - C. Edu 5301—Current Literature for Children and Adolescents
  - D. Geo 530—Earth Science Seminar
  - E. Mth 530—Seminar in Mathematics for Elementary Teachers
  - F. Phy 530—Seminar in Physical Sciences
  - G. Soc 531—Seminar in Principles of Sociology
  - H. Spc 539—Seminar in Fine Arts

**Program Leading to Professional Certificate—Elementary**

To be eligible to receive the Professional Certificate, the prerequisites and requirements must be met as follows:

1. The student must hold or be eligible for the Provisional Certificate—Elementary.
2. The student must complete the following program of study:
  - A. Specialization Area. Twelve semester hours of graduate level courses must be taken in one of the following disciplines: history, English, mathematics, biology, or chemistry.

\*Required.

B. Professional Development Area. Twelve semester hours must be selected from the following courses:

- (1) Edu 530—Structure and Organization of Public Education
- (2) Edu 531—Research
- (3) Edu 532—Current Issues in Education
- (4) Edu 533—Contemporary Philosophies of Education
- (5) Edu 534—Advanced Study in Human Development
- (6) Edu 535—The Learning Process
- (7) Edu 536—Problems in Teaching Language Arts and Social Studies
- (8) Edu 537—Elementary School Curriculum
- (9) Edu 538—Problems in Teaching Arithmetic and Science
- (10) Edu 539—Developmental Reading
- (11) Edu 5301—Current Literature for Children and Adolescents
- (12) Edu 5321—Technology

C. Resource Area. Six semester hours must be selected from the following courses:

- (1) Bio 531—Seminar in Biological Sciences
- (2) Eco 535—Seminar in Economics
- (3) Geo 530—Earth Science Seminar
- (4) Mth 530—Seminar in Mathematics for Elementary Teachers
- (5) Phy 530—Seminar in Physical Sciences
- (6) Soc 531—Seminar in Principles of Sociology
- (7) Spc 539—Seminar in Fine Arts

#### Degree Plan in Special Education

To meet individual needs, considerable flexibility is allowed in planning the student's program; however, the usual pattern of course work is as follows:

1. Specialization Area. Twelve semester hours must be selected from the following courses:

- A. Edu 5311—Advanced Studies in Mental Retardation
- B. Edu 5312—Occupational Education for the Mentally Retarded
- C. Edu 5313—Advanced Psychology of Exceptional Children
- D. Edu 5314—Seminar on the Education of the Mentally Retarded
- E. Edu 5315—Problems and Issues in Special Education
- F. Edu 5316—Administration and Supervision of Special Education Programs
- G. Edu 5325—Advanced Studies in Learning Disabilities
- H. Edu 5326—Seminar on the Education of the Physically Handicapped



2. Professional Development. Nine semester hours must be selected from the following courses:
  - A. Nine semester hours must be selected from the following courses. (Three semester hours if the student elects to write a thesis):
    - (1) Edu 530—Structure and Organization of Public Education
    - \* (2) Edu 531—Research
    - (3) Edu 532—Current Issues in Education
    - (4) Edu 533—Contemporary Philosophies of Education
    - (5) Edu 534—Advanced Study in Human Development
    - (6) Edu 535—The Learning Process
    - \*\* (7) Edu 430—Education of the Mentally Retarded
    - \*\* (8) Edu 431—Psychology of Exceptional Children
    - \*\* (9) Edu 439—Methods and Materials for Learning Disabilities
    - (10) Edu 5321—Technology
  - B. Thesis. Six semester hours credit:
    - (1) Edu 669A-669B—Thesis
3. Resource Area. Fifteen semester hours of senior or graduate courses are required as follows (nine semester hours if a thesis is written):
  - A. Six semester hours of senior or graduate level courses must be taken in one of the following disciplines: history, English, foreign languages, mathematics, sciences, art, music, speech, or health and physical education.
  - B. Nine semester hours must be selected from the following seminars (three semester hours if a thesis is written):
    - (1) Bio 531—Seminar in Biological Sciences
    - (2) Eco 535—Seminar in Economics
    - (3) Geo 530—Earth Science Seminar
    - (4) Mth 530—Seminar in Mathematics for Elementary Teachers
    - (5) Phy 530—Seminar in Physical Sciences
    - (6) Soc 531—Seminar in Principles of Sociology
    - (7) Spc 539—Seminar in Fine Arts
    - (8) Edu 5301—Current Literature for Children and Adolescents

**Program Leading to Professional Certificate—Mental Retardation**

To be eligible to receive the Professional Certificate, the prerequisites and requirements must be met as follows:

1. The student must hold or be eligible for the Provisional Certificate—Mental Retardation.
2. The student must complete the following program of study:
  - A. Specialization Area. Twelve semester hours of graduate level courses must be taken in the field of mental retardation, as follows:
    - (1) Edu 5311—Advanced Studies in Mental Retardation
    - (2) Edu 5312—Occupational Education for the Mentally Retarded
    - (3) Edu 5313—Psychology of the Mentally Retarded
    - (4) Edu 5314—Seminar on the Education of the Mentally Retarded.

\*Required.

\*\*This course may be taken only by special permission.

B. Professional Development Area. Six semester hours must be selected from the following courses:

- (1) Edu 530—Structure and Organization of Public Education
- (2) Edu 531—Research
- (3) Edu 532—Current Issues in Education
- (4) Edu 533—Contemporary Philosophies of Education
- (5) Edu 534—Advanced Study in Human Development
- (6) Edu 535—The Learning Process
- (7) Edu 5321—Technology

C. Resource Area. Six semester hours of senior or graduate level courses must be taken in one of the following disciplines: history, English, foreign languages, mathematics, sciences, art, music, speech, and health and physical education.

D. Electives. Six semester hours must be selected from senior or graduate level courses as approved by the advisor.

#### Degree Plan in Secondary Education

To meet individual needs, considerable flexibility is allowed in planning the student's program; however, the usual pattern of course work is as follows:

1. Specialization Area. Eighteen hours of graduate level courses must be taken in one of the following disciplines. A minimum of twelve hours must be taken at the 500 level.

##### Biology

Bio 441—Parasitology

Bio 442—Entomology

Bio 443—Limnology

Bio 444—Vertebrate Natural History

Bio 445—Marine Biology

Bio 446—Terrestrial Ecology

Bio 447—Plant Taxonomy

Bio 4301—Institute in Biological Sciences

Bio 532—Mycology

Bio 533—Ichthyology

Bio 534—Herpetology

Bio 535—Ornithology

Bio 536—Mammalogy

**Chemistry**

- Chm 438—History of Chemistry
- Chm 439—Nuclear Chemistry
- Chm 443—Biochemistry
- Chm 444—Qualitative Organic Analysis
- Chm 4101, 4201, 4301, 4401—Chemistry for Teachers
- Chm 5101, 5201, 5301, 5401, 5601—Chemistry for Teachers

The following courses are recommended for those with strong backgrounds:

- Chm 431—Physical
- Chm 432—Physical
- Chm 413—Physical Lab
- Chm 414—Physical Lab
- Chm 435—Modern Organic
- Chm 436—Inorganic II
- Chm 446—Instrumental
- Chm 531—Advanced Analytical
- Chm 533—Advanced Inorganic
- Chm 535—Advanced Organic

**Health and Physical Education**

- HPE 430—Problems in Physical and Health Education
- HPE 434—Health and Human Ecology
- HPE 435—Adapted Physical Education
- HPE 436—Organization and Administration of Physical and Health Education
- HPE 439—History and Theory of Dance
- HPE 531—Cultural Foundations of Physical Education
- HPE 532—Seminar in Physical Education
- HPE 533—Organization and Administration of The School Health Program
- HPE 534—Scientific Basis of Exercise
- HPE 535—Trends and Issues in Health and Physical Education
- HPE 536—Research Methods in Health and Physical Education
- HPE 5101, 5201, 5301, 5601—Institute in Health and Physical Education

**Mathematics**

- Mth 431—Introduction to Functions of a Complex Variable
- Mth 432—Introduction to Functions of a Complex Variable
- Mth 531—Theory of Functions of Real Variable

Mth 532—Modern Algebra  
Mth 533—Calculus of Variations  
Mth 534—Topology  
Mth 535—Introduction to Advanced Analysis  
Mth 536—Integral Equations  
Mth 537—Methods of Applied Mathematics  
Mth 539—Infinite Series  
Mth 5311—Foundations of Geometry  
Mth 5312—Linear Algebra  
Mth 5313—Abstract Algebra  
Mth 5314—History of Mathematics  
Mth 5315—Probability and Statistics  
Mth 5316—Data Processing  
Mth 5317—Number Theory

**Physics**

Phy 414, 415—Experimental Projects  
Phy 416, 417—Seminar  
Phy 431—Classical Mechanics  
Phy 432—Introductory Quantum Mechanics  
Phy 433—Solid State Physics  
Phy 436—Nuclear Physics  
Phy 437—Astrophysics  
Phy 440—Basic Physics for Teachers  
Phy 448—Optics  
Phy 531—Theoretical Physics  
Phy 532—Relativity  
Phy 533—Seminar  
Phy 5301-5601—Institute in Physics

2. Professional Development. Twelve semester hours must be taken as follows:

**Required**

Edu 531—Research  
Edu 5317—Secondary School Curriculum  
*or*  
Edu 5319—Problems in Secondary School Instruction

**Electives**

Edu 530—Structure and Organization of Public Education  
Edu 532—Current Issues in Education  
Edu 533—Contemporary Philosophies of Education

Edu 534—Advanced Study in Human Development

or

Edu 535—Advanced Educational Psychology

Edu 5321—Technology

Edu 669A-669-B—Thesis

3. Resource Area. Six hours of graduate level study in academic areas which support the discipline or which constitute a second teaching field interest.
4. Thesis. If the student chooses to write a thesis, the number of specialization hours is reduced to twelve, which must include a minimum of six semester hours taken at the 500 level.

#### **Program Leading to Professional Certificate—Secondary**

To be eligible to receive the Professional Certificate, the prerequisites and requirements must be met as follows:

1. A student must hold or be eligible for the Provisional Certificate—Secondary, in the designated area.
2. The student must complete the following program of study.
  - A. Specialization Area. Twelve semester hours of graduate courses must be completed in a professional level teaching field.
  - B. Resource Area. Six semester hours of graduate level study in academic areas which support the discipline or which constitute a second teaching field interest.
  - C. Professional Development. Six semester hours of approved courses in professional education must be completed.
  - D. Electives. Six semester hours may be selected from graduate level courses as approved by the person in charge of the certificate.

#### **Degree Plan in Guidance and Counseling**

To meet individual needs, some flexibility is allowed in planning the student's program; however, because of requirements for certification the usual pattern of course work is as follows:

1. Specialization Area. Twelve semester hours must be taken as follows:
  - Edu. 5322—Organization and Administration of the Guidance Program
  - Edu 5323—Occupational and Vocational Guidance
  - Edu 5324—Individual and Group Counseling
  - Edu 5328—Practicum in Guidance and Counseling
2. Professional Development. Fifteen semester hours must be taken as follows:
  - Edu 431—Psychology of Exceptional Children
  - Edu 4337—Tests and Measurements
  - Edu 531—Research
  - Edu 534—Advanced Study in Human Development
  - Edu 535—The Learning Process

3. Resource Area. Nine semester hours must be taken as follows:

Required

Soc 432—Group Work

Psy 338—Individual Psychological Testing

Electives

Soc 339—Juvenile Delinquency

or

Psy 432—Abnormal Psychology

or

Edu 5325—Advanced Studies in Learning Disabilities

4. Thesis. A thesis is not required or permitted.

**General Information Concerning  
Professional Certificates**

**Validity**

The Professional Certificate is valid for life unless canceled by lawful authority and gives the holder legal authority to perform duties in the public schools of Texas in the specialized areas designated on the face of the certificate.

**Requirements:**

1. Have completed the requirements for a Provisional Certificate.
2. Have at least three years of teaching experience.
3. Have completed an approved teacher education program.
4. Be of good moral character.
5. Be a citizen, or in the process of becoming a naturalized citizen of the United States.
6. Believe in and uphold the Constitutions of the United States and the State of Texas.
7. Have completed, in a Texas institution of higher learning, a course or courses in which the Constitutions of the United States and the State of Texas have been given special emphasis.
8. Have completed at least six semester hours of American History or three semester hours in American History plus three semester hours in Texas History.
9. Pay an application fee of \$3.00.

**Course Load for Full-Time Teachers**

Full-time teachers may enroll for as much as six semester hours of graduate credit for one semester during an academic year; however, the load of such students shall not exceed nine semester hours for the academic year.

**GRADUATE FACULTY****Members**

- Professor Howard W. Adams  
Secondary Education, education research
- Professor E. B. Blackburn, Jr.  
Elementary Education, elementary curriculum
- Associate Professor Walter Dezelle, Jr.  
Special Education, mental retardation
- Professor W. Richard Hargrove  
Elementary Education, foundations of education
- Professor Bradley B. Hogue  
Elementary Education, educational psychology
- Professor Joseph Ilika  
Elementary Education, elementary curriculum
- Professor M. L. McLaughlin  
Elementary Education, contemporary education
- Associate Professor Oliver P. Monk  
Secondary Education, mathematics education
- Professor Thomas T. Salter  
Elementary Education, elementary curriculum
- Professor E. Lee Self  
Secondary Education, public education

**Associate Members**

- Assistant Professor Kenneth R. Briggs  
Educational Psychology
- Assistant Professor Gloria Massey  
Secondary Education
- Professor Martha Thomas  
English Education

The graduate student will select his education courses from the following list:

530—**Structure and Organization of Public Education.** Analysis of the operation and function of public education at the local, state, and national levels. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

531—**Research.** Introduction to skills and techniques necessary for research and problems solving in education. Emphasis on terminology, methodology, and spirit of systematic research. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

532—**Current Issues in Education.** Current controversies and trends in public education. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

**533—Contemporary Philosophies of Education.** Influence of recent philosophies on education. Schools of educational philosophy and implications for curriculum development and teaching methods. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

**534—Advanced Study in Human Development.** A study of the development and nature of the human personality. Emphasis on recent psychological and biological experiments. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

**535—The Learning Process.** Dynamics, processes, and systems of learning. Theoretical emphasis. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

**536—Problems in Teaching the Language Arts and Social Studies.** Recent developments and trends with primary consideration given to individual teaching problems and individual research. Prerequisite: graduate standing. Class: 3 hours. Credits: 3 semester hours.

**537—The Elementary School Curriculum.** Analysis of the objectives, organization, and content of the different areas of the elementary school curriculum. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

**538—Problems in Teaching Arithmetic and Science.** Study of current developments and trends with emphasis upon individual teaching problems. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

**539—Developmental Reading.** Methods for extending and refining fundamental reading habits and attitudes, and for increasing reading efficiency. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

**5101, 5201, 5401, 5501, 5601—Institute in Education.** Designed to advance the professional competence of participants. For each institute, a description of the particular area of study will be indicated. May be repeated for credit when nature of institute differs sufficiently from one previously taken. Class: 1 to 6 hours. Credit: 1 to 6 semester hours.

**5301—Current Literature for Children and Adolescents.** Survey of recent literature for children and adolescents. Emphasis given to non-fiction in such areas as earth science and social science. Extensive reading of actual literature. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

**5311—Advanced Studies in Mental Retardation.** Sociological and educational problems related to mental retardation. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

**5312—Occupational Education for the Mentally Retarded.** Employment opportunities, job analyses, guidance and placement procedures, agency services. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

**5313—Advanced Psychology of Exceptional Children.** Examination of the psychological problems of exceptional children. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.



5314—Seminar on the Education of the Mentally Retarded. Study of the sociological and educational problems related to mental retardation. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

5315—Problems and Issues in Special Education. Appraisal of current problems, trends and practices in the education and care of exceptional children. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

5316—Administration and Supervision of Special Education Programs. Organization, financing, staffing and supervision in special education programs. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

5317—Secondary School Curriculum. Analysis of the objectives, organization, and content of the different areas of the secondary school curriculum. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

5319—Problems in Secondary School Instruction. Consideration of the instructional problems encountered by experienced teachers in the secondary schools. Prerequisite: graduate standing and two years of teaching experience. Class: 3 hours. Credit: 3 semester hours.

5321—Technology. Application of present technology to the production of educational materials and to direct instruction. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

5322—Organization and Administration of the Guidance Program. Essential services and management functions of guidance and counseling services for schools. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

5323—Occupational and Vocational Guidance. Survey of occupational fields, requirements, and rewards. Concepts of vocational guidance. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

5324—Individual and Group Counseling. Processes of individual study. Counseling procedures and techniques for individuals and groups. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

5325—Advanced Studies in Learning Disabilities. Sociological and educational problems related to learning disabilities. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

5326—Seminar on the Education of the Physically Handicapped. Seminar for experienced teachers on instruction for the physically handicapped. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

5327—College Teaching. Designed for graduate students with little or no pedagogical training or experience. Application of learning principles and pedagogical procedures in college classes. Prerequisite: permission of instructor. Class: 3 hours. Credit: 3 semester hours.

5328—**Practicum in Guidance and Counseling.** Supervised observation and practice of guidance and counseling in a school setting. Prerequisite: approval of department head. Class: the number of hours equivalent to 8 hours per week for 16 weeks. Credit: 3 semester hours.

669A-669B—**Thesis.** Prerequisite: admission to candidacy for the Master of Education degree. Credit: 6 semester hours.

### GRADUATE RESOURCE COURSES

The following courses are given in departments not offering graduate degrees and are utilized principally as resource courses for education majors.

Soc 531—**Seminar in Sociology.** Basic concepts and principles of sociology as applied to the study of selected topics. Designed for education majors or other non-sociology majors. Class: 3 hours. Credit: 3 semester hours.

Geo 530—**Earth Science Seminar.** A survey of earth materials and processes, earth history, astronomy, and meteorology. Identification of mineral, rock, and fossil specimens, and cloud formations. Demonstrations of topographic, geologic, and weather maps. Field trip required. Designed for non-science majors. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

### MASTER OF SCIENCE IN HEALTH AND PHYSICAL EDUCATION

#### Degree Requirements:

The Master of Science degree in Health and Physical Education requires the completion of thirty semester hours of graduate work. Eighteen semester hours, with twelve of these hours in courses listed 500 or higher, must be in the area of specialization. Six semester hours may be taken in another discipline acceptable as a resource area or, on approval by the head of the department, a student may elect to take all of his work in his major field. Six semester hours must be taken in thesis. HPE 536, Research Methods in Health and Physical Education, is required of all students.

### GRADUATE FACULTY

#### Members

Associate Professor Mary Jane Haskins  
Physical Education, research

Professor Belle Mead Holm  
Health Education

Associate Professor Marcella D. Woods  
Motor Development

Associate Professor Leonard A. Yates  
Physical Education

**Associate Member**

**Professor James B. Higgins**  
Physical Education

The graduate student will select his courses in health and physical education from the following:

**430—Problems in Physical Education.** Biological, physiological, social, psychological, and other purposes and outcomes; selection and distribution of activities; teaching methods; facilities; teacher preparation; literature; research problems. Class: By consultation. Credit: 3 semester hours.

**434—Health and Human Ecology.** Emphasis on the interaction of the human organism with the many aspects of environment and the implication in each area with regard to health. Class: 3 hours. Credit: 3 semester hours.

**435—Adapted Physical Education.** Diagnosis and recognition of remedial cases. Instructional and remedial activities for individuals needing modified or special exercise programs. Class: 3 hours. Credit: 3 semester hours.

**436—Organization and Administration of Physical and Health Education.** Administration procedures in setting up and conducting programs in physical education, health education, and intramural athletics. A survey of types of programs, administrative organizations, scope, personnel, policies, functions and duties of supervision, related problems in the three areas. Class: 3 hours. Credit: 3 semester hours.

**439—History and Theory of Dance.** Chronological summary of characteristics and forms of dance from primitive rites to contemporary art forms; origins and evaluation of classic and contemporary dance forms. Class: 3 hours. Credit: 3 semester hours.

**531—Cultural Foundations of Physical Education.** A study of history and cultural foundations of sport and physical education activities, their origin and influence upon modern man. Class: 3 hours. Credit: 3 semester hours.

**532—Seminar in Physical Education.** Designed to develop abilities in locating and evaluating literature and research in physical education and in allied fields. Course may be repeated for a maximum of 6 semester hours as the topic varies. Class: 3 hours. Credit: 3 semester hours.

**533—Organization and Administration of the School Health Program.** Administrative relationships and procedures in conducting school health programs. Class: 3 hours. Credit: 3 semester hours.

**534—Scientific Basis of Exercise.** A study of the role of physical activities and their effects on the human organism through the use of professional literature and laboratory experimentation. Class: 3 hours. Credit: 3 semester hours.

**535—Trends and Issues in Health and Physical Education.** Designed to assist the student to become knowledgeable on current trends and issues in the areas of health and physical education. Study will include historical,

analytical, and projective approaches. Course may be repeated for a maximum of 6 semester hours as the topic varies. Class: 3 hours. Credit: 3 semester hours.

**536—Research Methods in Health and Physical Education.** Familiarity with types of research in Health and Physical Education with emphasis on tools and techniques of research and research design. Class: 3 hours. Credit: 3 semester hours.

**5101, 5201, 5301, 5601—Institute in Health and Physical Education.** This course is designed to advance the professional competence of graduate students in health and physical education. Topic will vary. A description of the particular area of study will be indicated. May be repeated for credit when nature of course differs sufficiently from one previously taken. Class: 1-6 hours. Credit: 1-6 semester hours.

**669A-669B—Thesis.** Prerequisite: admission to candidacy for the Master of Science degree. Credit: 6 semester hours.

**SCHOOL OF ENGINEERING**

The School of Engineering offers a program of study leading to the Master of Engineering Science degree (M.E.S.) and a Master of Engineering degree (M.E.). The Department of Mathematics offers a Master of Science degree in Mathematics (M.S.). (See Department of Mathematics, this Catalog.)

**MASTER OF ENGINEERING SCIENCE**

The Master of Engineering Science degree plan requires the completion of thirty semester hours of graduate work, including thesis. For admission to the program, the student must meet the following requirements:

1. The general requirements for admission to the Graduate School.
2. Hold a bachelor's degree in a field of engineering or applied science.
3. Have credit equivalent to that required for undergraduate engineering students at Lamar.

It is assumed that all graduate students are proficient in the use of digital computers.

**Degree Requirements:**

The candidate for the M.E.S. degree must meet all the Graduate School general degree requirements as listed in this Catalog. Thirty semester hours of graduate work are required with the following restrictions:

1. A minimum of eighteen semester hours of credit in engineering courses, including:
  - a. Six semester hours in thesis.
  - b. Three semester hours of engineering courses from those designated as graduate core courses, and
  - c. Nine additional semester hours of engineering courses of which at least six semester hours must be on the 500 level.
2. From approved senior-graduate courses, nine semester hours in a combination of mathematics and science.
3. Three hours of electives.
4. All course work presented for the M.E.S. degree must have the approval of the candidate's committee.

**MASTER OF ENGINEERING**

The Master of Engineering (M.E.) degree is designed to suit the needs of the practicing engineer. This program recognizes the value of, and the initiative required for, professional registration.

For admission to the program, the student must meet the following requirements:

1. The general requirements for admission to the Graduate School.
2. Hold a bachelor's degree with credit substantially equivalent to that required for an engineering degree at Lamar.

**Degree Requirements:**

1. The candidate for the M.E degree must meet all the general requirements of the Graduate School as listed in this Catalog.
2. The general requirement is thirty-six semester hours of graduate work. At least eighteen semester hours of this work must be engineering courses at the 500 level. The remainder will be selected by the graduate student through consultation and agreement with his graduate committee.
3. A graduate student holding an Engineer-in-Training (EIT) certificate or a graduate student who is a Professional Engineer registered in the State of Texas (or registered in another state where requirements do not conflict with the provisions of the Texas Engineering Practice Act and are of a standard not lower than those specified in Section 12 of that Act) may satisfy course requirements by completing thirty-three semester hours of graduate work provided EGR 631 (Design Project) is included.

**GRADUATE FACULTY****Members**

- Associate Professor Ali M. Ali  
Operations research, quality control
- Professor Luther A. Beale  
Structural analysis, design, marine structures
- Professor Wendell C. Bean  
Control systems, bioengineering
- Professor Otto G. Brown  
Fluid mechanics in turbulent flow; bioengineering
- Professor Lloyd B. Cherry  
Electronic instrumentation and control
- Professor James L. Cooke  
Control systems
- Professor Floyd M. Crum  
Solid state devices in electronic circuits
- Professor Andre P. DelFlache  
Soil mechanics, foundations, ocean engineering, geophysics
- Associate Professor Edwin O. Eisen  
Liquid-liquid equilibria, nuclear engineering, kinetics
- Professor David G. Gates  
Methods engineering, work measurement
- Professor Frederic C. Jelen  
Corrosion, economic analysis
- Professor Robert A. McAllister  
Transport properties, fluid mechanics
- Professor Harry T. Mei  
Heat transfer, humidity control

Professor Bruce G. Rogers  
Ultimate load characteristics of structures, stress analysis  
Professor George B. Tims, Jr.  
Engineering management  
Professor Richard E. Walker  
Rheology, analog-hybrid computers  
Associate Professor Joseph T. Watt  
Control systems

#### Associate Members

Associate Professor Eugene P. Martinez  
Gas dynamics

Assistant Professor Fred M. Young  
Heat transfer, compressible flow

The graduate student will select his courses from the following:

**\*531—Materials Science.** Principles underlying the behavior of materials existing in the solid liquid and gaseous phases. Class: 3 hours. Credit: 3 semester hours.

**532—Kinetics.** Rate equations are developed by the application of statistical methods and the theory of absolute reaction rates. Partition functions and potential energy surfaces will be introduced. Considerable attention will be given to the measurement of reaction rates and the interpretation of experimental data. May be taken for graduate credit in chemistry or engineering. Class: 3 hours. Credit: 3 semester hours.

**\*533—Computer Methods in Engineering Analysis.** Computer techniques will be introduced and employed. Numerical methods for solving transcendental equations, polynomials, simultaneous linear algebraic equations, and partial differential equations. Monte Carlo method, random numbers and simulation of engineering systems will be introduced. Class: 3 hours. Credit: 3 semester hours.

**534—Nonlinear Analysis.** Various methods of solving nonlinear differential equations are studied. Analytical, graphical, and computer solutions are included. Class: 3 hours. Credit: 3 semester hours.

**\*535—Control Theory.** Introduction to state variables; multiple-input-multiple-output systems; controllability; performance criteria; choice of control strategy. Class: 3 hours. Credit: 3 semester hours.

**\*536—Thermodynamics - Process Industry.** Thermodynamic laws are derived and applied to physical chemical phenomena. Ideal and non-ideal gas, liquid, and solid solution behavior are developed for physical and chemical equilibria. Statistical and irreversible Thermodynamics are introduced. Course credit in chemistry is optional. Class: 3 hours. Credit: 3 semester hours.

**\*Core Course.** A core course may be repeated one time for graduate credit, upon prior approval, where course content varies.

**\*537—Thermodynamics - Energy Conversion.** The basic laws of Thermodynamics are derived and applied in the analysis of power cycles, energy conversion, and specific processes. Basic principles of irreversible thermodynamics and phenomenological relations are presented. An elementary statistical approach is presented with simple examples of the calculation of the transport properties of gases, liquids, and solids. Class: 3 hours. Credit: 3 semester hours.

**538—Sampled Data Control Systems.** Principles of digital and sampled-data control systems. Analysis of response, stability, and compensation by transforms and other methods; special topics as time permits. Prerequisite: Mth 4301. Class: 3 hours. Credit: 3 semester hours.

**539—Seminar.** Investigation of current engineering practices, research, and literature. The course may be repeated for credit when the subject matter differs. Class: 3 hours. Credit: 3 semester hours.

**5311—Heat Transfer Analysis.** Fundamental principles of heat transfer by conduction, convection and radiation. Emphasis will be given to the analysis of problems combining the various heat transfer mechanisms. Class: 3 hours. Credit: 3 semester hours.

**5312—Heat Transfer Mechanisms.** This course will be concerned with individual mechanisms of heat transfer. The mechanisms studied will be conduction, radiation, convection, or boiling. The course may be repeated for credit as the mechanism studied varies. Class: 3 hours. Credit: 3 semester hours.

**5313—Fluid Mechanics.** Fluid statics, fundamentals of fluid motion, systems and control volumes, basic laws, irrotational flow, similitude and dimensional analysis, incompressible viscous flow, boundary layer theory, and an introduction to compressible flow. Vector methods will be employed. Class: 3 hours. Credit: 3 semester hours.

**5314—Distillation.** Modern methods are surveyed for distillation-column calculations. Material and energy balance relationships are reviewed for multicomponent fractionation equipment and for batch stills. Various plate designs are presented including hydraulic factors of pressure drop and flooding, and plate efficiency is treated in detail. Class: 3 hours. Credit: 3 semester hours.

**5315—Theory of Elasticity.** General analysis of stress and strain, equations of equilibrium and compatibility, stress and strain relations, two dimensional stress problems, elastic energy principles, thermoelastic problems. Class: 3 hours. Credit: 3 semester hours.

**5316—Operations Research I.** The use of advanced mathematical models for optimizing engineering problems with emphasis on management decisions. Includes special techniques based on systems analysis, design of experiments, linear programming, queing, simulation, and probabilistic analysis. Class: 3 hours. Credit: 3 semester hours.



**5317—Micromeritics.** Shape and size-distribution of particles. Theories of sieving, grading and grinding. Surface properties. Chemical properties. Packing mechanics of particulate matter (statics; dynamics, behavior under stress, thermodynamics). Electrical, optical and sonic properties. Diffusion, transport, collection and separation of small particles. Class: 3 hours. Credit: 3 semester hours.

**5318—Stress Analysis.** Use of reflection and refraction photoelastic apparatus to determine state of stress in opaque and transparent structural models. Demonstration of brittle coating techniques. Comparison of electrical resistance and mechanical strain gages. Investigation of dynamic loading with oscilloscopes and other recording apparatus. Class: 3 hours. Credit: 3 semester hours.

**5319—Design of Experiments.** Experimental design and analysis of experiments are developed as tools of the manufacturing and process industries. Exploratory and evolutionary (EVOP) designs, analysis of variance (ANOVA), error, and regression are treated in some detail. Prerequisite: Course in statistics or equivalent. Class: 3 hours. Credit: 3 semester hours.

**5321—Quality Control Systems.** Application of statistical methods to industrial problems; regression and correlation theory; analysis of variance; use of control charts for control of manufacturing operations. Class: 3 hours. Credit: 3 semester hours.

**5322—Rheology.** A study of non-Newtonian liquids with emphasis on principles and fundamentals. Methods of measuring rheological properties of non-elastic and elastic liquids and prediction of laminar and turbulent flow. Class: 3 hours. Credit: 3 semester hours.

**5323—Catalysis and Reactor Design.** The mechanisms of catalytic processes will be considered in detail. The evaluation of catalyst effectiveness and selection of catalysts will be discussed. The design of catalytic and non-catalytic reactors will be considered. Class: 3 hours. Credit: 3 semester hours.

**5324—Wave Mechanics in Particulate Matter.** Propagation of elastic waves in semi-infinite media. Surface waves and body waves. Behavior of particulate masses under the effect of dynamic loading, impact and transient phenomena. Effect on sub-structures of waves from industrial, seismic and nuclear sources. Mechanical and electronic recording. Class: 3 hours. Credit: 3 semester hours.

**5325—Information Theory.** Aspects applicable to all fields of engineering entropy as a measure of information: signal processing, channel capacity and coding theory. Class: 3 hours. Credit: 3 semester hours.

**5326—Waves and Coastal Processes.** Hydrodynamics of waves, wave generation, reflection, energy transmission and dissipation. Coastal phenomena, harbors and breakwaters. Analysis of tides and tidal currents. Salt water, fresh water interaction and diffusion in estuaries; erosion and shoaling in tidal waters. Class: 3 hours. Credit: 3 semester hours.

**5327—Marine Structures.** Analysis of wind and wave forces acting on marine structures. Consideration of design techniques and design requirements for offshore structures. Application of computer methods. Class: 3 hours. Credit: 3 semester hours.

**5328—Inelastic Theory of Structures.** Investigation of structural behavior under conditions of overload. Design of structures using principles of ultimate strength and plastic design theories. Consideration of load and safety factors, stress redistribution, and shakedown. Class: 3 hours. Credit: 3 semester hours.

**5331—Similitude and Model Design.** Dimensional analysis, data processes, prediction equations and model design, including a study of distorted and dissimilar models. Models studied include structural fluid flow, thermal, electrical, magnetic, acoustical, and illumination types. Various analogues from second-order ordinary and partial differential equations are also discussed. Prerequisite: Mth 434 recommended. Class: 3 hours. Credit: 3 semester hours.

**5332—Operations Research II.** Advanced topics in operations research—linear programming, non-linear programming, advanced topics in queuing and inventory theories, sensitivity analysis, and dynamic programming. Prerequisite: EGR 5316 or equivalent. Class: 3 hours. Credit: 3 semester hours.

**5333—Production Control.** Advanced topics in techniques employed in different types of manufacture for planning and controlling production. Class: 3 hours. Credit: 3 semester hours.

**5334—Salary Administration for Engineers and Scientists.** A study of salary incentives, job evaluation, and merit rating for engineering and scientific personnel, executive and managerial compensation. Class: 3 hours. Credit: 3 semester hours.

**5335—Engineering Administration.** The qualitative and quantitative responsibilities of the engineer as an administrator. The planning, organization and control of engineering functions. Class: 3 hours. Credit: 3 semester hours.

**5342—Special Topics.** The course is designed to meet special needs of students. Each topic is offered on an irregular schedule as the demand requires. Example topics include:

1. Kinetic Theory of Gases
2. Transients in Compressible Flow
3. Non-linear Vibrations
4. Protective Construction
5. Absorption and Extraction
6. Stagewise Mass Transfer
7. Properties of Gases and Liquids
8. Nuclear Engineering
9. Hybrid and Analog Computers
10. Adaptive Control
11. Optimization Techniques
12. Sampling Techniques

The course may be repeated for credit when the subject differs. Class: 3 hours. Credit: 3 semester hours.

**5343—Industrial Waste Treatment.** Procedures for analysis of the industrial waste problem, methods of collecting experimental data, and process design for required treatment. Case studies and special laboratory problems for translating experimental data to prototype design. Class: 3 hours. Credit: 3 semester hours.

**5344—Unit Operations and Processes of Sanitary Engineering.** Theory of fluid and slurry movement under gravity and pressure systems, mixing processes, coagulation and flocculation of chemical treatment, separatory processes including flotation and sedimentation, and gas transfer and absorption of the biological systems. Selected laboratory assignments for model studies of these unit operations. Class: 3 hours. Credit: 3 semester hours.

**5345—Materials Technology.** Study of materials specifications, standards, and their evaluation. A critical review of current specifications, how they were developed, and how they should be applied in engineering practice. Discussion of the proper use of mill reports, independent testing laboratories, and consultants. Class: 3 hours. Credit: 3 semester hours.

**5391—Work Systems Engineering.** Study of current research in methods engineering and work measurement; work design; work systems, systems of standard data and predetermined motion time data, statistical treatment of work measurement. Class: 3 hours. Credit: 3 semester hours.

**5101, 5201, 5301, 5401, 5501, 5601—Institute in Engineering.** Designed to advance the professional competence of participants. For each institute, a description of the particular area of study will be indicated. May be repeated for credit when nature of institute differs sufficiently from one previously taken. Class: 1-6 hours. Credit: 1-6 hours.

**669A-669B—Thesis.** Prerequisite: admission to candidacy. Credit: 6 semester hours.

**631—Design Project.** Prerequisite: admission to candidacy. Credit: 3 semester hours.

## DEPARTMENT OF ENGLISH

**Degree Requirements**

The degree of Master of Arts in English requires the completion of thirty semester hours of graduate work: eighteen in English, six in thesis, and six in an approved minor or six additional hours in English. At least twelve semester hours, exclusive of the thesis, must be in English courses numbered 500 or above. The minor must be approved by the Head of the Department of English; such approval will be given on the basis of the support the minor can give to the major.

**Professional Certification Requirements (Texas) in English**

The plan for the Professional Certificate—Secondary requires the completion of thirty semester hours of graduate work: eighteen in English, six in resource areas, and six in approved teacher education. At least twelve semester hours must be in English courses numbered 500 or above. The courses in the resource areas must be approved by the Head of the Department of English; such approval will be given on the basis of the support they can give to the major and on the specific needs of the graduate student. The six semester hours of teacher education must be taken in courses specifically approved for the Professional Certificate—Secondary.

Depending on the student's undergraduate course work, his graduate program in English will include English 530; 539; either 531, 532, or 534, and one course from 535, 536, 537, and 538. Six additional hours from the 500 level courses not already taken, or from 400 level courses specifically approved, are also required.

**GRADUATE FACULTY****Members**

Professor Robert J. Barnes

British and Continental literature: 1840 to the present

Associate Professor Jay P. Blumenfeld

Twentieth century literature, linguistics

Professor George W. de Schweinitz

Modern American literature, creative writing

Professor Winfred S. Emmons, Jr.

Middle English language and literature, American literature

Professor Harry L. Frissell

Renaissance and seventeenth century British literature

Professor Robert C. Olson

Eighteenth century British literature

Associate Professor Jack N. Renfrow

Renaissance literature

Professor Henry B. Rule

American literature: 1840 to the present

Associate Professor Robert Blaine Thomas  
Seventeenth and eighteenth century British literature, short story

Professor Alvice W. Yeats  
British literature: 1840 to the present

Associate Professor David D. Zink  
Nineteenth century American and British literature

The graduate student will select his English courses from the following list:

430—**History of the English Language.** Theory and nature of language. Studies in the growth of British and American forms. Prerequisite: Foreign language through 232. Class: 3 hours. Credit: 3 semester hours.

431—**Chaucer.** A study of the poetry and language of Chaucer with emphasis on the *Canterbury Tales*. Class: 3 hours. Credit: 3 semester hours.

432—**The Age of Elizabeth.** The non-dramatic literature of England from Skelton to Donne. Class: 3 hours. Credit: 3 semester hours.

433—**The Age of Elizabeth.** The dramatic literature of England, exclusive of Shakespeare, from Heywood to Ford. Class: 3 hours. Credit: 3 semester hours.

434—**Shakespeare.** Intensive study of selected major plays. Class: 3 hours. Credit: 3 semester hours.

435—**The Seventeenth Century.** The non-dramatic literature of England from the Metaphysical poets to Dryden. Class: 3 hours. Credit: 3 semester hours.

436—**Milton.** A study of Milton's poetry and prose against the social, political, and literary background of his time. Class: 3 hours. Credit: 3 semester hours.

437—**Restoration and Eighteenth Century Drama.** A study of the plays of the period 1660-1800. Class: 3 hours. Credit: 3 semester hours.

438—**The Eighteenth Century.** The poetry and prose in England from the Restoration to the rise of Romanticism. Class: 3 hours. Credit: 3 semester hours.

439—**The Romantic Period.** An intensive study of the major authors of the period from Burns to Keats. Class: 3 hours. Credit: 3 semester hours.

4311—**The Victorian Period.** An intensive study of the major authors of the period from Carlyle to Swinburne. Class: 3 hours. Credit: 3 semester hours.

4313—**The American Literary Renaissance: 1820-1860.** An intensive study of the major authors of the period from Poe to Melville. Class: 3 hours. Credit: 3 semester hours.

4314—**The Development of American Realism: 1860-1900.** An intensive study of the major authors of the period from Whitman to Norris. Class: 3 hours. Credit: 3 semester hours.

4316—**Literary Criticism.** Chronological study of the great critics. An introduction to aesthetics. Class: 3 hours. Credit: 3 semester hours.

4317—**Contemporary Drama.** A study of dramatic trends and representative plays from Ibsen to the present. Class: 3 hours. Credit: 3 semester hours.

4318—**Contemporary Poetry.** A study of poetic development in England and America with emphasis on representative poets from Hardy to the present. Class: 3 hours. Credit: 3 semester hours.

4319—**Contemporary Fiction.** A study of prose fiction representative of modern ideas and trends,, with emphasis on English and Continental authors. Class: 3 hours. Credit: 3 semester hours.

4321—**Selected Problems in Comparative Literature.** Intensive study of an author or authors, literary genre, or period selected from the range of world literature. Emphasis upon analysis and literary method. Class: 3 hours. Credit: 3 semester hours.

4123, 4223, 4323, 4423, 4523, 4623—**Institute In English.** An intensive study of one or more aspects of the discipline of English (language, literature, composition). Class: 1-4 hours. Laboratory 1-4 hours. Credit: 1-6 semester hours.

530—**Bibliography and Research Methods.** An introduction to graduate research methods and sources. Basic course for all beginning graduate students. Prerequisite: graduate standing. Class: 3 hours. Credit 3 semester hours.

531—**Old English.** A study of the grammar and the reading of short selections from the poetry and prose written before 1200. Emphasis will be placed on vocabulary and the historical development of the language. Prerequisite: graduate standing and English 430 (History of the Language) or the equivalent. Class: 3 hours. Credit: 3 semester hours.

532—**Middle English.** A study of the grammar and the reading of short selections from literature of the period, 1200-1450. Emphasis will be placed on the development of the language into Modern English. Prerequisite: graduate standing and English 431 (Chaucer) or the equivalent. Class: 3 hours. Credit: 3 semester hours.

534—**Studies in Medieval English Literature.** An intensive study of an author or related authors selected from the Old English and Middle English periods. Course may be repeated for a maximum of six semester hours credit when the topic varies. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

535—**Studies in Renaissance and Seventeenth Century English Literature.** An intensive study of an author or related authors selected from the period. Course may be repeated for a maximum of six semester hours credit when the topic varies. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

**536—Studies in Restoration and Eighteenth Century English Literature.** An intensive study of an author or related authors selected from the period. Course may be repeated for a maximum of six semester hours credit when the topic varies. Prerequisite graduate standing. Class: 3 hours. Credit: 3 semester hours.

**537—Studies in Nineteenth Century English Literature.** An intensive study of an author or related authors selected from the period. Course may be repeated for a maximum of six semester hours credit when the topic varies. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

**538—Studies in Twentieth Century Literature.** An intensive study of an author or related authors selected from the period. Course may be repeated for a maximum of six semester hours credit when the topic varies. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

**539—Studies in American Literature.** An intensive study of an author or related authors selected from the period. Course may be repeated for a maximum of six semester hours credit when the topic varies. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

**669A-669B—Thesis.** Prerequisite: admission to candidacy for the master's degree. Credit: 6 semester hours.

## DEPARTMENT OF GOVERNMENT

**Degree Requirements**

The degree of Master of Arts in Government requires the completion of thirty semester hours of graduate work: eighteen in government, six in the thesis, and six in an approved minor. At least twelve semester hours, exclusive of the thesis, must be in government courses numbered 500 or above. The minor must be approved by the Head of the Department of Government; such approval will be given on the basis of the support the minor can give to the major. With approval of the Head of the Department of Government six additional hours in government may be substituted for the minor.

The student's graduate program must include Government 530.

**GRADUATE FACULTY****Members**

- Professor Irving O. Dawson  
American Government, Constitutional Government
- Professor Earl W. Fornell  
American Government, Political Parties, Political Theory
- Professor Manfred Stevens  
Comparative Government, Europe
- Professor William R. Tucker  
International Relations, Modern Europe

The graduate student will select his government courses from the following list:

**430—Organizational Theory and Behavior.** A study of the structural and management aspects of public administration; theory and practices; policy formation processes and techniques. Class: 3 hours. Credit: 3 semester hours.

**431—History of Political Thought I.** The chief concepts of outstanding political thinkers from the Greeks through the Reformation. Class: 3 hours. Credit: 3 semester hours.

**432—History of Political Thought II.** A continuation of Government 431 from the Reformation through Karl Marx. Class: 3 hours. Credit: 3 semester hours.

**433—History of Political Thought III.** A continuation of Government 432 from Karl Marx to the present with attention given to modern American thought. Class: 3 hours. Credit: 3 semester hours.

**434—The Administrative Process.** A study of the nature of government administration in areas of economic policy; causes, scope and methods of administration regulation. Class: 3 hours. Credit: 3 semester hours.

**435—The International System.** The study of the legal bases of the modern international system and the political and legal characteristics of the developing world order. Class: 3 hours. Credit: 3 semester hours.

**436—American Constitutional Law and Development.** Development of the American Constitution through judicial interpretations, with particular



emphasis on cases dealing with federalism, commerce, Congress, and the executive. Class: 3 hours. Credit: 3 semester hours.

**437—American Constitutional Law and Development.** A continuation of Government 436 with particular emphasis upon cases dealing with due process and civil rights. Class: 3 hours. Credit: 3 semester hours.

**438—Approaches to the Study of Politics.** A systematic introduction to the various methodological approaches and research techniques used by contemporary political scientists, focusing particularly on the integration of research findings and the design of research models. Class: 3 hours. Credit: 3 semester hours.

**439—Comparative Public Administration.** A study of bureaucratic structures and functions of advanced and developing nations, emphasizing comparison of relationships between environments and administrative processes. Class: 3 hours. Credit: 3 semester hours.

**530—Scope and Method of Political Science.** The study in depth of selected topics concerning the theoretical foundations underlying a scientific approach to the study of political phenomena and analytical techniques to be applied to a study of political behavior. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

**531—Seminar in Political Theory.** Selected issues in political thought with emphasis on the classical thinkers and their relationship to contemporary political, economic and social problems. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

**534—Seminar in American Government and Politics.** A survey of the literature in the field of American government and politics. Classical and contemporary works are examined, with emphasis on the modern approaches to the study of American government and politics. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

**535—Seminar in the Theory and Practice of Public Administration.** An analytical survey of organization, management and problems in public executive organizations: includes study of organizational theory, policy formulation, personnel, finance and administrative leadership. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

**536—Seminar in International Politics.** The study in depth of selected problems in international relations, both historical and current. Problems of a theoretical and institutional nature as well as specific policies will be dealt with. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

**537—Seminar in Comparative Study of Political Systems.** Study of the theory and method of comparative political analysis; systematic examination and explanation of the structure and function of Western and non-Western political systems.

**669A-669B—Thesis.** Prerequisite: admission to candidacy for the master's degree. Credit: 6 semester hours.

## DEPARTMENT OF HISTORY

**Degree Requirements**

The degree of Master of Arts in History requires the completion of thirty semester hours of graduate work: eighteen in history, six in thesis, and six in an approved minor. At least twelve semester hours, exclusive of the thesis, must be in history courses numbered 500 or above. The minor must be approved by the Head of the Department of History; such approval will be given on the basis of the support the minor can give to the major. With the approval of the Head of the Department of History six additional hours in history may be substituted for the minor.

**Professional Certification Requirements (Texas) in History**

The plan for the Professional Certificate—Secondary requires the completion of thirty semester hours of graduate work: eighteen in history, six in resource areas, and six in approved teacher education. At least twelve semester hours must be in history courses numbered 500 or above. The courses in the resource areas must be approved by the Head of the Department of History; such approval will be given on the basis of the support they can give to the major and on the specific needs of the graduate student. The six semester hours of teacher education must be taken in courses specifically approved for the Professional Certificate—Secondary.

Depending on the student's undergraduate course work, his graduate program in history will include History 530, 531, 532, and one course from 533 or 534. Six additional hours taken from the 500 level courses not already taken, or from 400 level courses specifically approved, are also required.

**GRADUATE FACULTY****Members**

- Professor Paul E. Isaac  
United States history, recent, the West
- Professor Andrew J. Johnson  
United States History, Revolution, Constitution
- Professor Howard Mackey  
Modern European history, Great Britain
- Professor L. Wesley Norton  
United States history, social and intellectual
- Associate Professor R. Beeler Satterfield  
United States history, middle period
- Professor Preston B. Williams  
Modern European history, Central and Western Europe
- Professor Ralph A. Wooster  
United States history, Civil War, the South

**Associate Members**

- Assistant Professor Howell Holmes Gwin, Jr.  
European history, classical and medieval
- Assistant Professor Walter A. Sutton  
United States history, diplomatic

The graduate student will select his history courses from the following list:

**430—Era of the Renaissance and Reformation.** Western Europe from 1453 to 1610. Class: 3 hours. Credit: 3 semester hours.

**431—The Old Regime.** Western Europe from 1610 to 1783. Class: 3 hours. Credit: 3 semester hours.

**432—The French Revolution and Napoleon.** Western Europe from 1783 to 1815. Class: 3 hours. Credit: 3 semester hours.

**433—Russia and Eastern Europe to 1860.** Russia, Poland, and the Balkans from the period of the Byzantine Empire to 1860. Class: 3 hours. Credit: 3 semester hours.

**434—Nineteenth Century Europe.** Europe from 1815 to 1914. Class: 3 hours. Credit: 3 semester hours.

**435—Twentieth Century Europe.** Europe since 1914. Class: 3 hours. Credit: 3 semester hours.

**436—The American West.** The American West from colonial times to the present. Class: 3 hours. Credit: 3 semester hours.

**437—The Old South.** The American South from colonial times to the Civil War. Class: 3 hours. Credit: 3 semester hours.

**438—The New South.** The American South from the Civil War to the present. Class: 3 hours. Credit: 3 semester hours.

**4311—Colonial America.** Class: 3 hours. Credit: 3 semester hours.

**4312—The American Revolution.** Class: 3 hours. Credit: 3 semester hours.

**4313—The Age of Jackson.** Class: 3 hours. Credit: 3 semester hours.

**4314—The American Civil War.** Class: 3 hours. Credit: 3 semester hours.

**4315—Reconstruction and Industrialization: The United States from 1865 to 1898.** Class: 3 hours. Credit: 3 semester hours.

**4316—World Power and Reform: The United States from 1898 to 1920.** Class: 3 hours. Credit: 3 semester hours.

**4317—New Deal and World Leadership: The United States from 1920 to 1940.** Class: 3 hours. Credit: 3 semester hours.

**4318—Classical Civilization.** Greece and Rome from earliest times to the fall of the Roman Empire in the West. Class: 3 hours. Credit: 3 semester hours.

**4319—Medieval Civilization.** Western Europe and the Mediterranean area from the late Roman period to 1453. Class: 3 hours. Credit: 3 semester hours.

4321—**The Far East to 1800.** Japan, China, Indo-China, and India to 1800. Class: 3 hours. Credit: 3 semester hours.

4322—**The Far East Since 1800.** Japan, China, Indo-China, and India since 1800. Class: 3 hours. Credit: 3 semester hours.

4323—**Latin America to 1810.** Class: 3 hours. Credit: 3 semester hours.

4324—**Latin America Since 1810.** Class: 3 hours. Credit: 3 semester hours.

4325—**Tudor and Stuart England.** England from 1485 to 1688. Class: 3 hours. Credit: 3 semester hours.

4326—**Eighteenth Century England.** England (Great Britain) from 1688 to 1815. Class: 3 hours. Credit: 3 semester hours.

4327—**Victorian England.** Great Britain from 1815 to 1914. Class: 3 hours. Credit: 3 semester hours.

4328—**Contemporary America: The United States since 1940.** Class: 3 hours. Credit: 3 semester hours.

4329—**Modern European Intellectual History.** An examination of the major European intellectual movements and thinkers from the Renaissance to the present. Class: 3 hours. Credit: 3 semester hours.

4331—**Russia Since 1860.** The development of modern Russia, from 1860 to the present. Class: 3 hours. Credit: 3 semester hours.

4101, 4201, 4301, 4401, 4501, 4601—**Institute in History.** Designed to advance the professional competence of participants. For each institute, a description of the particular area of study will be indicated. May be repeated for credit when nature of institute differs sufficiently from one previously taken. Class: 1-6 hours. Credit: 1-6 semester hours.

530—**Classical and European Historiography.** Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

531—**American Historiography.** Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

532—**Readings in American History.** Course may be repeated for a maximum of six semester hours credit when topic varies. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

533—**Readings in European History Before 1815.** Course may be repeated for a maximum of six semester hours credit when the topic varies. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

534—**Readings in European History Since 1815.** Course may be repeated for a maximum of six semester hours credit when the topic varies. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

535—**Seminar in Texas History.** Course may be repeated for a maximum of six semester hours credit when the topic varies. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

536—Seminar in Southern History. Course may be repeated for a maximum of six semester hours credit when the topic varies. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

537—Seminar in United States History. Course may be repeated for a maximum of six semester hours credit when the topic varies. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

539—Seminar in the American West. Course may be repeated for a maximum of six semester hours credit when the topic varies. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

5311—Seminar in European History. Course may be repeated for a maximum of six semester hours credit when the topic varies. Prerequisite: graduate standing. Class: 3 hours. Credit: 3 semester hours.

5101, 5201, 5301, 5401, 5501, 5601—Institute in History. Designed to advance the professional competence of participants. For each institute, a description of the particular area of study will be indicated. May be repeated for credit when nature of institute differs sufficiently from one previously taken. Class: 1-6 hours. Credit: 1-6 semester hours.

669A-669B—Thesis. Prerequisite: admission to candidacy for the master's degree. Credit: 6 semester hours.

**DEPARTMENT OF MATHEMATICS**

The Department of Mathematics offers a program of study leading to the Master of Science degree in Mathematics (M.S.). Those seeking admission to this program must meet the general requirements as set forth in this Catalog for admission to the Graduate School. In addition, the applicant's twenty-four semester hours of undergraduate work in Mathematics must include a course in advanced calculus or its equivalent.

**Degree Requirements**

The Master of Science degree in mathematics requires the completion of thirty semester hours of graduate work of which eighteen semester hours must be in courses listed 500 or higher.

Additional specific degree requirements are as follows:

1. Fifteen to eighteen semester hours in mathematics, including nine semester hours of graduate course (exclusive of thesis).
2. Six semester hours in thesis.
3. Six to nine semester hours in a minor field to be approved by the head of the department. On approval by the head of the department a student may elect to take all of his work in his major field.

**GRADUATE FACULTY****Members**

Professor Russell W. Cowan  
Differential equations, applied mathematics

Associate Professor Sterling C. Crim  
Applied mathematics

Associate Professor Philip W. Latimer  
Analysis, modern elementary mathematics

Associate Professor Sterling W. McGuire  
Mathematical Statistics

Professor Jeremiah M. Stark  
Analysis, applied mathematics

**Associate Member**

Associate Professor Sam M. Wood, Jr.  
Analysis, abstract algebra

For mathematics majors:

4302—Advanced Calculus for Engineers. Boundary-value problems, orthogonal functions, introduction to vector analysis and functions of a complex variable, partial differential equations of mathematical physics. Class: 3 hours. Credit: 3 semester hours.

431, 432—**Introduction to Functions of a Complex Variable.** Review of theorems from analysis and point set theory followed by a study of analytic functions from the Cauchy-Riemann and Weierstrass points of view. Compact sets, uniform convergence, Taylor Expansion Theorem, analytical continuation, Laurent expansions, calculus of residues, conformal mapping. Class: 3 hours. Credit: 3 semester hours.

433—**Vector Analysis.** The algebra and calculus of vectors with applications. Scalar and vector fields, operators, Green's Stokes's, and Divergence Theorems, curvilinear coordinates. Other topics as time permits. Class: 3 hours. Credit: 3 semester hours.

434—**Partial Differential Equations.** General and particular solutions, boundary conditions, Fourier series, Bessel functions, harmonic analysis, numerical solutions, condition of heat, flow of electricity. Class: 3 hours. Credit: 3 semester hours.

435—**Introductory Topology.** Topological spaces, metric spaces, product spaces, connected spaces, and compact spaces. Open sets, closed sets, limit points, closure, interior, boundary, continuity, homeomorphism, subspaces, components, and open coverings. Some applications to analysis. Class: 3 hours. Credit: 3 semester hours.

437, 438—**Probability and Statistics.** Discrete and continuous event spaces, functions of several random variables, independent experiments, Central Limit Theorem, and properties of special distribution. Introduction to analysis of variance. Class: 3 hours. Credit: 3 semester hours for each course.

4311—**Numerical Solution of Differential Equations.** Analytical foundations. Methods for ordinary and partial differential equations. Class: 3 hours. Credit: 3 semester hours.

4315—**Numerical Analysis.** Approximations, interpolations, finite differences, numerical integration, curve fitting. Class: 3 hours. Credit: 3 semester hours.

531—**Theory of Functions of Real Variable.** Analytical functions, pathological functions, set functions, Riemann integral, measure theory, Lebesgue integral, Riemann-Stieltjes and Lebesgue-Stieltjes integral. Class: 3 hours. Credit: 3 semester hours.

532—**Modern Algebra.** Numbers, sets, rings, fields, polynomials, and the theory of fields. The theory of fields includes the study of subfields, prime fields, simple field extensions, algebraic field extensions, and Galois fields. Class: 3 hours. Credit: 3 semester hours.

533—**Calculus of Variations.** The Euler-Lagrange differential equation, necessary conditions of Legendre, Jacobi, and Weierstrass, sufficient conditions for an extreme, brachistochrone problem, geodesics, surface of revolution of minimum area, other problems as time permits. Class: 3 hours. Credit: 3 semester hours.

534—**Topology.** Sets, compact spaces, topological spaces, embedding and metrization, and Urysohn lemma. Uniform spaces and function spaces as time permits. Class: 3 hours.

535—**Introduction to Advanced Analysis.** The Riemann mapping theorem, prime number theorem, functions of finite order, Turan's proof of Fabry gap theorem, other topics as time permits. Prerequisite: Mth 431. Class: 3 hours. Credit: 3 semester hours.

536—**Integral Equations.** Fredholm theory. Eigenvalues and eigenfunctions. Volterra integral equation. Degenerate, symmetric, resolvent, iterated, and arbitrary kernels. Neumann series. Use of integral equations theory as a unified approach to boundary value problems, differential equations, and potential theory. Class: 3 hours. Credit: 3 semester hours.

537—**Methods of Applied Mathematics.** The Dirichlet problem, solution of boundary value problems, the Bergman kernel function, method of the minimum integral, applications of conformal mapping. Prerequisite: Mth 431. Class: 3 hours. Credit: 3 semester hours.

539—**Infinite Series.** Sequences, power series, series of functions, complex series, expansion of functions, tests for convergence, uniform convergence, conditions for rearranging terms in a series, Fourier series, Lambert series, Weierstrass theorem on double series, asymptotic expansions, summation of series. Class: 3 hours. Credit: 3 semester hours.

5301—**Operational Mathematics.** Ordinary differential equations, the Laplace Transform, elementary properties; Inverse Transforms, applications of the Laplace Transform to ordinary differential equations. Class: 3 hours. Credit: 3 semester hours.

5302—**Operational Mathematics.** Application of Laplace Transform to partial differential equations, boundary-value problems and characteristics, function representation. Class: 3 hours. Credit: 3 semester hours.

5303—**Theory of Linear Models.** Review of regression analysis; theory of least squares; multivariate analysis; theory of the general linear hypothesis model. Class: 3 hours. Credit: 3 semester hours.

5304—**The Theory of Mathematical Programming.** Theory of linear and nonlinear programming; the  $\epsilon$ -form of the approximating problem; quadratic programming; gradient methods. Class: 3 hours. Credit: 3 semester hours.

5305—**Statistical Methods in Reliability.** Statistical theories pertinent to solution of engineering problems in reliability; distribution and failure theory including failure rate and mean time to failure for the exponential, log normal, gamma, and Weibull distributions. Class: 3 hours. Credit: 3 semester hours.

5331—**Special Topics for Graduate Students.** Advanced topics in mathematics to suit the needs of individual classes of graduate students. Course may be repeated for a maximum of 6 semester hours credit when the topic varies. Class: 3 hours. Credit: 3 semester hours.



669A-669B—Thesis. Prerequisite: admission to candidacy for the master's degree. Credit: 6 semester hours.

#### MATHEMATICS - EDUCATION

530—Seminar in Mathematics for Teachers. A review of basic mathematics through description and problem solving techniques. May not be taken for credit by science, engineering, or mathematics students. Class: 3 hours. Credit: 3 semester hours.

5311—Foundation of Geometry. Foundations of geometry, transformations, basic concepts, and selected Euclidean topics. Class: 3 hours. Credit: 3 semester hours.

5312—Linear Algebra. Systems of equations, vector spaces, linear transformations and matrices. Class: 3 hours. Credit: 3 semester hours.

5313—Abstract Algebra. Sets, groups, rings, integral domains, and fields. Class: 3 hours. Credit: 3 semester hours.

5314—History of Mathematics. Primitive man's mathematics, Babylonian and Egyptian Mathematics, Pre and Post Euclid Greek Mathematics, Hindu-Arabic Mathematics, and Mathematics from 500 A.D. to the present. Class: 3 hours. Credit: 3 semester hours.

5315—Probability and Statistics. Permutation and factorials, elementary principles of probability, mathematical expectations, averages, curve fitting, application. Class: 3 hours. Credit: 3 semester hours.

5316—Data Processing. A survey of higher level languages and an assembly language with applications to advanced programming techniques. Syntax, semantics, and numerical techniques as applied to programming applications. Class: 3 hours. Credit: 3 semester hours.

5317—Number Theory. A development of the theory of numbers with applications. Class: 3 hours. Credit: 3 semester hours.

**DEPARTMENT OF PHYSICS**

The Department of Physics offers the following graduate courses to be used primarily to provide an area of specialization for the Master of Education degree in Secondary Education and as support to other advanced degree programs.

**GRADUATE FACULTY****Members**

Professor Carl J. Rigney

Thermal Physics, electromagnetism

Associate Professor Hugh O. Peebles, Jr.

Astrophysics

Associate Professor Joseph F. Pizzo, Jr.

Theoretical Physics, relativity

5101, 5201, 5301, 5401, 5501, and 5601—**Institute in Physics.** Designed to provide credit for participation in summer, in-service or other institutes. Credit varies with duration. The description of the area of study of each institute will appear on the printed schedule. May be repeated for credit when nature of institute differs sufficiently from those taken previously. Class: 1-6 hours. Laboratory: 2-4 hours. Credit: 1-6 semester hours.

530—**Seminar in Physical Science.** Designed for non-science majors. Measurement, light, the solar system, and stars; force and motion, work and energy, heat, weather, lightning, electric charge and current, magnetism; batteries, atoms and molecules. Class: 3 hours. Credit: 3 semester hours.

531—**Theoretical Physics.** The application of typical mathematical techniques, with emphasis on field and potential concepts. Class: 3 hours. Credit: 3 semester hours.

532—**Relativity.** Brief introduction to the special and general theory followed by detailed study of a particular topic. Class: 3 hours. Credit: 3 semester hours.

533—**Seminar.** Selected topics pertaining to the research reported in contemporary publications. Course may be repeated for a maximum of six semester hours credit when the topic varies. Class: 3 hours. Credit: 3 semester hours.

**DEPARTMENT OF SPEECH**

A Master of Science degree in Speech is offered by the Department of Speech and may be obtained through programs of study with an optional emphasis in Speech Pathology or Audiology. The master's programs are designed to help the student increase his knowledge of the field, give him an opportunity to develop his skill in providing service to the communicatively handicapped, and to prepare him for certification by the American Speech & Hearing Association. Persons seeking admission to these programs must meet the general requirements for admission that are outlined in the graduate catalog. An applicant must also have completed twenty-four semester hours of undergraduate courses that provide fundamental information concerning the normal development of the communicative process and concerning the management of disorders of communication.

**Degree Requirements**

The candidate for the Master of Science degree in Speech must meet all the graduate school general degree requirements as listed in this catalog, plus the special requirement of obtaining a minimum of 100 supervised hours of clinical experience. A total of thirty-six semester hours of course work is required for the degree, including six semester hours of electives. An optional thesis program may be elected by the candidate which would eliminate the six hours of electives.

**Professional Certification Requirements of the  
American Speech & Hearing Association (including undergraduate work):**

The certificate of clinical competence in Speech Pathology or Audiology requires the completion of sixty semester hours that includes eighteen hours in fundamentals and forty-two hours in the management of disorders of communication. Of these forty-two hours, twenty-four (not including thesis) must be in courses in either Speech Pathology or Audiology, and no fewer than six in either. Furthermore, thirty of the forty-two semester hours must be in courses acceptable toward a graduate degree. Certification also requires verification of two hundred and seventy-five hours of supervised clinical practice.

**GRADUATE FACULTY****Members**

Professor Robert F. Achilles  
Speech Pathology

Professor Ted Skinner  
Speech

Professor Harold N. Williams  
Audiology, Speech Pathology

The graduate student may select his courses in Speech Pathology and Audiology from the following list:

**435—Organic Speech and Voice Disorders.** Diagnosis and therapy of disorders of communication that are organic in nature, with emphasis on structural disorders and disorders of voice. Class: 3 hours. Credit: 3 semester hours.

**4324—Advanced Audiology.** Assessment of auditory functions by special pure tone techniques and speech audiometry, and hearing aid evaluation. Class: 3 hours. Credit: 3 semester hours.

**4325—Instrumentation.** A study of the behavior of sound waves, basic recording and analysis of sound, use and maintenance of equipment used in speech and hearing clinics or for research projects. Class: 3 hours. Credit: 3 semester hours.

**515, 525, 535—Individual Study.** Independent study of special and/or specific problems in disorders of communication. Class: 1-3 hours. Credit: 1-3 semester hours.

**530—Seminar in Speech Pathology.** Study of theory and diagnostic procedures with emphasis on educational and vocational aspects as they relate to speech pathology. Class: 3 hours. Credit: 3 semester hours.

**531—Advanced Clinical Practice.** Diagnostic and therapeutic procedures in speech pathology or audiology. One hour of clinical practice per week per credit hour. Class: 3 hours. Credit: 3 semester hours.

**532—Communication Theory.** Development of language, automatic control devices, sensory feedback systems, tonal flow and modulation, and qualitative aspects of sound as related to speech development and dysfunctions. Class: 3 hours. Credit: 3 semester hours.

**5321—Seminar in Audiology.** Study of theory and diagnostic procedures, with emphasis on educational and vocational aspects as they relate to loss of hearing. Class: 3 hours. Credit: 3 semester hours.

**5322—Seminar in Disorders of Language.** Etiology, diagnosis and clinical management of language disorders, with emphasis on aphasia. Class: 3 hours. Credit: 3 semester hours.

**5323—Neurological Speech and Hearing Disorders.** Principles of general neurology with special reference to the functions of the central nervous system, as related to speech and hearing disorders. Class: 3 hours. Credit: 3 semester hours.

**5324—Science of Sound.** Study of amplification and phonation in relation to electrical theories of audition. Credit: 3 semester hours. (This course replaces SPC 4326—*Science of Sound*.)

**533—Disorders of Communication: Clinical Management.** Study of theory, procedure, and clinical management as they relate to problems in disorders of communication. Class: 3 hours. Credit: 3 semester hours.

**534—Disorders of Communication: Administration.** Study of procedure, inter and intra agency and professional relationships, supervision, and program development as they relate to administrative practice in the field of disorders of communication. Class: 3 hours. Credit: 3 semester hours.

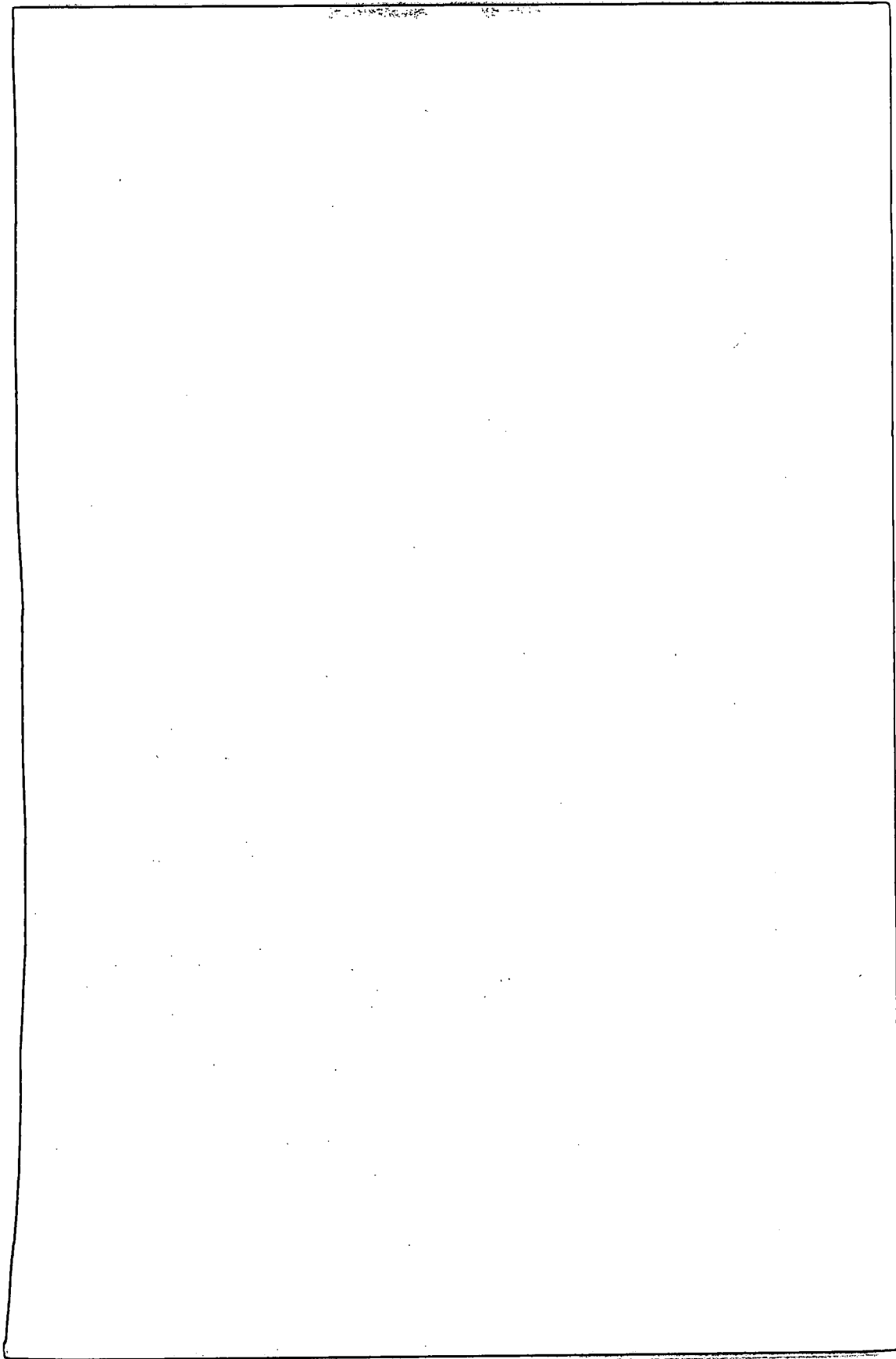
**537—Medical Audiology.** Differential diagnosis, medical legal implications, testing of infants with emphasis on electro-physiological audiometry. Class: 3 hours. Credit: 3 semester hours.

**538—Hearing Conservation.** Programs in industry and the public schools including study and practicum. Class: 3 hours. Credit: 3 semester hours.

**669A, 669B—Thesis:** Prerequisite: Admission to candidacy. Credit: 6 semester hours.

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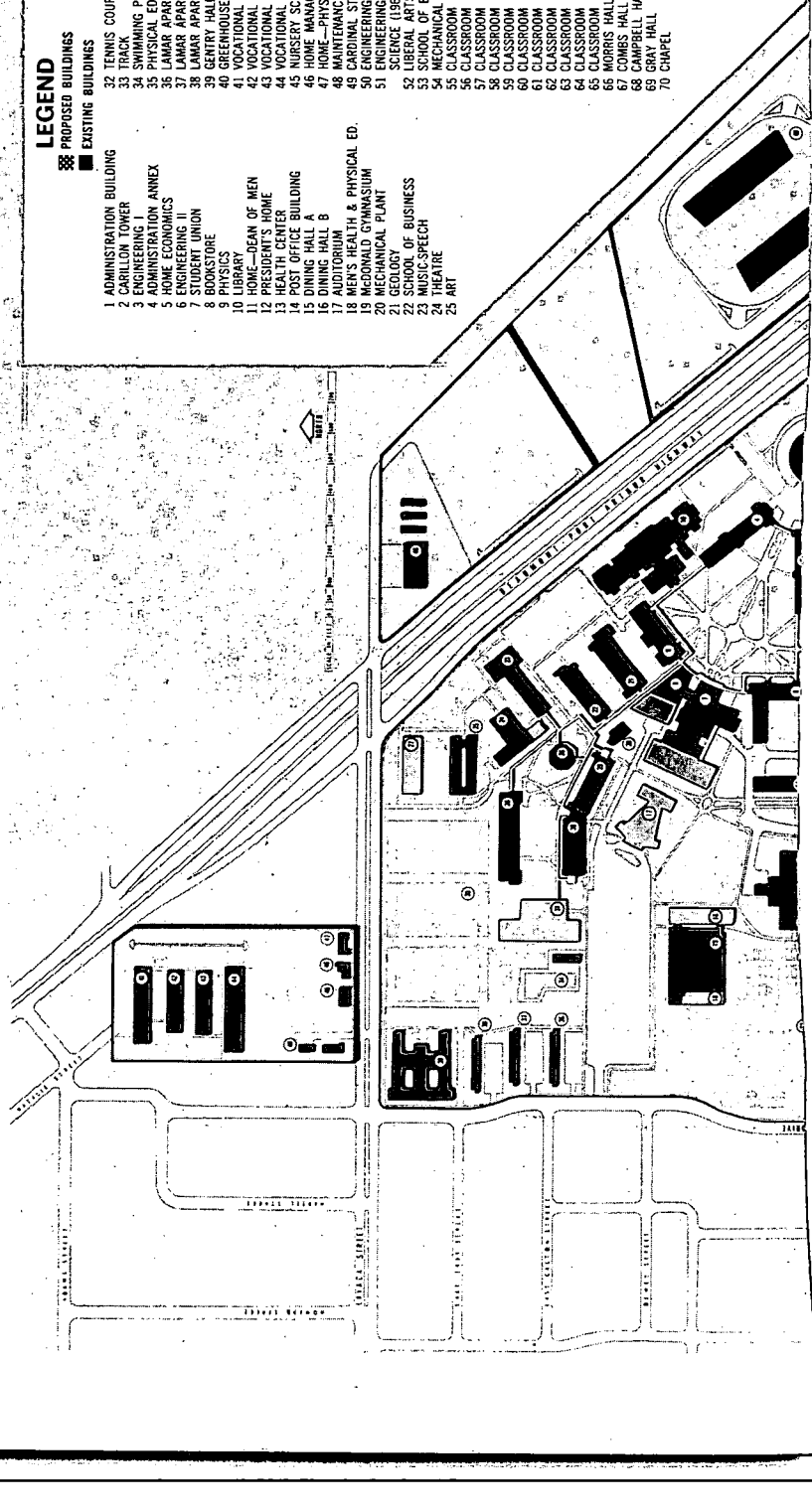
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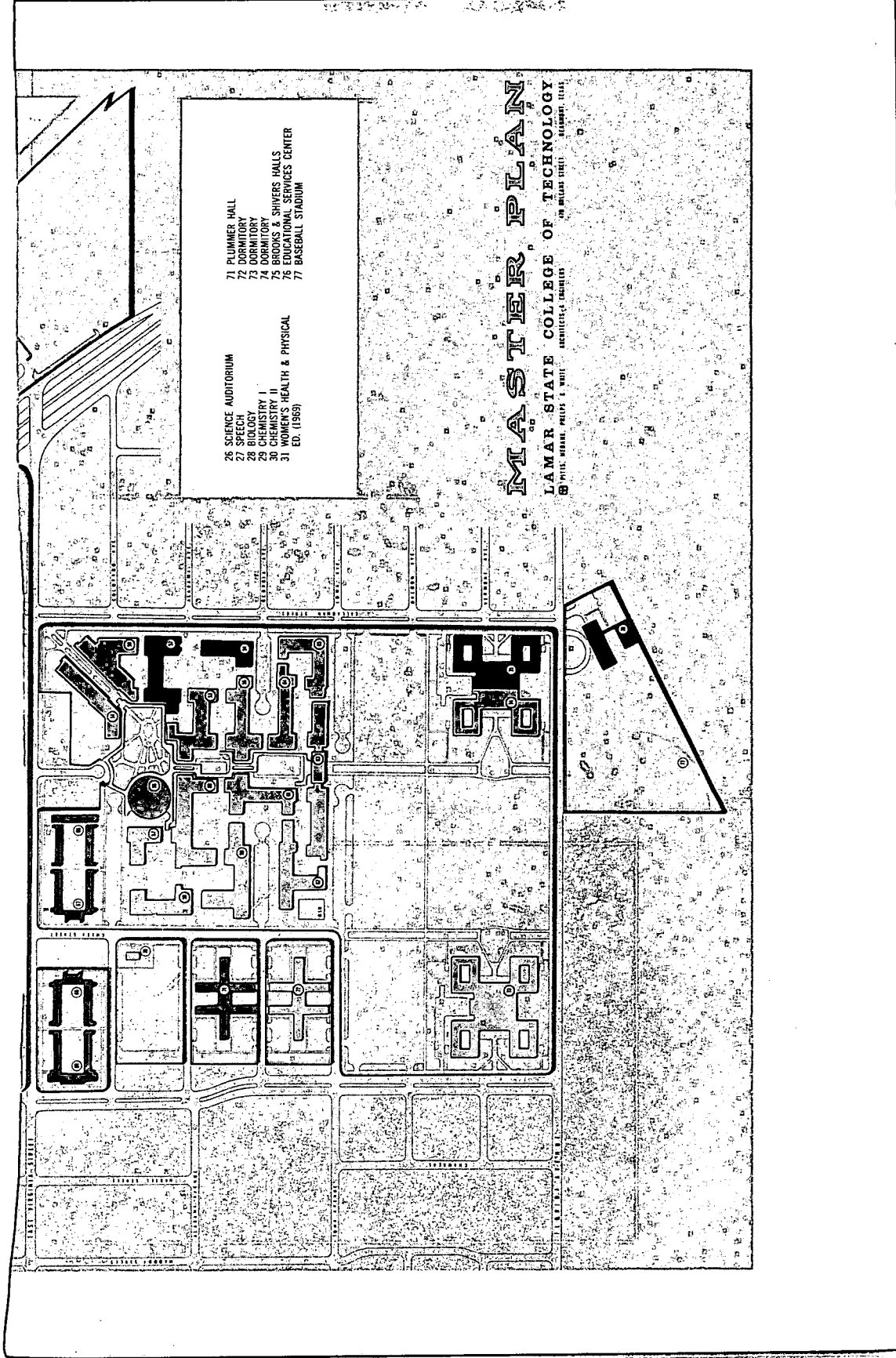
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# MASTER PLAN

LAMAR STATE COLLEGE OF TECHNOLOGY  
1015 S. MAIN, P.O. BOX 1, UNIT 1, WILSON, TEXAS 75097

### **HOW TO ENTER THE GRADUATE SCHOOL AT LAMAR**

- 1. Complete two application blanks and mail to the Dean of the Graduate School.**
- 2. Ask the Registrar of each college that you attended to send two transcripts to the Dean of the Graduate School.**
- 3. Have Graduate Record Examination scores (aptitude section and the appropriate subject area) sent to the Dean of the Graduate School.**
- 4. If college housing is desired, send request to Vice-President of Student Affairs.**

