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THE  
GRADUATE SCHOOL

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## GRADUATE OFFICE STAFF

Room 251 Administration Building

William Bryan Gates, *Dean*

Mrs. Irene F. Temple, *Administrative Secretary*

Mrs. Katherine C. Baxter, *Part-Time Secretary*

Mrs. Alma Granato, *Part-Time Secretary*



## General Information

The purpose of this bulletin is to provide essential information about the Graduate School of Texas Technological College. Details about such matters as the College Calendar, residence halls and other accommodations, the Student Health Service, the Placement Service, and the over-all policies of the institution are set forth in a General Information Bulletin, a copy of which may be obtained by addressing the Registrar of the College.

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Texas Technological College is a State-supported coeducational institution of general nature. It comprises the undergraduate Schools of Agriculture, Arts and Sciences, Business Administration, Engineering, and Home Economics, and the Graduate School. It embraces also a Division of Extension and a Reserve Officers Training Corps (Army and Air Force).

The presidents who have directed Texas Technological College are as follows: Paul Whitfield Horn (1925-1932), Bradford Knapp (1932-1938), Clifford Bartlett Jones (1938-1944; President Emeritus, 1944—), William Marvin Whyburn (1944-1948), Dossie Marion Wiggins (1948-1952), Edward Newlon Jones (1952-1959), and Robert Cabaniss Goodwin (1959—).

Graduate work has been offered at Texas Technological College since 1927. In 1937, the graduate program became a separate unit under its own dean and council. Between 1928, when the first Master's Degree was awarded, and Aug. 31, 1960, a total of 2,496 Masters' Degrees had been conferred. Since 1952, when the first doctorate was awarded, 63 Doctors' Degrees have been conferred; of these, 36 were Ed.D.'s and 27 were Ph.D.'s.

The following professors have served as graduate dean: William Albert Jackson (1937-1938), Robert Cabaniss Goodwin (1938-1945), William Curry Holden (1945-1950), and William Bryan Gates (1950—).

## THE LIBRARIES

For a number of years, the emphasis in new acquisitions for the Library has been upon materials needed for research by graduate students and faculty members. The present Library Building, erected in 1937, has been completely outgrown. Now under construction and scheduled for completion in 1961 is a new Library Building which will ultimately provide space for half a million volumes and about fifteen hundred readers.

Of special interest to those interested in the culture of this area is the Southwest Collection, housed in The Museum and comprising a large assortment of books, newspapers, and manuscripts dealing with the Southwest.

## SCHOLARSHIPS AND FELLOWSHIPS

The departments which offer doctoral work (Chemistry, Education, English, History, and Psychology) and some of those offering major work for the Master's Degree usually have teaching fellowships for properly qualified graduate students. Those interested in this type of appointment should communicate directly with the head of the department concerned.

Obtainable from the Registrar is a pamphlet describing the scholarships, fellowships, and loan funds available through the College.

## FEES AND DEPOSITS

No student is considered enrolled in the College until full settlement of the fees has been made. The General Information Bulletin should be consulted for details about fees and other expenses. The following partial summary is provided merely as a convenient reference guide for graduate students.

**STUDENT SERVICES FEE:** \$17 each semester. Required of every one who enrolls for 6 or more semester hours of work.

**GENERAL PROPERTY DEPOSIT:** \$7, which must be maintained at all times by replacement of any charges against it. The unused portion is returnable if a request is made no later than four years after the student's last attendance.

**STUDENT UNION FEE:** \$5 for each semester; \$2.50 for each term of a summer session.

### REGISTRATION FEE (PER SEMESTER):

For an enrollment of 12 or more hours of non-laboratory work .....	Resident	Non-Resident
	\$50.00	\$200.00

Fees for smaller enrollments are shown in the General Information Bulletin.

Prospective students should consult the Dean of Admissions concerning their legal residence.

### REGISTRATION FEE (PER SEMESTER) FOR EVENING AND SATURDAY CLASSES:

	Resident	Non-Resident
For each non-laboratory course carrying 3 hours' credit or less .....	\$15.00	\$50.00
For each non-laboratory course carrying 4 or 5 hours' credit .....	\$19.00	\$67.00

For each non-laboratory course carrying 6 or more hours' credit ..... \$30.00      \$100.00

Prospective students should consult the Dean of Admissions concerning their legal residence.

**LABORATORY FEES:** \$2 per semester for each course carrying 3 hours' credit or less; \$4 per semester for courses carrying 4 hours' credit or more.

**SPECIAL FEES:** Some courses require special fees for materials or services. See the General Information Bulletin.

**REFUND OF FEES:** See the General Information Bulletin.

**CHANGE-OF-SCHEDULE FEE:** \$3 for each change after registration has been completed unless the change is made for the convenience of the College.

**VISITOR'S FEE:** \$10 for each course. Applicable only to persons *not* registering for regular work in the College. An enrollee who wishes to visit or audit a course will pay the regular fee for it, and it will count as part of his academic load. No credit may ever be earned by either of these types of attendance.

**GRADUATION FEE:** \$5. Once a diploma has been ordered for a student, there can be no refund of this fee even if he does not graduate. For a subsequent graduation, a supplementary fee of \$2 is required.

**FEE FOR GRADUATING IN ABSENTIA:** \$1.50.

**FEE FOR BINDING THESES AND DISSERTATIONS:** In 1960, this fee is \$3 per copy, but it is subject to change. For the microfilming of doctoral dissertations, there is a charge of \$22. Further details are given on Page 23 of this Bulletin.

## Policies and Regulations

### RESPONSIBILITY OF STUDENTS

Graduate students are expected to make themselves thoroughly familiar with the regulations of the Graduate School and the requirements for degrees. Failure to follow the regulations and requirements almost inevitably results in complications for which the Graduate School cannot assume responsibility.

To facilitate communication, graduate students should promptly notify the Graduate Office of their changes of address.

### CONTINUATION IN THE GRADUATE SCHOOL

Every student enrolled in the Graduate School, whether he is working toward a degree or not, is required to be diligent in his studies and to cooperate fully with the policies of the institution. The Graduate School reserves the right to place on probation or to drop from its rolls

any graduate student who does not maintain a satisfactory academic standing or who fails to conform to the regulations of the College or to the conventions of good citizenship.

## GRADUATE DEGREES AND TEACHERS' CERTIFICATES

Prospective students should understand that the material in this Bulletin applies only to requirements for graduate degrees and has no direct relation to certificates for public school teachers. The Graduate School gives no assurance that a program for a graduate degree and a program for a certificate will coincide. Students interested in certificates should confer with the Director of Teacher Certification at the outset of their work.

## ADMISSION TO THE GRADUATE SCHOOL

Admission to the Graduate School, as to the other schools of Texas Technological College, is granted by the Dean of Admissions, to whom all correspondence concerning admission should be addressed.

Prospective graduate students should begin their preliminary correspondence early enough to meet the deadlines indicated in Section V, below. Those who fail to do so must reconcile themselves to possible delay and uncertainty in the determination of their status.

The basic prerequisite for admission to the Graduate School, regardless of the type of admission sought, is the possession of an acceptable Bachelor's Degree from a recognized college or university.

Applicants who are unable to take the Aptitude Test of the Graduate Record Examinations (see Page 10 of this Bulletin) before their initial registration will be required to take it at the first administration of it thereafter if they wish to be considered for admission to degree work. Such registrants are automatically treated as "Unclassified Students," subject to the provisions of Sections II, III, and IV, below.

### I. TYPES OF STUDENTS

The Graduate School recognizes two types of students:

1. Those accepted as applicants for graduate degrees here.
2. Those accepted as "Unclassified Students"; that is, students who do not wish to work toward degrees here and students who have not satisfied the requirements for admission to graduate degree programs.

### II. REQUIREMENTS FOR ADMISSION TO DEGREE PROGRAMS

Admission to programs leading to a Master's or Doctor's Degree is restricted to applicants whose records indicate probable success in graduate degree work, according to policies established by the Graduate

Council. Specifically, the formula for evaluation involves a combination of the applicant's scores on the Aptitude Test of the Graduate Record Examinations and the grade-point average on his last two years of undergraduate work.

### III. CHANGE OF STATUS

"Unclassified Students" may become applicants for admission to degree programs upon the satisfaction of the requirements specified in Section II, above, but, as indicated in Section IV, a limitation may be placed upon the amount of *degree credit* allowed for courses completed prior to official admission to a degree program.

### IV. LIMITATION ON DEGREE CREDIT FOR WORK COMPLETED PRIOR TO ADMISSION TO A DEGREE PROGRAM

The Graduate School reserves the right to limit the amount of *degree credit* that may be allowed for work completed prior to the student's official admission to a degree program or to deny degree credit for such work. In general, degree credit will not be granted for courses completed more than one semester prior to the individual's formal acceptance for degree work.

### V. DOCUMENTS REQUIRED BY THE DEAN OF ADMISSIONS

The documents listed below represent the minimum requirement; other material, including recommendations, may be required at the discretion of the Dean of Admissions or the Dean of the Graduate School.

1. Of applicants seeking admission to a Master's or Doctor's Degree program in this Graduate School (documents to be submitted at least thirty days prior to the proposed enrollment — sixty days by applicants outside the United States):
  - (a) A formal application on a blank provided by the Dean of Admissions.
  - (b) Complete transcripts of all previous college work, to be sent to the Dean of Admissions by the institutions concerned.
  - (c) Scores on the Aptitude Test of the Graduate Record Examinations, to be sent to the Dean of Admissions by the Educational Testing Service.
2. Of applicants seeking admission as "Unclassified Students" (documents to be submitted at least thirty days prior to the proposed enrollment):
  - (a) A formal application on a blank provided by the Dean of Admissions.
  - (b) Complete transcripts of all previous college work, to be sent to the Dean of Admissions by the institutions concerned.

## GRADUATE RECORD EXAMINATIONS

As indicated under "Admission to the Graduate School," all applicants for admission to a degree program are required to submit their scores on the Aptitude Test of the Graduate Record Examinations.

This test is prepared and scored by the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey. The Graduate Record Examinations are administered at many centers throughout the United States and several foreign countries four times each year, usually in January, April, July, and November.

Five or six weeks in advance of a contemplated test date, prospective examinees should request of the Educational Testing Service a booklet of information concerning the Aptitude Test of the Graduate Record Examinations and an application blank. The completed application form, together with the examination fee (currently \$7), should reach the Educational Testing Service a month in advance of the actual test date.

On his application for the Aptitude Test, the prospective student should indicate that his test scores are to be sent to the Dean of Admissions, Texas Technological College, Lubbock, Texas.

The Aptitude Test of the Graduate Record Examinations is an objective-type examination involving vocabulary, reading comprehension, and logical and mathematical reasoning. It yields two scores: Verbal Factor and Quantitative Factor. No special preparation in advance is necessary for it.

## GRADUATE ADVISERS

The Dean of the Graduate School is the general adviser for all graduate students, but, so far as particular courses are concerned, a student is counseled by the head of his major and minor departments or by other professors designated for such counseling. Advisement in matters pertaining to teachers' certificates is the responsibility of the Director of Teacher Certification.

## ELIGIBILITY FOR ENROLLMENT

### MEMBERS OF THE FACULTY AND STAFF

Full-time members of the faculty and staff of Texas Technological College may enroll for courses only by special permission of the President of the College. In registering for graduate work, they become subject to the usual regulations of the Graduate School. However, no member of the faculty with a rank above instructor is eligible to receive a graduate degree from Texas Technological College.

### UNDERGRADUATES TAKING WORK FOR GRADUATE CREDIT

An undergraduate student who is within 9 semester hours of graduation and who has at least a B average in his major and minor subjects

may enroll for courses carrying graduate credit, subject to the approval of the dean of his undergraduate school and the Dean of the Graduate School. This approval must be obtained on special forms at the time of registration. No course taken without this approval may be counted for graduate credit.

An undergraduate who is permitted to enroll for graduate work as indicated above is required to take the Aptitude Test of the Graduate Record Examinations at the first administration of it after his enrollment for graduate work — if he has not taken it before.

The maximum amount of work that may be scheduled by an undergraduate taking courses for graduate credit is 15 hours in a semester or 6 hours in a summer term, including graduate and undergraduate work. Undergraduates permitted to enroll for graduate work are expected to complete all of their undergraduate requirements within the academic year in which they first enroll for graduate credit.

An undergraduate may not receive credit for more than 12 semester hours of graduate work completed prior to his admission to the Graduate School as an applicant for a graduate degree.

#### UNDERGRADUATES TAKING GRADUATE COURSES FOR UNDERGRADUATE CREDIT

In exceptional circumstances, on the written recommendation of the department concerned and the approval of the Dean of the Graduate School, a senior with a high record may be permitted to enroll in a course listed "For Graduates," but each case is handled individually.

#### RANK OF COURSES

Courses numbered in the 500 series and above are for graduate students. Most of the courses numbered in the 400 series and some of those in the 300 series may be taken for graduate credit. In such courses, a graduate student may, at the discretion of his professor, be assigned additional work beyond that required of undergraduates. A graduate student enrolled in any course which carries graduate credit is automatically considered to be taking it for such credit.

Approximately half of the work credited toward a Master's Degree is expected to be in courses designated for graduate students. Most of the work credited toward a Doctor's Degree should be in courses of this rank.

#### AMOUNT OF WORK PERMITTED

A full graduate schedule is 12 hours in a semester or 6 hours in a summer term. The maximum enrollment in the Graduate School is 15 hours in a semester or 6 hours in a summer term.

For teaching fellows or others employed in part-time positions on or off the campus, the permissible load will be determined by the Dean and the head of the student's major department.

For teachers and others employed in full-time duties on or off the campus, the maximum enrollment is 3 semester hours in any term or semester.

Included in a graduate student's total load are extension courses and correspondence courses which he may be taking for the removal of deficiencies.

## REGISTRATION

The general procedure of registration is under the jurisdiction of the Registrar. Students are expected to follow carefully the instructions furnished them.

The registration cards of all graduate students and of all students enrolling for any graduate credit must be approved by the Dean of the Graduate School before the payment of fees.

## AFFIDAVIT REQUIRED BY STATE LAW

By an act of the Texas Legislature, every person owing allegiance to the United States is required to sign an affidavit of loyalty in the presence of a Notary Public before he may be permitted to register in a Texas state-supported college or university. The academic deans of Texas Technological College are charged with the responsibility of enforcing this law. Graduate students are expected to execute the necessary form in the Graduate Office when they present their registration cards for the Dean's approval. A special form is provided for students who are not citizens of the United States.

## CHANGES IN SCHEDULE

A graduate student who wishes to change a section, to add or drop a course, or to withdraw from the Graduate School is required to make his request at the Graduate Office. A student who quits a course without official withdrawal will receive F on it.

After a schedule has been approved and the fees have been paid, the adding or dropping of a course or the changing of a section will be subject to a charge of \$3 for each change unless the change is made for the convenience of a department or the College.

## PREREQUISITES FOR A GRADUATE MAJOR

For a graduate major, an applicant must have completed, or must take as undergraduate leveling work, a minimum of 18 semester hours (including at least 12 hours on the junior or senior level) in his proposed major subject and he must be accepted by the department concerned. Any department may specify additional prerequisites if they are considered necessary and may require an applicant to pass an examination before his acceptance.



## PREREQUISITES FOR A CONVENTIONAL MINOR

For a "Conventional Minor" (one in which there is some degree of concentration in one or two departments), an applicant must have completed, or must take as undergraduate leveling work, a minimum of 9 semester hours (including at least 6 hours on the junior or senior level) in his proposed minor subject or partly in this subject and partly in a closely allied field, and he must be accepted by the department concerned. Any department may specify additional prerequisites if they are considered necessary and may require an applicant to pass an examination before his acceptance.

A student having more than one "Conventional Minor" must satisfy the requirements in each of the fields involved.

## ACCEPTANCE BY THE DEPARTMENTS

Acceptance of an applicant for the Master's Degree is indicated by the departments' approval of the student's "Program for the Master's Degree" (see Page 17 of this Bulletin). A student wishing to transfer from one department to another is required to file a new "Program."

Acceptance of an applicant for the Doctor's Degree is indicated by a letter to the Dean of the Graduate School from the heads of the departments concerned. This method is required for transfers from one department to another as well as for new students.

Such acceptance, on either the Master's level or the Doctor's level, is merely provisional and does not constitute admission to candidacy for a graduate degree.

## RESIDENCE

Study leading to a graduate degree involves sustained residence as well as the completion of courses. Residence, which is expressed in terms of weeks, months, or years, is credited for work done on the campus of Texas Technological College and for certain types of courses (theses, field courses, practicums, internships, individual study, or any other type of course) when offered at a place and under circumstances specifically established by the department concerned and approved by the Graduate Council in advance of the offering of the course.

As much as 12 weeks of residence for the Master's Degree may be earned in evening and Saturday classes that meet on the campus, but work completed in these courses does not reduce the minimum residence requirement for the doctorate.

Residence is not credited for work completed by extension. Courses transferred from another graduate school will not reduce the minimum residence requirement for the Master's Degree.

The minimum residence requirements for the Master's Degree and the Doctor's Degree will be found in the appropriate sections of this Bulletin.

## GRADES AND GRADE AVERAGES

The grades used in the Graduate School are the same as those used in undergraduate work (A, B, C, D, and F).

Courses completed with a Grade of C may be counted toward a graduate degree if they are offset by a comparable number of A's. No grade less than C will count toward a graduate degree, but all work taken for graduate credit is included in the computation of the grade average.

Work completed at another graduate school with a grade less than B will not be accepted, but grades on transferred work will not raise the grade average on courses completed in this Graduate School.

## REQUIREMENT FOR GRADUATION

The grade average required for graduation is at least a B (grade-point average of 2.00) in the major and the minor considered separately. Students admitted with any type of condition may be required to have a grade-point average of at least 2.50.

The grade-point average is computed by the following formula: For each semester hour, 3 points are allowed for the grade of A, 2 points for a grade of B, and 1 point for a grade of C.

## SYMBOLS PR AND I

The symbol Pr (in progress) is given for the first half of a thesis or dissertation (631 or 831), and no final grade is to be assigned for a thesis or dissertation (631-632 or 831-832) until the completed work has been approved by the student's advisory committee and accepted by the Dean of the Graduate School. Pr is also given for the Master's report (630) until the document has been approved by the committee and accepted by the Dean.

Pr may be given by a professor when a student's work in a research course is not quite finished but is satisfactorily in progress at the end of a semester. This symbol must be replaced by a standard letter grade before credit can be granted for the work.

The symbol I (incomplete) may be given by a professor when a student's work in a regularly organized class has not been completed at the end of a semester and when the failure to complete the work has been solely due to causes beyond the student's control. It is not used as a substitute for F. When I stands for a year without action on the part of the student, it may become F.

## PROFICIENCY IN ENGLISH

A student found deficient in English may be required to complete satisfactorily certain specified courses in English usage (without graduate credit) before he is considered for admission to candidacy for a graduate degree.

## STATE REQUIREMENT IN GOVERNMENT

By an act of the Texas Legislature, no student in a State-supported college or university may be certified for graduation without the completion of "at least six (6) hours for credit in the governments of the State of Texas or of the United States of America, or the equivalent in both." All candidates for graduate degrees are required to satisfy this requirement.

## STATEMENT OF INTENTION TO GRADUATE

Not earlier than twelve weeks and not later than nine weeks prior to his proposed date of graduation, every candidate for a graduate degree must file at the Graduate Office a form known as the "Statement of Intention to Graduate." No candidate's name will be placed on the "Tentative List of Graduates" for any commencement unless this statement has been received at the Graduate Office within the time limits specified.

A candidate who fails to graduate at the expected time is required to file a new "Statement of Intention to Graduate" for any subsequent graduation.

## The Master's Degree

The requirements set forth in this section are in addition to those listed under the heading of "Policies and Regulations."

### DEGREES OFFERED

In the "Program for the Master's Degree" and on the title-approved page of a thesis, the exact and official designation of the degree must be used:

- Master of Arts
- Master of Business Administration
- Master of Education
- Master of Science
- Master of Science in Agriculture
- Master of Science in Chemical Engineering
- Master of Science in Civil Engineering
- Master of Science in Electrical Engineering
- Master of Science in Home Economics
- Master of Science in Mechanical Engineering

## BASIC PROGRAMS

For any of these degrees, two plans are authorized by the Graduate School, but the option rests with the departments, not with the students. Not all departments participate in Plan II.

**PLAN I. WITH REPORT OR THESIS:** A minimum of 30 semester hours of graduate work, including the 3 semester hours' credit allowed for the report (630) or the 6 semester hours' credit allowed for the thesis (631-632). Not all departments permit a 3-hour report.

**PLAN II. WITHOUT REPORT OR THESIS:** A minimum of 36 semester hours of graduate work.

## SPECIAL DETAILS

(1) A student contemplating doctoral study is expected to follow Plan I.

(2) For the degrees of Master of Arts and Master of Science, a reading knowledge of a foreign language is required. This requirement may be applied to other degrees at the discretion of the department concerned. In general, the satisfactory completion of 12 or more semester hours of undergraduate work in a single foreign language acceptable to the major department will absolve this requirement, but some departments require their students to pass a reading examination given by the Department of Foreign Languages.

(3) In any combination of work in education (Education, Agricultural Education, Business Education, Health and Physical Education, Home Economics Education, or Music Education), a maximum of 24 semester hours may be credited toward the Master's Degree.

## MAJORS

Every program for a Master's Degree must embody a major of 18 to 24 semester hours in a subject or field which has been approved for major work and for which the student has, or completes, the prerequisites as explained on Page 12 of this Bulletin.

## MINORS

A program for a Master's Degree must embody a minor to supplement the major. The number of hours in the minor depends on the general program (whether 30 hours or 36 hours) and the number of hours planned in the major (18 hours or 24 hours).

A student may have a "Conventional Minor," one in which some degree of concentration is contemplated and in which the minor department exercises some jurisdiction over the program; a "General Minor," one made up of courses for which the student has the prerequisites and which together form a suitable supplement to the major; or a "Composite Minor," one made up of especially designed courses (all numbered 5335) for students who because of their maturity can profit by advanced intro-

ductions to various fields. The courses numbered 5335 in Applied Arts, Clothing and Textiles, Economics, Food and Nutrition, Music, and Speech are restricted to students with major emphasis on Elementary Education.

## "PROGRAM FOR THE MASTER'S DEGREE"

Early in his first semester of graduate study, every one contemplating Master's Degree work is required to submit to the Dean of the Graduate School a "Program for the Master's Degree" as prepared by representatives of the proposed major department and the proposed minor department(s) if a "Conventional Minor" is involved. The necessary forms and instructions are obtainable at the Graduate Office.

When the student receives his approved copy of his "Program" from the Graduate Office, he is expected to keep it and use it as the basis of all subsequent enrollments. Substitutions of courses (except the special group numbered 5335) can be made only on the written recommendation of the department or departments concerned and the approval of the Graduate Dean.

Approval of a "Program for the Master's Degree" DOES NOT, however, constitute official admission to Master's Degree work or admission to candidacy for a Master's Degree. It merely signifies that the proposed program will be acceptable if the student satisfies all of the regulations of the Graduate School and all of the requirements connected with his degree program.

## MINIMUM RESIDENCE

The minimum residence requirement for any Master's Degree is a full academic year (nine months) of graduate work or its approximate equivalent in five 6-week summer terms. Part-time enrollment is evaluated on a fractional basis.

As much as 12 weeks of residence in a Master's Degree program may be earned by work in Saturday or evening classes that meet on the campus.

## TRANSFERRED AND EXTENSION WORK

There is no automatic transfer of credit toward a Master's Degree, but, in general, work completed in residence at another accredited graduate school may, on the recommendation of the departments concerned, be accepted for as much as 6 semester hours toward a Master's Degree. Such credit will not, however, reduce the minimum residence requirement for a Master's Degree.

A maximum of 6 semester hours of extension work completed through the Division of Extension of Texas Technological College may be credited on the course work for a Master's Degree if the student had been officially admitted to the Graduate School (at least as an "Unclassified Student") prior to his enrollment for the extension work. Residence is not credited for extension work.

Not more than 9 semester hours of any combination of extension courses and courses completed elsewhere can be credited toward a Master's Degree.

**GRADUATE CREDIT IS NEVER GRANTED FOR COURSES TAKEN BY CORRESPONDENCE.**

## ADMISSION TO CANDIDACY

Every applicant for a Master's Degree is required to submit to the Dean of the Graduate School a formal "Application for Admission to Candidacy for the Master's Degree" upon the completion of approximately half of the work listed in his "Program for the Master's Degree." Blanks for this application are obtainable at the Graduate Office.

ALL THE FOLLOWING REQUIREMENTS FOR ADMISSION TO CANDIDACY FOR THE MASTER'S DEGREE MUST BE SATISFIED AT LEAST TWO MONTHS PRIOR TO GRADUATION:

(1) Official admission to Master's Degree work must have been secured.\*

(2) At least half of the graduate work required for the the Master's Degree must have been completed in residence with an average grade of B or higher.

(3) The requirement concerning proficiency in English must have been satisfied.

(4) The requirement in a foreign language (if any) must have been satisfied.

(5) The general field of the thesis (if any) must have been approved.

(6) The work up to this point must be acceptable to the departments concerned, as attested by their approval of the "Application for Admission to Candidacy."

(7) The entire program must be in conformity with the general regulations of the Graduate School and the requirements for the particular degree.

## TIME LIMIT

All work credited toward a Master's Degree must be completed within six years. Students whose graduate study here is interrupted by involuntary military service will be granted an extension of time for the period of their military duty, not exceeding five years.

\* If a student began Master's Degree work prior to Sept. 1, 1955, but had not been admitted to candidacy by that date, he must have taken the Aptitude Test of the Graduate Record Examinations for admission to candidacy.

## THESIS

If a student's program requires a thesis, the research for it is supervised by a committee appointed by the Dean of the Graduate School on the recommendation of the departments concerned. This committee is also charged with the responsibility of conducting the student's final examination.

Available at the Graduate Office, free of charge, is a pamphlet entitled *Instructions for Preparing and Submitting Theses and Dissertations*. All writers and directors of theses are expected to have a copy of this pamphlet and follow it carefully.

## FINAL EXAMINATION

Within the term or semester in which he plans to graduate, at a time specified by his major department, every candidate for a Master's Degree is required to undergo a final comprehensive examination in his major field. The minor is not ordinarily included in this examination.

The final examination is normally given once each long session and once each summer. It is the student's responsibility to confer with the chairman of his advisory committee or the head of his major department about the time and place of the examination. No reminders will be provided by the departments or the Graduate School.

A student who fails the final examination may repeat it once but not until after an interval of four months or more.

At the discretion of the department concerned, a student who passes the examination, but does not graduate within twelve months may be required to repeat the examination.

## The Doctor's Degree

The requirements set forth in this section are in addition to those listed under "Policies and Regulations."

## MAJORS

Major work leading to the Degree of Doctor of Philosophy is offered in the Departments of Chemistry, English, History, and Psychology. The Degree of Doctor of Education is offered with a major in Education.

## ADMISSION TO DOCTORAL STUDY

Admission to doctoral study is restricted to applicants whose background shows definite promise of probable success on this the highest level of academic endeavor. The formal requirements for admission to the

doctoral program are a distinguished record in previous work (undergraduate and graduate) and a high score on the Aptitude Test of the Graduate Record Examinations. Each doctoral department has additional requirements which applicants must satisfy for admission.

## PROGRAM OF WORK

### YEARS OF STUDY

A minimum of three years of graduate study beyond the Bachelor's Degree is required for the doctorate. Work completed for the Master's Degree is considered one of these years if it forms part of a logical sequence in the entire program.

Work completed in the doctoral program of another recognized graduate school will be considered on the recommendation of the departments concerned, but no assurance can be given that such work will reduce the course or residence requirements in this Graduate School. *In no case can transferred credit reduce the minimum residence requirement (see below).*

Doctoral study cannot be estimated solely in terms of credit hours, but the program normally requires the completion of 72 to 90 or more hours of work beyond the Bachelor's Degree. Of this number, not more than 9 semester hours' credit may be earned in special types of courses (field courses, practicum courses, individual study courses, and so on) and not more than 12 semester hours in dissertation courses (731,732, and 831-832).

### MAJOR AND MINOR

An applicant for the doctorate will devote most of his time to his major subject, but for the Ph.D. Degree, the program must include a "Conventional Minor" of at least 18 semester hours beyond the Bachelor's Degree in a department other than the major; and for the Ed.D. Degree, the program must include at least 24 semester hours beyond the Bachelor's Degree outside any field of Education.

In addition to any work completed elsewhere in a minor subject, at least 6 semester hours must be completed here in that subject if it is to be considered an official minor.

An applicant for the Ed.D. Degree not having a "Conventional Minor" may take as part of his work outside his major those courses which are numbered 5335 but which are not restricted to students in Elementary Education.

### MINIMUM RESIDENCE

These residence requirements apply to every one beginning doctoral study at Texas Technological College after June 1, 1955, and to those who started earlier than that if they failed to satisfy all requirements with respect to the Graduate Record Examinations by June 1, 1955.

Regardless of the amount of graduate work he may have completed elsewhere, every applicant for the Ed.D. or the Ph.D. is required to com-



plete in residence in this Graduate School at least one year of graduate study beyond the Master's Degree or beyond the equivalent of this degree if he proceeds to doctoral work without taking a Master's Degree.

This minimum residence requirement can be satisfied only by the completion of a full schedule of graduate work in each of the two consecutive semesters of a long session. (A full schedule is normally from 12 to 15 semester hours, but, in exceptional circumstances, the Dean may accept a slightly smaller load as a full schedule.) No part of this requirement can be satisfied by any type of off-campus enrollment or by part-time enrollment in Saturday or evening classes.

## PRELIMINARY EXAMINATION

As early in his doctoral study as possible, the applicant will undergo a preliminary examination (oral or written or both), administered by the major and minor departments. This examination will serve as the basis of further counseling of the applicant. The major department will file at the Graduate Office a report on this examination and will include a statement concerning the applicant's proficiency in English composition as determined by the major department on the basis of suitable tests.

## LANGUAGES AND STATISTICS

As indicated in the preceding section, every applicant for the doctorate is required to demonstrate, early in his program, an adequate command of English composition.

Before taking the "Qualifying Examination for Admission to Candidacy," applicants for the Ph.D. Degree are required to pass reading examinations in two foreign languages acceptable to the major and minor departments and the Dean of the Graduate School. These examinations (usually in French or Spanish and German) are given by the Department of Foreign Languages at times specified by that department.

Before taking the "Qualifying Examination for Admission to Candidacy," applicants for the Ed.D. Degree are required to show competency in educational evaluation and educational statistics and also a foreign language if their research requires such competency. The examination in educational statistics is administered by a committee representing the Departments of Education, Mathematics, and Psychology.

## ADVISORY COMMITTEE

As soon as an applicant has passed the preliminary examination administered by his major and minor departments, an advisory committee will be appointed by the Dean on the recommendation of the departments concerned. This committee will hold meetings as often as necessary with the applicant and will direct his work at all stages. From time to time, the chairman of the committee will file written reports with the

Dean and the heads of the departments concerned, indicating the applicant's progress.

## QUALIFYING EXAMINATION

The Qualifying Examination for Admission to Candidacy for the Doctor's Degree is one of the major features of the doctoral program. An applicant is eligible to attempt this examination only after he has satisfied the following requirements: (1) He must have been officially admitted to the doctoral program, (2) He must have passed the preliminary examination and have been provisionally accepted by his major and minor departments, (3) He must have satisfied the requirements in languages (including English) and/or statistics, and (4) He must have completed most of the course work prescribed by his committee.

The Qualifying Examination is prepared and administered by the candidate's advisory committee and any other professors the committee or the Dean may consider necessary. The major portion of the examination is an essay-type test, of at least six hours' duration. It usually includes also an oral examination under the supervision of the committee and any other professors that may be invited to participate.

### PROCEDURE WHEN THE EXAMINATION IS SATISFACTORY

If the Qualifying Examination is considered satisfactory, the chairman of the advisory committee will send to the Dean, for consideration by the Graduate Council, a formal written recommendation that the applicant be admitted to candidacy for the Doctor's Degree.

### PROCEDURE WHEN THE EXAMINATION IS NOT SATISFACTORY

If the Qualifying Examination is not satisfactory, the chairman of the advisory committee will so notify the Dean, in writing. An applicant who does not pass the Qualifying Examination may be permitted to repeat it once, after a lapse of at least a semester or fifteen weeks.

## ADMISSION TO CANDIDACY

Authority for admitting an applicant to candidacy for a Doctor's Degree is vested in the Graduate Council. Upon receipt of a recommendation from an advisory committee, the Dean will submit it to the Graduate Council for action. The Council may approve the committee's recommendation, or it may, after consultation with the committee, suggest additional requirements which the applicant must satisfy.

By a written communication, the Dean will transmit the results of the Council's action to the applicant, to the chairman of his advisory committee, and to the heads of the departments concerned.

## LIMITATION ON THE NUMBER OF CANDIDATES

To insure proper individual attention to each applicant for the doctorate, the Graduate Council limits the number of applicants that will be admitted to candidacy from any department in any one year (Sept. 1 to Aug. 31) to one candidate for each department staff member who holds an earned doctorate and has full membership on the Graduate Faculty.

## TIME LIMIT

All work for the doctorate must be completed within four years after the applicant has been admitted to candidacy.

## INTERVALS BETWEEN EXAMINATIONS

At least three months must intervene between the preliminary examination and the qualifying examination and at least six months between the latter and the final examination.

## DISSERTATION

A dissertation is required of every candidate for the doctorate.

The subject of the dissertation must be approved by the advisory committee and the Dean at least eight months before the candidate's proposed date of graduation.

The dissertation must demonstrate a mastery of the techniques of research, a thorough understanding of the subject matter and its background, and a high degree of skill in organizing and presenting the material. The dissertation should embody a significant re-evaluation of existing knowledge or some contribution to learning. The work on the dissertation is constantly under the supervision of the advisory committee and any other professors the committee or the Dean may consider necessary.

Available at the Graduate Office, free of charge, is a pamphlet entitled *Instructions for Preparing and Submitting Theses and Dissertations*. All writers and directors of dissertations are expected to have a copy of this pamphlet and follow it carefully.

Three typewritten copies of the dissertation are required by the College. They must be accompanied by two copies of an abstract, *not more than six hundred words in length*.

## DISSERTATION FEES

When a doctoral dissertation and its abstract have been approved by a student's advisory committee and accepted by the Dean of the Graduate School, the candidate will pay the College Cashier a "Microfilming and Shipping Charge" of \$22 for the microfilming of the complete dissertation by University Microfilms, Inc., of Ann Arbor, Michi-

gan, and the publication of the abstract in *Dissertation Abstracts*. Other services rendered by University Microfilms, Inc., are explained in the local pamphlet of instructions.

In addition to the fee indicated above, the doctoral candidate will pay to the Texas Tech Press the fee for the binding of the three official typewritten copies of the dissertation. In 1960, this fee is \$3 per copy, but, like other fees, it is subject to change without notice as circumstances may require. If he wishes to do so, the student may have additional copies of his dissertation bound at the prevailing rate.

## FINAL EXAMINATION

A final oral examination, usually over the general field of the dissertation, is required of every candidate for the doctorate. It may be scheduled at any suitable time after the dissertation (not necessarily the final version) has been approved by the advisory committee. The examination is conducted by the advisory committee under the supervision of the Dean or a professor designated to act in his place. Professors other than members of the student's committee may participate in the examination, but they have no vote in determining the outcome. At the conclusion of the examination, the chairman of the advisory committee will send a written notice to the Graduate Office, giving the result of the examination.

## Courses

### INFORMATIONAL DETAILS

#### LIMITATION OF OFFERINGS

Not all of the courses listed in this Bulletin are offered every year. A class schedule, published just before the opening of each term or semester, indicates the courses to be available in that term or semester and the hours at which they will meet. The College reserves the right, however, to cancel any scheduled course, as well as to withdraw any program from the list of graduate offerings, if the best interests of the institution require such action.

#### INDICATION OF CREDIT

The number of semester hours' credit for each course is shown immediately following the title of the course.

### THESIS AND DISSERTATION COURSES

In all departments offering major work for the Master's Degree, the Master's Thesis is listed as 631-632. It carries 6 semester hours' credit. A student enrolls for each portion of the thesis course once.

In some departments there is a Master's Report (630), which carries 3 semester hours' credit.

In all departments offering major work for the Doctor's Degree, the Doctor's Dissertation is listed as 831-832. It carries 6 semester hours' credit. A student enrolls for each portion of the dissertation course once. To provide flexible credit for the dissertation, some departments require their students to register for either or both of the courses called "Research" (731, 732) while the dissertation is in progress. So far as the Graduate School is concerned, however, the only required enrollment for the dissertation is 831-832.

## PREREQUISITES FOR COURSES

Certain general prerequisites apply to all courses listed in this Bulletin. For example, senior standing is the normal prerequisite for enrollment in a 400 course which carries graduate credit, and graduate standing is a prerequisite for enrollment in any course numbered 500 and above.

Enrollment in any course must be approved by the department offering it.

## DEPARTMENTS OF INSTRUCTION

### ACCOUNTING

Professor Reginald Rushing  
Head of the Department

#### MAJORS AND MINORS FOR THE MASTER'S DEGREE

(All degree programs are to be cleared through the Committee on Graduate Study in the School of Business Administration.)

A thesis is required for the Master's Degree.

#### FOR UNDERGRADUATES AND GRADUATES

- 430. Income Tax Accounting. Cr. 3
- 431. Advanced Income Tax Accounting.  
Cr. 3
- 432. Governmental Accounting. Cr. 3
- 433. Petroleum Accounting. Cr. 3
- 434. Advanced Accounting I. Cr. 3
- 435. Advanced Accounting II. Cr. 3
- 436. Accounting Systems. Cr. 3
- 437. Principles of Auditing. Cr. 3
- 438. Advanced Auditing. Cr. 3
- 439. Budgeting. Cr. 3
- 4313. Advanced Cost Accounting. Cr. 3
- 443. An Introduction to Computers and  
Programming Techniques. Cr. 4

- 444. Large Scale Tape Controlled Computers and Programming Techniques. Cr. 4

#### FOR GRADUATES

- 531. Controllership. Cr. 3
- 532. Internship. Cr. 3
- 533. Current Accounting Theory. Cr. 3
- 534. Seminar. Cr. 3  
Not open to Accounting majors.
- 535. Seminar in Accounting. Cr. 3
- 536. CPA Review I. Cr. 3
- 537. CPA Review II. Cr. 3
- 631-632. Master's Thesis. Cr. 6

## AGRICULTURAL ECONOMICS

Professor J. Wayland Bennett  
Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

(All degree programs are to be cleared through the Committee on  
Graduate Study in the School of Agriculture.)

A thesis is required for the Master's Degree.

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| FOR UNDERGRADUATES AND GRADUATES                         | 437. Farm and Ranch Appraisal. Cr. 3             |
| 411. Agricultural Economics Seminar.<br>Cr. 1            | 438. Range and Ranch Economics. Cr. 3            |
| 430. Problems in Agricultural Economics. Cr. 3           | 439. Agricultural Prices. Cr. 3<br>Formerly 324. |
| 431. Livestock Marketing. Cr. 3                          | 4311. Agricultural Finance. Cr. 3                |
| 432. Statistical Methods in Agricultural Research. Cr. 3 |  |
| 434. Advanced Farm Management. Cr. 3                     | FOR GRADUATES                                    |
| 435. Agricultural Policies and Organizations. Cr. 3      | 511. Seminar. Cr. 1                              |
| 436. World Trade in Agricultural Products. Cr. 3         | May be repeated for credit.                      |
|  | 533. Marketing Problems. Cr. 3                   |
|  | 534. Research in Agricultural Economics. Cr. 3   |
|  | May be repeated once for credit.                 |
|  | 631-632. Master's Thesis. Cr. 6                  |

## AGRICULTURAL EDUCATION

Professor R. L. Chappelle  
Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

(All degree programs are to be cleared through the Committee on  
Graduate Study in the School of Agriculture.)

Master's Degree work is offered under both the thesis and the non-thesis plans.

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|--|--|
| FOR GRADUATES  | 525. Problems. Cr. 2   |
| 511. Problems. Cr. 1   | Formerly 423.  |
| May be repeated for credit.  | May be repeated once for credit.                                 |
| 522. Advanced Methods in High School Vocational Agriculture. Cr. 2 | 531. Investigation in the Field of Agricultural Education. Cr. 3 |
| 523. Advanced Methods in Adult Agricultural Education. Cr. 2       | May be repeated once for credit.                                 |
| 524. Advanced Methods in Future Farmer Work. Cr. 2                 | 631-632. Master's Thesis. Cr. 6                                  |
| Formerly 426.  |  |

## AGRICULTURAL ENGINEERING

Professor I. L. Williams  
Acting Head of the Department

## MINORS ONLY FOR THE MASTER'S DEGREE

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|---|---|
| FOR UNDERGRADUATES AND GRADUATES              | 434. Rural Electrification. Cr. 3             |
| 411. Seminar. Cr. 1                           | 435. Farm Mechanics Problems. Cr. 3           |
| 430. Agricultural Engineering Problems. Cr. 3 | 436. Cotton Gin Engineering. Cr. 3            |
| 433. Elements of Tractor Design. Cr. 3        | 437. Design of Farm Irrigation Systems. Cr. 3 |

438. Structural Design of Farm Buildings. Cr. 3  
 439. Functional Design of Farm Buildings. Cr. 3  
 Formerly 331.

442. Engineering for Soil and Water Conservation and Drainage. Cr. 4  
 Formerly 432.

## AGRONOMY

Professor A. W. Young  
 Head of the Department

### MAJORS AND MINORS FOR THE MASTER'S DEGREE

(All degree programs are to be cleared through the Committee on Graduate Study in the School of Agriculture.)

A thesis is required for the Master's Degree.

- FOR UNDERGRADUATES AND GRADUATES  
 422. Dry Farm Soil Management. Cr. 2  
 423. Soil Fertility. Cr. 2  
 425. Seed Technology. Cr. 2  
 430. Agronomy Problems. Cr. 3  
 May be repeated once for credit.  
 431. Plant Breeding and Improvement. Cr. 3  
 433. Cotton Production. Cr. 3  
 434. Soil Conservation and Land Use Planning. Cr. 3  
 435. Soil Morphology and Genesis. Cr. 3  
 436. Soil Chemistry. Cr. 3

437. Range Plant Management. Cr. 3  
 438. Advanced Range Plant Management. Cr. 3  
 439. Soil Microbiology. Cr. 3

### FOR GRADUATES

511. Agronomy Seminar. Cr. 1  
 May be repeated for credit.  
 534. Agronomy Research. Cr. 3  
 May be repeated once for credit.  
 535. Research Methods. Cr. 3  
 536. Soil and Plant Relationships. Cr. 3  
 631-632. Master's Thesis. Cr. 6

## ANIMAL HUSBANDRY

Professor Ralph M. Durham  
 Head of the Department

### MAJORS AND MINORS FOR THE MASTER'S DEGREE

(All degree programs are to be cleared through the Committee on Graduate Study in the School of Agriculture.)

A thesis is required for the Master's Degree.

- FOR UNDERGRADUATES AND GRADUATES  
 411. Animal Husbandry Seminar. Cr. 1  
 May be repeated for credit.  
 425. Horse Production. Cr. 2  
 427. Swine Production. Cr. 2  
 431. Beef Cattle Production. Cr. 3  
 432. Animal Breeding. Cr. 3  
 433. Sheep Production. Cr. 3  
 435. Dairy Cattle Production. Cr. 3  
 436. Advanced Animal Nutrition. Cr. 3  
 439. Hormones in Animal Production. Cr. 3

- FOR GRADUATES  
 533. Techniques in Animal Research. Cr. 3  
 May be repeated once for credit.  
 534. Research in Animal Nutrition. Cr. 3  
 May be repeated once for credit.  
 631-632. Master's Thesis. Cr. 6

## POULTRY HUSBANDRY

- FOR UNDERGRADUATES AND GRADUATES  
 431. Poultry Production. Cr. 3

432. Turkey Production. Cr. 3  
 433. Caged Egg Production. Cr. 3

## APPLIED ARTS

Professor B. C. Lockhart  
Head of the Department

## MINORS ONLY FOR THE MASTER'S DEGREE

FOR UNDERGRADUATES AND GRADUATES 4129. Laboratory. Cr. 1

421. Special Problems. Cr. 2  
May be repeated once for credit.  
425. Silk Screen Printing. Cr. 2  
427. Sculpture. Cr. 2  
433. Advanced Interior Design. Cr. 3  
434. Metals and Plastics. Cr. 3  
435. Jewelry and Lapidary. Cr. 3  
439. Experience Training in Applied  
Arts. Cr. 3

## FOR GRADUATES

531. Special Problems. Cr. 3  
May be repeated once for credit.  
537. Art for Exceptional Children. Cr. 3  
535. Theory and Practice of Art for  
Elementary Teachers. Cr. 3  
Enrollment limited to graduate  
students in Elementary Education.

## ARCHITECTURE AND ALLIED ARTS

Professor N. E. Barrick  
Head of the Department

## MINORS ONLY FOR THE MASTER'S DEGREE

## ARCHITECTURE

- FOR UNDERGRADUATES AND GRADUATES 423, 424. Life Drawing II, III.  
Cr. 2 each  
Model Fee: \$5 each course.  
320. History of Furniture and Costume.  
Cr. 2  
4316, 4317 Architectural Sculpture.  
Cr. 3 each  
Ceramics Fee: \$5 each course.  
321. History of Early American Archi-  
tecture. Cr. 2  
435. Advanced Architectural Working  
Drawings. Cr. 3  
322. History of Renaissance Architec-  
ture. Cr. 2  
436. City Planning. Cr. 3  
323. History of Modern Architecture.  
Cr. 2  
420. Professional Practice. Cr. 2

## ALLIED ARTS

- FOR UNDERGRADUATES AND GRADUATES 4318, 4319. History of Painting and  
Sculpture. Cr. 3 each  
421. Art Workshop. Cr. 2  
Fee: \$5 if work is in ceramics or  
pottery.  
4351. Art in Elementary Education.  
Cr. 3  
433, 434. Commercial Design II.  
Cr. 3 each  
FOR GRADUATES  
4311, 4312. Ceramics. Cr. 3 each  
Fee: \$5 each course.  
5335. Art in the Modern World. Cr. 3

## BIOLOGY

Professor E. D. Camp  
Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

Master's Degree work is offered under both the thesis and the non-thesis plans.

Before being recommended for admission to candidacy for the Master's Degree with a major in this department, the student must take a preliminary examination which



ordinarily includes the work usually required of undergraduates who major in this department. If the examination reveals serious weaknesses, the student may be required to take (without graduate credit) such courses as may be designated by the department.

### BACTERIOLOGY

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|---|--|
| FOR UNDERGRADUATES AND GRADUATES                      | 431. Problems in Bacteriology. Cr. 3   |
| 331-332. Principles of Bacteriology                   | 432. Immunology and Serology. Cr. 3    |
| Cr. 6   | 433. The Physiology of Bacteria. Cr. 3 |
| 333. Communicable Diseases. Cr. 3                     |  |
| 334. Bacteriology of Foods and Food Sanitation. Cr. 3 |  |

### BIOLOGY

- |                                     |                             |
|-------------------------------------|-----------------------------|
| FOR UNDERGRADUATES AND GRADUATES    | 333. Bio-Ecology. Cr. 3     |
| 331. Heredity. Cr. 3                | 411. Biology Seminar. Cr. 1 |
| 332. The Teaching of Biology. Cr. 3 |                             |

### BOTANY

- |   |                                    |
|---|------------------------------------|
| FOR UNDERGRADUATES AND GRADUATES        | FOR GRADUATES                      |
| 331. Plant Physiology. Cr. 3            | 531. Problems in Botany. Cr. 3     |
| 332. Plant Pathology. Cr. 3             | May be repeated once for credit.   |
| 339. Plant Anatomy. Cr. 3               | 534. Advanced Plant Anatomy. Cr. 3 |
| 431. Botanical Microtechnique. Cr. 3    | 535. Field Botany. Cr. 3           |
| 435. Advanced Taxonomy. Cr. 3           | May be repeated once for credit.   |
| 436. Plant Geography. Cr. 3             | 631-632. Master's Thesis. Cr. 6    |
| 437. Problems in Plant Geography. Cr. 3 |                                    |
| 438. Morphology of Fungi. Cr. 3         |                                    |

### ENTOMOLOGY

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|----------------------------------|---------------------------------|
| FOR UNDERGRADUATES AND GRADUATES | 432. Insect Ecology. Cr. 3      |
| 334. Insect Morphology. Cr. 3    | 4311. Medical Entomology. Cr. 3 |
| 335. Insect Taxonomy. Cr. 3      | 4312. Acarology. Cr. 3          |

### ZOOLOGY

- |  |  |
|--|--|
| FOR UNDERGRADUATES AND GRADUATES               | 4312. Advanced Parasitology. Cr. 3                       |
| 331. Animal Histology. Cr. 3                   |  |
| 332. Comparative Vertebrate Embryology. Cr. 3  | FOR GRADUATES  |
| 333. Parasitology. Cr. 3                       | 531. Problems in Zoology. Cr. 3                          |
| 336. Comparative Invertebrate Zoology. Cr. 3   | May be repeated once for credit.                         |
| 435. Cytology. Cr. 3                           | 532. Principles and Methods of Systematic Zoology. Cr. 3 |
| 436. Zoological Technique. Cr. 3               | 535. Field Zoology. Cr. 3                                |
| 437. Natural History of the Vertebrates. Cr. 3 | May be repeated once for credit.                         |
|  | 631-632. Master's Thesis. Cr. 6                          |

## BUSINESS EDUCATION AND SECRETARIAL ADMINISTRATION

Professor W. R. Pasewark  
Head of the Department

### MAJORS AND MINORS FOR THE MASTER'S DEGREE

(All degree programs are to be cleared through the Committee on  
Graduate Study in the School of Business Administration.)

A thesis is required for the Degree of Master of Business Administration. For the Degree of Master of Education, both the thesis and the non-thesis plans are available.

### BUSINESS EDUCATION

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|---|--|
| <p>FOR UNDERGRADUATES AND GRADUATES</p> <p>422. Improvement of Instruction in Bookkeeping and the Social-Business Subjects. Cr. 2</p> <p>423. Improvement of Instruction in Typewriting and Shorthand. Cr. 2</p> <p>424. Improvement of Instruction in Basic Business. Cr. 2</p> <p style="text-align: center;">FOR GRADUATES</p> <p>511. Individual Directed Study. Cr. 1</p> <p>522. Foundations of Business Education. Cr. 2</p> | <p>523. Evaluation of Current Literature in Business Education. Cr. 2</p> <p>531. Improvement of Instruction in Business Subjects. Cr. 3</p> <p>532. Tests and Measurements in Business Education. Cr. 3</p> <p>533. Guidance in Business Education. Cr. 3</p> <p>535. Seminar in Business Education. Cr. 3</p> <p>631-632. Master's Thesis. Cr. 6</p> |
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### SECRETARIAL ADMINISTRATION

- |  |                               |
|--|-------------------------------|
| <p>FOR UNDERGRADUATES AND GRADUATES</p> <p>421. Voice-Writing and Duplicating Machines. Cr. 2</p> <p>Machine Service Fee: \$10</p> | <p>431. Internship. Cr. 3</p> |
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## CHEMISTRY

Professor Joe Dennis  
Head of the Department

### MAJORS AND MINORS FOR THE MASTER'S DEGREE AND THE DOCTOR'S DEGREE

#### Special Regulations Concerning the Master's Degree

Before being recommended for admission to candidacy for the Master's Degree in this department, the student must take written preliminary examinations on his undergraduate work, including inorganic, organic, and analytical chemistry and either physical or biological chemistry. These examinations are given during the first week of each semester, according to schedules posted on the departmental bulletin board. Students will have an opportunity to register for such remedial courses as the examinations may show to be necessary.

At least one semester before graduation, every applicant for the Master's Degree in this department must pass a reading examination in a foreign language acceptable to this department. The examination will be given under the direction of the Department of Foreign Languages and will deal with critical material in the field of chemistry.

No student may receive a Master's Degree in Chemistry without having done satisfactory work in physical chemistry (Chemistry 441-442 or its equivalent).

A thesis is required for the Master's Degree, and it must be based on experimental work except in extraordinary cases. It shall be the duty of each thesis committee in this department to see that the spirit of this regulation is carried out.

#### Special Regulations Concerning the Doctor's Degree

Credit for the research presented in the doctoral dissertation in this department shall constitute not less than one-sixth nor more than one-third of the total work presented for the degree.

At least 18 semester hours of work must be done outside this department.

#### FOR UNDERGRADUATES AND GRADUATES

- 411, 412. Chemical Literature and Seminar. Cr. 1 each
- 431. Qualitative Organic Analysis. Cr. 3
- 433. Inorganic Preparations. Cr. 3
- 434. Organic Preparations. Cr. 3
- 436. Biological Chemistry I. Cr. 3
- 437. Biological Chemistry II. Cr. 3
- 438. Physical Chemistry III. Cr. 3
- 439. Quantitative Analysis III. Cr. 3
- 441, 442. Physical Chemistry I-II. Cr. 4 each

#### FOR GRADUATES

- 511, 512. Graduate Seminar. Cr. 1 each  
May be repeated for credit.
- 517. Selected Topics in Analytical Chemistry. Cr. 1  
May be repeated for credit.
- 5301. Advanced Inorganic Chemistry I. Cr. 3
- 5302. Advanced Inorganic Chemistry II. Cr. 3
- 5303. Nuclear Chemistry. Cr. 3
- 5304. Selected Topics in Inorganic Chemistry. Cr. 3
- 5315. Spectrographic Analysis I, Emission Spectra. Cr. 3
- 5316. Spectrographic Analysis II, Absorption Spectra. Cr. 3

- 5321. Advanced Organic Chemistry I. Cr. 3
- 5322. Advanced Organic Chemistry II. Cr. 3
- 5325. Selected Topics in Organic Chemistry. Cr. 3
- 5327. Physical Organic Chemistry. Cr. 3
- 5328. Mechanisms of Organic Chemistry. Cr. 3
- 5334. Selected Topics in Biological Chemistry. Cr. 3
- 5335. Physical Biochemistry. Cr. 3
- 5342. Advanced Physical Chemistry. Cr. 3
- 5343. Colloidal Chemistry. Cr. 3
- 5344. Kinetics of Chemical Reactions. Cr. 3
- 5346. Electrochemistry. Cr. 3
- 5347. Advanced Thermodynamics. Cr. 3
- 5348. Selected Topics in Physical Chemistry. Cr. 3
- 631-632. Master's Thesis. Cr. 6
- 731, 732. Research. Cr. 3 each  
At the discretion of the Department, may be required of students working on the Doctor's dissertation.
- 831-832. Doctor's Dissertation. Cr. 6  
Required as the final registration for the dissertation.

## CHEMICAL ENGINEERING

Dean John R. Bradford  
Acting Head of the Department

#### MAJORS AND MINORS FOR THE MASTER'S DEGREE

(All degree programs are to be cleared through the Committee on Graduate Study in the School of Engineering.)

A thesis or a report is normally required for the Master's Degree.

#### FOR UNDERGRADUATES AND GRADUATES

- 425, 426. Unit Operations Laboratory. Cr. 2 each
- 430. Chemical Engineering Plant Design. Cr. 3
- 431. Unit Processes. Cr. 3
- 432. Process Development. Cr. 3

- 433, 434. Chemical Engineering Thermodynamics. Cr. 3 each
- 435. Instrumentation. Cr. 3
- 437. Principles of Chemical Engineering III. Cr. 3
- 439. Nuclear Engineering. Cr. 3

## FOR GRADUATES

531. Advanced Chemical Engineering Thermodynamics. Cr. 3  
 532. Chemical Engineering Design. Cr. 3  
 533. Organic Unit Processes. Cr. 3  
 534. Absorption and Extraction. Cr. 3  
 535. Heat Transfer. Cr. 3  
 536. Distillation. Cr. 3  
 5383, 5384. Nuclear Reactor Laboratory. Cr. 3 each  
 Formerly 5293-5294.
- 5391, 5392. Nuclear Chemical Engineering. Cr. 3 each  
 5393, 5394. Principles of Nuclear Reactor Engineering. Cr. 3 each  
 5395, 5396. Reactor Shielding. Cr. 3 each  
 5397, 5398. Nuclear Radiations Laboratory. Cr. 3 each  
 630. Master's Report. Cr. 3  
 631-632. Master's Thesis. Cr. 6

## CIVIL ENGINEERING

Professor J. H. Murdough  
 Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

(All degree programs are to be cleared through the Committee on Graduate Study in the School of Engineering.)

Master's Degree work is offered under both the thesis and the non-thesis plans.

## FOR UNDERGRADUATES AND GRADUATES

423. Traffic Engineering. Cr. 2  
 424. Materials. Cr. 2  
 425. Materials. Cr. 2  
 431. Reinforced Concrete. Cr. 3  
 432. Reinforced Concrete. Cr. 3  
 433. Structures. Cr. 3  
 434. Structures. Cr. 3  
 437. Water Supply and Treatment. Cr. 3  
 438. Sewerage and Sewage Treatment. Cr. 3  
 439. Law and Ethics in Engineering. Cr. 3  
 4312. Soil Mechanics and Foundations. Cr. 3  
 4313. Sanitary Engineering Design — Water. Cr. 3  
 4314. Sanitary Engineering Design — Sewage. Cr. 3  
 4315. Hydrology. Cr. 3  
 4316. Elements of Hydraulic Engineering. Cr. 3

4317. Cost Estimating. Cr. 3

## FOR GRADUATES

511. Advanced Soil Mechanics Laboratory. Cr. 1  
 531. Advanced Strength of Materials. Cr. 3  
 532. Theory of Elasticity. Cr. 3  
 533. Theory of Ultimate Strength Design. Cr. 3  
 534. Advanced Structural Analysis. Cr. 3  
 535. Dams and Reservoirs. Cr. 3  
 536. Open Channel Hydraulics. Cr. 3  
 538. Advanced Water and Waste Treatment. Cr. 3  
 539. Flow in Porous Media. Cr. 3  
 5312. Applied Soil Mechanics. Cr. 3  
 5313, 5314. Advanced Work in Special Fields. Cr. 3 each  
 630. Master's Report. Cr. 3  
 631-632. Master's Thesis. Cr. 6

## CLOTHING AND TEXTILES

Professor Martha Gene Shelden  
 Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

(All degree programs are to be cleared through the Committee on Graduate Study in the School of Home Economics.)

Master's Degree work is offered under both the thesis and the non-thesis plans.

## FOR UNDERGRADUATES AND GRADUATES

411. Special Problems. Cr. 1  
 May be repeated for a maximum of 3 hrs. credit.
431. Advanced Textiles. Cr. 3  
 432. Dress Design and Draping. Cr. 3  
 433. History and Philosophy of Dress. Cr. 3

436. Pattern Design. Cr. 3  
 437. Demonstration Clothing. Cr. 3

## FOR GRADUATES

- 512 to 517. Advanced Clothing Units. -  
 Cr. 1 each  
 512. Shortcuts and Application of  
 the Bishop Method.  
 513. Dressmaker Tailoring.  
 514. Classroom Application of  
 New Techniques.  
 515. New Fibers, Fabrics, and  
 Finishes.  
 516. Construction, Use, and Care  
 of Fabrics.  
 517. Teacher Aids.

518. Seminar. Cr. 1  
 531. Special Problems in Clothing and  
 Textiles. Cr. 3  
 534. Custom Tailoring. Cr. 3  
 Formerly 434.  
 535. Home Furnishings. Cr. 3  
 Formerly 435.  
 535. Textile Trends and Resources  
 for Elementary Teachers. Cr. 3  
 Enrollment limited to graduate stu-  
 dents in Elementary Education.  
 630. Master's Report. Cr. 3  
 631-632. Master's Thesis. Cr. 6

## DAIRY INDUSTRY

Professor J. J. Willingham  
 Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

(All degree programs are to be cleared through the Committee on  
 Graduate Study in the School of Agriculture.)

A thesis is required for the Master's Degree.

## FOR UNDERGRADUATES AND GRADUATES

411. Dairy Seminar. Cr. 1  
 May be repeated for credit.  
 412. Starters and Cultured Milk. Cr. 1  
 422. Condensed and Powdered Milk.  
 Cr. 2  
 432. Dairy Industry Problems. Cr. 3  
 433. Ice Cream Making. Cr. 3  
 435. Dairy and Food Inspection. Cr. 3

437. Creamery Management and  
 Merchandising. Cr. 3  
 451. Butter and Cheese Making. Cr. 5

## FOR GRADUATES

531. Dairy Industry Research. Cr. 3  
 May be repeated once for credit.  
 535. Dairy Bacteriology Research. Cr. 3  
 May be repeated once for credit.  
 631-632. Master's Thesis. Cr. 6

## ECONOMICS

Professor R. L. Rouse  
 Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

(All degree programs are to be cleared through the Committee on  
 Graduate Study in the School of Business Administration.)

A thesis is required for the Master's Degree.

## FOR UNDERGRADUATES AND GRADUATES

430. Development of Economic Doc-  
 trines. Cr. 3  
 Formerly 436.  
 431. Contemporary Economic Doctrines.  
 Cr. 3  
 432. Foreign Market Surveys. Cr. 3  
 433. International Economic Relations.  
 Cr. 3

435. Transportation Economics. Cr. 3  
 437. Current Economic Problems. Cr. 3  
 4311. Advanced Economic Theory. Cr. 3  
 4312. Theories of Depressions. Cr. 3  
 4314. Consumer Economics. Cr. 3

## FOR GRADUATES

531. Economic Research. Cr. 3  
 532. Advanced Micro-Economic  
 Analysis. Cr. 3

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|---|--|
| 533. Advanced Macro-Economic Analysis. Cr. 3          | 535. Seminar in Economic Policy. Cr. 3                           |
| 534. Seminar in Contemporary Economic Problems. Cr. 3 | 5335. Human Geography. Cr. 3                                     |
| Not open to Economics majors.                         | Enrollment limited to graduate students in Elementary Education. |
|   | 631-632. Master's Thesis. Cr. 6                                  |

## EDUCATION AND PHILOSOPHY

Professor Morris S. Wallace

Head of the Department

### MAJORS AND MINORS FOR THE MASTER'S DEGREE AND MAJORS FOR THE DEGREE OF DOCTOR OF EDUCATION

The program leading to certification as a counselor in the public schools is a joint enterprise of the Departments of Education and Psychology. Students interested in this program are invited to write to the head of either of these departments for details.

### EDUCATION

**PREREQUISITES:** In addition to the general prerequisites implied by a student's classification (junior, senior, or graduate), the following prerequisites in education are required for enrollment in courses in this department: 9 to 12 hours for a 400 course; 18 or more hours for a 500 course. Some of the courses have additional special prerequisites. Students should consult the departmental advisers.

Master's Degree work is offered under both the thesis and the non-thesis plans.

- |   |  |
|---|--|
| FOR UNDERGRADUATES AND GRADUATES  |  |
| 430. History and Philosophy of Education. Cr. 3                               | 5312. Supervision in the Elementary School. Cr. 3                      |
| 4315. Audio-Visual Education. Cr. 3   | 5313. Supervision in the Secondary School. Cr. 3                       |
| Service Fee: \$3.   | 5315. Introduction to Continuing Education. Cr. 3                      |
| 4325. Children's Literature. Cr. 3  | 5316. The Junior College. Cr. 3  |
| 4331. Foundations of Educational Sociology. Cr. 3                             | 5317. The Junior High School. Cr. 3                                    |
| 4338. Foundations of Special Education. Cr. 3                                 | 5318. Selection and Evaluation of Audio-Visual Materials. Cr. 3        |
| 5139. Advanced Education Workshops in Teaching and Administration. Cr. 1 to 6 | 5319. Audio-Visual Production. Cr. 3                                   |
| 530. Advanced Educational Psychology. Cr. 3                                   | 5321. Individual Study in Education. Cr. 3                             |
| 532. Philosophy of Education. Cr. 3   | May be repeated once for credit  |
| 533. Public School Administration. Cr. 3                                      | 5322. Foundations of Educational Research. Cr. 3                       |
| 534. Advanced Educational Sociology. Cr. 3                                    | 5323. Advanced Educational Statistics. Cr. 3                           |
| 535. Federal, State, County, and Local Educational Administration. Cr. 3      | 5325. Legal Bases of Education. Cr. 3                                  |
| 536. Elementary School Administration. Cr. 3                                  | 5329. Organization and Program Planning in Continuing Education. Cr. 3 |
| 537. Secondary School Administration. Cr. 3                                   | 5331. Human Development in Education. Cr. 3                            |
| 538. Administration of Audio-Visual Services. Cr. 3                           | 5332. Group Processes in Education. Cr. 3                              |
| 539. Administration of School Business Services. Cr. 3                        | 5334. Teaching Reading in the Secondary School. Cr. 3                  |
|   | 5341. Developing Arithmetic Programs in Elementary Education. Cr. 3    |

5342. Developing Reading Programs in Elementary Education. Cr. 3
5343. Developing Natural and Physical Environment Concepts in Elementary Education. Cr. 3
5344. Developing Language Arts Programs in Elementary Education. Cr. 3
5345. Developing Social Studies Programs in Elementary Education. Cr. 3
5346. Fundamentals of Curriculum Development. Cr. 3
5347. Developing Curriculum and Instructional Materials in the Elementary School. Cr. 3
5348. Developing Curriculum and Instructional Materials in the Secondary School. Cr. 3
5349. Organizing and Administering the Instructional Improvement Program. Cr. 3
5351. General Education Seminar. Cr. 3
5352. Seminar in History and Philosophy of Education. Cr. 3
5353. Comparative Education. Cr. 3
5354. Seminar in Educational Sociology. Cr. 3
5355. Seminar in Elementary Education. Cr. 3
5356. Seminar in Secondary Education. Cr. 3
5357. The Administration of the Junior College. Cr. 3
5359. Seminar in Supervision. Cr. 3
5362. Seminar in Continuing Education. Cr. 3
5363. Problems in Audio-Visual Education. Cr. 3
5364. Seminar in Educational Psychology. Cr. 3
5366. The Administration of School Staff Personnel. Cr. 3
5367. School Finance. Cr. 3
5369. School Public Relations. Cr. 3
5371. Supervision. Cr. 3
5372. Developing the School Guidance Program. Cr. 3
5373. Evaluation. Cr. 3
- 631-632. Master's Thesis. Cr. 6
661. Internship in Educational Administration. Cr. 6
662. Internship in Educational Administration. Cr. 6
- 731, 732. Research. Cr. 3 each  
At the discretion of the Department, may be required of students working on the Doctor's dissertation.
- 831-832. Doctor's Dissertation. Cr. 6  
Required as the final registration for the dissertation.

### PHILOSOPHY

- FOR UNDERGRADUATES AND GRADUATES
332. History of Philosophy. Cr. 3
333. Development of American Philosophy. Cr. 3
335. Oriental Philosophies. Cr. 3
337. Logic. Cr. 3
431. Aesthetics. Cr. 3
432. Philosophy of Value. Cr. 3
436. Philosophy of Religion. Cr. 3
438. Seminar in Philosophical Problems. Cr. 3
- FOR GRADUATES
5335. Structure and Dynamics of Philosophical Thought. Cr. 3

### ELECTRICAL ENGINEERING

Professor H. A. Spuhler  
Head of the Department

#### MAJORS AND MINORS FOR THE MASTER'S DEGREE

(All degree programs are to be cleared through the Committee on Graduate Study in the School of Engineering.)

A thesis is required for the Master's Degree.

- FOR UNDERGRADUATES AND GRADUATES
313. Transients Laboratory. Cr. 1
316. Electric Energy Conversion Laboratory. Cr. 1
317. Electronics Laboratory. Cr. 1
321. Static Electric and Magnetic Fields. Cr. 2
333. Transients in Linear Systems. Cr. 3
334. Transmission Lines. Cr. 3  
Formerly 4323.
337. Electronics. Cr. 3
- 4115, 4116. Vacuum Tube Circuits Laboratory. Cr. 1 each

- 4121, 4122. Control System Instrumentation Laboratory. Cr. 1 each  
 4124. Electrical Transmission Lines Laboratory. Cr. 1  
 4213. Electric Energy Conversion Laboratory. Cr. 2  
 4221, 4222. Control System Instrumentation. Cr. 2 each  
 4224. Electromagnetic Waves. Cr. 2  
 4313. Electric Energy Conversion. Cr. 1  
 4315, 4316. Vacuum Tube Circuits and Systems. Cr. 3 each
- FOR GRADUATES
531. Pulse and Timing Circuits. Cr. 3  
 532. Advanced Amplifier Theory. Cr. 3  
 533. Symmetrical Components. Cr. 3  
 535. Electric Power Systems. Cr. 3  
 536, 537. Advanced Network Theory. Cr. 3 each  
 538, 539. Advanced Electrical Machine Theory. Cr. 3 each  
 5211, 5212. Special Problems in Electrical Engineering. Cr. 2 each  
 5311, 5312. Automatic Control Systems. Cr. 3 each  
 5313. Active Network Analysis. Cr. 3  
 5314. Transistor Electronics. Cr. 3  
 5315, 5316. Advanced Electromagnetic Theory. Cr. 3 each  
 5317. Advanced Transients. Cr. 3  
 630. Master's Report. Cr. 3  
 631-632. Master's Thesis. Cr. 6

## ENGLISH

Professor Truman W. Camp  
 Head of the Department

### MAJORS AND MINORS FOR THE MASTER'S DEGREE AND THE DOCTOR'S DEGREE

Students seeking the Master's Degree in English should consult the head of the department about their program before enrolling for any courses.

Although Master's Degree work is offered under both the thesis and the non-thesis plans, students contemplating doctoral study or college teaching are required to submit a thesis for the Master's Degree.

Before being recommended for admission to candidacy for the Master's Degree in this department, every applicant must pass a reading examination in a foreign language acceptable to the department. This examination will be given by the Department of Foreign Languages.

Upon completing his work for the Master's Degree or at the beginning of his second full year of graduate work, the student who plans to work toward the doctorate in English will be given a preliminary comprehensive examination in English literature and American literature, to determine his degree of proficiency in these subjects.

An applicant for the doctorate in English must complete at least one graduate course in each of these nine fields: Old English, Middle English, the Renaissance, Shakespeare, the Seventeenth Century, the Eighteenth Century, Romanticism, the Nineteenth Century, and American Literature. He will select one field (or two or more closely related fields) as his area of concentration in which he will take additional courses and write his dissertation. For a minor subject (at least 18 semester hours of graduate work), the department recommends work in history or foreign languages. All applicants for the doctorate in English should take English 511, preferably near the beginning of their graduate program.

- FOR UNDERGRADUATES AND GRADUATES
430. Myth and Romance. Cr. 3  
 432. Shakespeare. Cr. 3  
 434. Milton and His Age. Cr. 3  
 435. English Romanticism. Cr. 3  
 436. The Later Romantic Poets. Cr. 3  
 437. Advanced Grammar. Cr. 3  
 438. History of the English Language. Cr. 3  
 439. American English. Cr. 3  
 4311. The Neo-Classical Age. Cr. 3  
 4312. Age of Johnson. Cr. 3  
 4314. Literature of the English Renaissance. Cr. 3  
 4319. Victorian Literature. Cr. 3  
 (Not to be taken by students who have credit for English 337.)  
 4323. American Literature and Its Backgrounds. Cr. 3  
 4324. American Literature and Its Backgrounds. Cr. 3  
 4325. The American Novel to 1900. Cr. 3



4326. The American Novel After 1900. Cr. 3  
 4327. The English Novel from Lyly to Scott. Cr. 3  
 4328. English and Foreign Fiction from 1825 to 1910. Cr. 3  
 4329. Modern British and American Poetry. Cr. 3  
 4336. The Teaching of English in the Secondary Schools. Cr. 3  
 4337. English Literary History: A Synthesis. Cr. 3  
 4351. Appreciation of the Literature of Western Civilization. Cr. 3

## FOR GRADUATES

511. Seminar in Literary Research. Cr. 1  
 512. The Teaching of College English. Cr. 1  
 530. The Age of Chaucer. Cr. 3  
     May be repeated once for credit.  
 533. Studies in Renaissance Literature. Cr. 3  
     May be repeated once for credit.  
 534. Old English. Cr. 3  
 535. Studies in Nineteenth Century English Literature. Cr. 3  
     May be repeated once for credit.  
 536. Studies in American Literature to 1865. Cr. 3  
     May be repeated once for credit.  
 537. Studies in American Literature After 1865. Cr. 3  
     May be repeated once for credit.  
 538. Studies in the English Romantic Poets. Cr. 3  
     May be repeated once for credit.  
 539. Studies in Eighteenth-Century Literature. Cr. 3  
     May be repeated once for credit.  
 5311. Studies in English Literature of the Seventeenth Century. Cr. 3  
     May be repeated once for credit.  
 5312. English Drama Through 1642. Cr. 3  
     Formerly 4331 and 4332.  
     May be repeated once for credit.  
 5313. Philosophical Ideas in Literature. Cr. 3  
     Formerly 4333.  
     May be repeated once for credit.  
 5314. History of Literary Criticism. Cr. 3  
     Formerly 4334.  
     May be repeated once for credit.  
 5319. Studies in Shakespeare. Cr. 3  
     May be repeated once for credit.  
 5321. Individual Study. Cr. 3  
     May be repeated once for credit.  
 5322. Studies in the Literature of the Southwest. Cr. 3  
 5335. Principles of Language. Cr. 3  
 631-632. Master's Thesis. Cr. 6  
 731, 732. Research. Cr. 3 each  
     At the discretion of the Department, may be required of students working on the Doctor's dissertation.  
 831-832. Doctor's Dissertation. Cr. 6  
     Required as the final registration for the dissertation.

## FINANCE

Professor R. L. Rouse  
 Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

(All degree programs are to be cleared through the Committee on Graduate Study in the School of Business Administration.)

A thesis is required for the Master's Degree.

## FOR UNDERGRADUATES AND GRADUATES

431. The Federal Reserve System. Cr. 3  
 432. Real Estate. Cr. 3  
 433. Corporate Financial Problems and Cases. Cr. 3  
 434. Investments. Cr. 3  
 435. Property Insurance. Cr. 3  
 437. Casualty Insurance. Cr. 3

438. Bank Administration. Cr. 3  
 439. Real Estate Appraisal. Cr. 3

## FOR GRADUATES

531. Current Financial Problems. Cr. 3  
 534. Seminar. Cr. 3  
     Not open to Finance majors.  
 631-632. Master's Thesis. Cr. 6

## BUSINESS LAW

## FOR UNDERGRADUATES AND GRADUATES

4311. CPA Law Review. Cr. 3

## FOOD AND NUTRITION

Professor Mina W. Lamb  
Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

(All degree programs are to be cleared through the Committee on  
Graduate Study in the School of Home Economics.)

A thesis is required for the Master's Degree.

- |  |  |
|--|--|
| FOR UNDERGRADUATES AND GRADUATES   | 531. Problems in Food and Nutrition.<br>Cr. 3<br>May be repeated once for credit.  |
| 411. Nutrition and the School Lunch.<br>Cr. 1<br>May be repeated, but not for degree credit. | 533. Readings in Nutrition. Cr. 3<br>May be repeated once for credit.  |
| 431. Nutrition in Disease. Cr. 3   | 5335. Principles and Applications of<br>Nutrition for Elementary<br>Teachers. Cr. 3<br>Enrollment limited to graduate stu-<br>dents in Elementary Education. |
| 432. Advanced Human Nutrition. Cr. 3   | 630. Master's Report. Cr. 3  |
| 434. Food Service for Special<br>Occasions. Cr. 3  | 631-632. Master's Thesis. Cr. 6  |
| 435. Food Demonstration. Cr. 3   |  |
| 436. Experimental Cookery. Cr. 3   |  |
| 439. Food Economics. Cr. 3   |  |

## FOR GRADUATES

515. Special Aspects of Foods. Cr. 1  
May be repeated once for credit.

## FOREIGN LANGUAGES

Professor John C. Dowling  
Head of the Department

## MINORS ONLY FOR THE DOCTOR'S DEGREE

PREREQUISITES: In addition to the general prerequisites implied by a student's classification (senior or graduate), the following prerequisites are required for enrollment in courses in this department: for a 400 course, the course numbered 331-332 (or its equivalent) in the particular language; for a 500 course, graduate standing in the particular language.

## FRENCH

## MINORS ONLY FOR THE MASTER'S DEGREE

- |   |  |
|---|--|
| FOR UNDERGRADUATES AND GRADUATES                        | 435. Studies in French Language and<br>Literature. Cr. 3<br>May be repeated once for credit. |
| 431. The Modern Drama. Cr. 3                            | 436. Studies in French Language and<br>Literature. Cr. 3<br>May be repeated once for credit. |
| 432. The Modern Drama. Cr. 3                            |  |
| 433. The Literature of the Nineteenth<br>Century. Cr. 3 |  |
| 434. The Literature of the Nineteenth<br>Century. Cr. 3 |  |

## GERMAN

## MINORS ONLY FOR THE MASTER'S DEGREE

- |  |  |
|--|--|
| FOR UNDERGRADUATES AND GRADUATES   | 436. Studies in German Language<br>and Literature. Cr. 3<br>May be repeated once for credit. |
| 435. Studies in German Language<br>and Literature. Cr. 3<br>May be repeated once for credit. |  |

## SPANISH

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

Master's Degree work is offered under both the thesis and the non-thesis plans.

## FOR UNDERGRADUATES AND GRADUATES

- 431. Nineteenth Century Prose. Cr. 3
- 432. Nineteenth Century Prose. Cr. 3
- 433. Modern Drama and Poetry. Cr. 3
- 434. Modern Drama and Poetry. Cr. 3
- 436. Advanced Composition and Conversation. Cr. 3
- 437. Advanced Grammar and Composition. Cr. 3
- 4312. The Prose of the Golden Age. Cr. 3
- 4313. The Prose of the Golden Age. Cr. 3
- 4314. The Drama of the Golden Age. Cr. 3
- 4315. The Drama of the Golden Age. Cr. 3
- 4316. A Survey of Spanish Literature. Cr. 3
- 4317. A Survey of Spanish Literature. Cr. 3
- 4318. Readings in Contemporary Spanish Literature. Cr. 3
- 4319. Readings in Contemporary Spanish Literature. Cr. 3

- 4324. Readings in Spanish American Literature and Civilization. Cr. 3
- 4325. Readings in Spanish American Literature and Civilization. Cr. 3
- 4326. Survey of Spanish American Literature. Cr. 3
- 4327. Survey of Spanish American Literature. Cr. 3
- 4328-4329. Spanish Civilization. Cr. 6  
Offered in alternate summers in Mexico City.

## FOR GRADUATES

- 5312. Studies in Spanish and Spanish American Literature. Cr. 3  
May be repeated for credit.
- 5313. Studies in Spanish and Spanish American Literature. Cr. 3  
May be repeated for credit.
- 5335. Spanish in the Elementary School. Cr. 3
- 631-632. Master's Thesis. Cr. 6

## METHODS

## FOR UNDERGRADUATES AND GRADUATES

- 4311. Teachers' Course in Methods of Teaching Foreign Languages. Cr. 3  
Required of students planning to teach a foreign language.

## FOR GRADUATES

- 5311. Laboratory Techniques in Foreign Language Teaching. Cr. 3

## GEOLOGY

Professor F. A. Wade  
Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

Before being recommended for admission to candidacy for the Master's Degree with a major in this department, the student must take a qualifying examination covering the usual undergraduate program for a Bachelor's Degree in Geology. If this examination reveals serious weaknesses in necessary areas, the student may be required to register for or to repeat such courses as may be designated by the major professor.

A thesis is required for the Master's Degree.

## FOR UNDERGRADUATES AND GRADUATES

- 431, 432. Optical Mineralogy and Petrography. Cr. 3 each
- 433. Petroleum Geology. Cr. 3
- 434. Petroleum Geology. Cr. 3
- 435. Stratigraphic Paleontology. Cr. 3
- 436. Micropaleontology. Cr. 3

- 437. Sedimentation. Cr. 3
- 438. Sedimentation. Cr. 3
- 4314. Principles of Stratigraphy. Cr. 3
- 4315. Paleozoic, Mesozoic, and Cenezoic Stratigraphy. Cr. 3
- 4316. Aerial Photo Interpretation. Cr. 3

## FOR GRADUATES

511. Graduate Seminar. Cr. 1  
Required of all graduate students  
majoring in this Department.
521. Clay Mineralogy. Cr. 2
- 531, 532. Advanced Physical and Historical Geology. Cr. 3 each  
A field trip is required each semester.
533. Petrology of Igneous Rocks. Cr. 3
534. Petrology of Metamorphic Rocks. Cr. 3
- 535, 536. Advanced Work in Specific Fields. Cr. 3 each
538. Geology of the Southwest. Cr. 3
5311. Stratigraphic Micropaleontology. Cr. 3
5312. Economic Geology. Cr. 3  
Formerly 4311 and 4312.
5314. Earthquake Seismology. Cr. 3
5315. Geochemistry I. Cr. 3
5316. Geochemistry II. Cr. 3
5317. Geophysical Methods: Gravity and Magnetic. Cr. 3  
Formerly 4317.
5318. Geophysical Methods: Seismic and Electrical. Cr. 3  
Formerly 4318.
5324. Advanced Sedimentation. Cr. 3
5327. Advanced Paleontology. Cr. 3
5328. Advanced Structural Geology. Cr. 3
541. X-Ray Diffraction and Analysis. Cr. 4
542. X-Ray Crystallography. Cr. 4
563. Advanced Field Geology. Cr. 6
- 631-632. Master's Thesis. Cr. 6

## GOVERNMENT

Professor J. William Davis  
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE  
AND MINORS FOR THE DOCTOR'S DEGREE

A thesis is required for the Master's Degree.

## FOR UNDERGRADUATES AND GRADUATES

331. Local Government. Cr. 3
332. European Political Ideas. Cr. 3
333. American Political Ideas. Cr. 3
334. Political Parties. Cr. 3
335. International Politics. Cr. 3
336. United States Foreign Policy. Cr. 3
337. Public Administration, Organization. Cr. 3
338. Personnel and Fiscal Administration. Cr. 3
339. Legislation. Cr. 3
3311. State Government. Cr. 3
3312. British Government. Cr. 3
3313. Russian Government. Cr. 3
3315. Government and Business. Cr. 3
3316. Government and Labor. Cr. 3
3317. Mexican and Caribbean Governments. Cr. 3
3318. South American Governments. Cr. 3
3319. Jurisprudence. Cr. 3
431. American Constitutional Law — Powers. Cr. 3
432. American Constitutional Law — Limitations. Cr. 3
433. Modern Political Ideas. Cr. 3
434. The Theory of Public Administration. Cr. 3
435. International Organization. Cr. 3
436. International Law. Cr. 3
437. Political Geography. Cr. 3
438. Local Administration. Cr. 3
439. Administrative Law. Cr. 3
4371. Teaching Social Science in the High School. Cr. 3

## FOR GRADUATES

531. Reading and Research. Cr. 3  
May be repeated for credit.
532. Seminar in American Government and Politics. Cr. 3
533. Seminar in Political Theory. Cr. 3
534. Seminar in Public Administration. Cr. 3
535. Seminar in Public Law. Cr. 3
536. Seminar in International Relations. Cr. 3
537. Seminar in Comparative Government and Institutions. Cr. 3
5335. Political Ideologies and Institutions. Cr. 3
- 631-632. Master's Thesis. Cr. 6

## HEALTH, PHYSICAL EDUCATION AND RECREATION FOR MEN

Professor R. W. Kireilis  
Head of the Department

### MAJORS AND MINORS FOR THE MASTER'S DEGREE

Unless otherwise specified, all courses are open to both men and women.  
Master's Degree work is offered under both the thesis and the non-thesis plans.

#### FOR UNDERGRADUATES AND GRADUATES

- 431. Kinesiology. Cr. 3
- 432. Physiology of Exercise. Cr. 3
- 436. Physical Examinations and Corrective Physical Education. Cr. 3
- 437. Measurements in Physical Education. Cr. 3
- 438. Curriculum Development in Physical Education. Cr. 3
- 439. Organization and Administration of Recreational Programs. Cr. 3
- 4321. Methods and Techniques of Driver Instruction. Cr. 3
- 4323. Organization and Administration of Camps. Cr. 3
- 4326. Safety Education. Cr. 3

#### FOR GRADUATES

- 531. Administration of Physical Education. Cr. 3
- 532. Supervision of Physical Education. Cr. 3
- 533. Facilities for Physical Education. Cr. 3
- 534. Administration of the School Health Program. Cr. 3
- 5322. Organization and Administration of Interscholastic and Intercollegiate Athletic Programs. Cr. 3  
Formerly 4322.
- 5324. Organization and Administration of Intramural Sports. Cr. 3  
Formerly 4324.
- 631-632. Master's Thesis. Cr. 6

## HEALTH, PHYSICAL EDUCATION AND RECREATION FOR WOMEN

Professor Mary B. Dabney  
Head of the Department

### MAJORS AND MINORS FOR THE MASTER'S DEGREE

Unless otherwise specified, all courses are open to both men and women.  
Master's Degree work is offered under both the thesis and the non-thesis plans.

#### FOR UNDERGRADUATES AND GRADUATES

- 431. Kinesiology. Cr. 3
- 432. Physiology of Exercise. Cr. 3
- 436. Physical Examinations and Corrective Physical Education. Cr. 3
- 437. Measurements in Physical Education. Cr. 3
- 438. Curriculum Development in Physical Education. Cr. 3
- 439. Organization and Administration of Recreation Programs. Cr. 3
- 4311. Physical Education for the Junior and Senior High School. Cr. 3
- 4321. Methods and Techniques of Driver Instruction. Cr. 3

- 4323. Organization and Administration of Camps. Cr. 3
- 4326. Safety Education. Cr. 3

#### FOR GRADUATES

- 531. Administration of Physical Education. Cr. 3
- 532. Supervision of Physical Education. Cr. 3
- 533. Facilities for Physical Education. Cr. 3
- 534. Administration of the School Health Program. Cr. 3
- 631-632. Master's Thesis. Cr. 6

## HISTORY AND ANTHROPOLOGY

Professor D. M. Vigness  
Acting Head of the Department

## HISTORY

MAJORS AND MINORS FOR THE MASTER'S DEGREE  
AND THE DOCTOR'S DEGREE

**PREREQUISITES:** In addition to the general prerequisites implied by the student's classification (senior or graduate), the following prerequisites are normally required for enrollment in courses in this department: for courses numbered from 430 through 4322, 6 hours in history; for courses numbered from 4346 through 4371, 12 hours; for courses numbered 531 through 5368, 18 hours.

In History, students contemplating doctoral study or college teaching are ordinarily required to submit a thesis for the Master's Degree. On the advice of the department, other students may be permitted to follow the non-thesis plan for the Master's Degree.

## FOR UNDERGRADUATES AND GRADUATES

- 430. English Colonial America. Cr. 3
- 432. Constitutional History of the United States to 1865. Cr. 3
- 433. Constitutional History of the United States Since 1865. Cr. 3
- 436. Social and Cultural History of the United States to 1865. Cr. 3
- 437. Social and Cultural History of the United States Since 1865. Cr. 3
- 438. Texas Prior to Statehood. Cr. 3  
Formerly 4341.
- 439. Texas Since Annexation. Cr. 3  
Formerly 4343.
- 4311. The Old South. Cr. 3
- 4312. The South Since the Civil War. Cr. 3
- 4321. Colonial South America. Cr. 3  
Formerly 3331.
- 4322. South America Since Independence. Cr. 3  
Formerly 3332.
- 4346. Twentieth Century Britain. Cr. 3  
Formerly 4337.
- 4347. Constitutional History of England. Cr. 3  
Formerly 4339.
- 4349. The British Empire. Cr. 3  
Formerly 4353.
- 4351. The Near East in Modern Times. Cr. 3  
Formerly 3316.
- 4354. The Far East. Cr. 3
- 4355. Africa. Cr. 3  
Formerly 4333.
- 4361. Classical Civilizations: Greece and Rome. Cr. 3  
Formerly 331.
- 4362. Medieval Civilizations. Cr. 3

- 4364. Europe, the Age of Absolutism and the Old Regime. Cr. 3
- 4366. Europe, 1815-1870. Cr. 3  
Formerly 4332.
- 4367. Europe, 1870-1918. Cr. 3  
Formerly 4335.
- 4371. Teaching Social Studies in the High School. Cr. 3

## FOR GRADUATES

- 531. Proseminar in Texas History. Cr. 3
- 5311. History of Science and Technology. Cr. 3  
Formerly 431.
- 5312. History of Theology in America. Cr. 3  
Formerly 4365.
- 5315. Problems in American History. Cr. 3.  
May be repeated once for credit.
- 537. The American Frontier, 1763-1803. Cr. 3  
Formerly 4327.
- 538. The Trans-Mississippi West, 1803 to the Present. Cr. 3  
Formerly 4328.
- 5323. Spanish North America. Cr. 3  
Formerly 4323.
- 5324. Mexico Since Independence. Cr. 3  
Formerly 4324.
- 5335. History Appreciation for Teachers. Cr. 3
- 5344. Tudor England. Cr. 3
- 5345. Stuart England. Cr. 3
- 5359. History of Russia. Cr. 3  
Formerly 4331.
- 5363. The Renaissance and the Reformation. Cr. 3

5365. The French Revolution and Napoleon. Cr. 3  
Formerly 4334.
5368. Europe Since 1918. Cr. 3  
Formerly 4336.
- 631-632. Master's Thesis. Cr. 6
633. Seminar in Southwestern History. Cr. 3  
May be repeated once for credit.  
Formerly 530.
634. Seminar in American History. Cr. 3  
May be repeated once for credit.  
Formerly 532.
635. Seminar in European History. Cr. 3  
May be repeated once for credit.  
Formerly 533.
636. Seminar in Latin American History. Cr. 3  
Formerly 536.
- 731, 732. Doctoral Research. Cr. 3 each  
At the discretion of the Department, may be required of students working on the Doctor's dissertation.
- 831-832. Doctoral Dissertation. Cr. 6  
Required as the final registration for the dissertation.

## ANTHROPOLOGY

## MINORS ONLY FOR THE MASTER'S DEGREE

## FOR UNDERGRADUATES AND GRADUATES

430. Cultures and Peoples of the Southwest. Cr. 3  
Formerly 330.
432. Primitive Religions. Cr. 3
438. Culture and Personality. Cr. 3  
Formerly 338.
439. Peoples and Cultures of Oceania. Cr. 3  
Formerly 339.
4311. Anthropological Linguistics. Cr. 3  
Formerly 331.
4312. The Plains Indians. Cr. 3  
Formerly 333.
4313. Races, Peoples, and Languages of North America. Cr. 3  
Formerly 334.

4314. Pre-Spanish Cultures of Mexico. Cr. 3  
Formerly 335.

## FOR GRADUATES

531. Seminar in Anthropology. Cr. 3
- 533-534. Southwestern Archaeology: A Field Course. Cr. 6  
Formerly 433-434.
- 536-537. Archaeology of Mexico: A Field Course. Cr. 6  
Formerly 336-337.
539. Field Archaeology. Cr. 3  
Formerly 431.
5335. Origins of Social Customs and Institutions. Cr. 3

## HOME AND FAMILY LIFE

Professor E. M. Knowles

Head of the Department

## MINORS ONLY FOR THE MASTER'S DEGREE

## CHILD DEVELOPMENT AND FAMILY RELATIONS

## FOR UNDERGRADUATES AND GRADUATES

431. Later Childhood. Cr. 3
432. Skills and Techniques in Working with the Preschool Child. Cr. 3
433. Family Relations. Cr. 3
435. Student Teaching in the Preschool. Cr. 3
436. Parent Education. Cr. 3

438. Exceptional Children in the Family. Cr. 3
439. The Aged in the Family. Cr. 3

## FOR GRADUATES

534. Adjustments of the Handicapped in the Family. Cr. 3
5336. Family Life Conference. Cr. 3

## HOME MANAGEMENT

- |   |  |
|---|--|
| FOR UNDERGRADUATES AND GRADUATES            | 435. Advanced Consumer Problems.<br>Cr. 3      |
| 411. Household Equipment Workshop.<br>Cr. 1 | 436. Advanced Housing for the<br>Family. Cr. 3 |
| 431. Housing the Family. Cr. 3              |  |
| 432. Home Management Residence. Cr. 3       |  |
| 434. Advanced Household Equipment.<br>Cr. 3 |  |

## HOME ECONOMICS EDUCATION

Professor Vivian Adams  
Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

(All degree programs are to be cleared through the Committee on  
Graduate Study in the School of Home Economics.)

Master's Degree work is offered under both the thesis and the non-thesis plans.

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|--|---|
| FOR UNDERGRADUATES AND GRADUATES   | 531. The Organization and Administra-<br>tion of Homemaking Education.<br>Cr. 3 |
| 426. Problems in Student Teaching.<br>Cr. 2  | 532. Curriculum Development in Home<br>Economics. Cr. 3                         |
| 433. Methods in Civil Defense for<br>Home and Community. Cr. 3                             | 533. Evaluation in Home Economics.<br>Cr. 3                                     |
| 435. Methods in Adult Leadership in<br>Home Economics. Cr. 3                               | 534. Techniques of Research in Home<br>Economics. Cr. 3                         |
| 461. Student Teaching in Home<br>Economics. Cr. 6  | 536. Problems. Cr. 3<br>May be repeated once for credit.                        |
| FOR GRADUATES  | 537. Techniques of Supervision in<br>Home Economics. Cr. 3                      |
| 513. Instructor Training in Home<br>Care of the Sick. Cr. 1                                | 630. Master's Report. Cr. 3   |
| 514. Specific Problems in Teaching<br>Home Economics. Cr. 1<br>May be repeated for credit. | 631-632. Master's Thesis. Cr. 6   |

## HORTICULTURE AND PARK MANAGEMENT

Professor E. J. Urbanovsky  
Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

(All degree programs are to be cleared through the Committee on  
Graduate Study in the School of Agriculture.)

In Horticulture, a thesis is required for the Master's Degree.

In Park Management, a thesis is usually required.

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|---|---|
| FOR UNDERGRADUATES AND GRADUATES                                    | 436. Advanced Floricultural Science.<br>Cr. 3                         |
| 422. Design and Operation of Parks and<br>Recreation Systems. Cr. 2 | 441. Landscape Design. Cr. 4  |
| 423. Design and Operation of Parks and<br>Recreation Systems. Cr. 2 | 442. Landscape Design. Cr. 4  |
| 425. Horticulture Problems. Cr. 2                                   | FOR GRADUATES   |
| 430. Horticulture Problems. Cr. 3                                   | 511. Horticulture Seminar. Cr. 1<br>May be repeated for credit.       |
| 431. Pomology. Cr. 3  | 531. Horticulture Research. Cr. 3<br>May be repeated once for credit. |
| 435. Vegetable Production. Cr. 3                                    | 631-632. Master's Thesis. Cr. 6                                       |



## ENTOMOLOGY

FOR UNDERGRADUATES AND GRADUATES

431. Agricultural Compounds. Cr. 3

## INDUSTRIAL ENGINEERING

Professor R. A. Dudek  
Head of the Department

MINORS ONLY FOR THE MASTER'S DEGREE

FOR UNDERGRADUATES AND GRADUATES

- |  |   |
|--|---|
| 421. Materials Handling. Cr. 2                         | 436. Engineering Economy. Cr. 3                       |
| 422. Special Problems in Industrial Engineering. Cr. 2 | 437. Industrial Statistics and Quality Control. Cr. 3 |
| 423. Industrial Procurement. Cr. 2                     | 438. Manufacturing Analysis. Cr. 3                    |
| 432. Industrial Plant Design. Cr. 3                    | 439. Analysis of Industrial Operations. Cr. 3         |

## JOURNALISM

Professor Wallace E. Garets  
Head of the Department

MINORS ONLY FOR THE MASTER'S DEGREE

FOR UNDERGRADUATES AND GRADUATES

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|--|--|
| 333. Newspaper Management, Promotion, and Circulation. Cr. 3 | 432. Journalism for the High School Teacher. Cr. 3     |
| 338, 339. Editing. Cr. 3 each                                | 433. Public Opinion and Propaganda. Cr. 3              |
| 411. Special Problems in Journalism. Cr. 1                   | 434. Editorial Writing. Cr. 3                          |
| May be repeated for credit.                                  | 435. Newspaper Advertising Problems and Methods. Cr. 3 |
| 430. Law of the Press. Cr. 3                                 |  |

## MANAGEMENT

Professor F. L. Mize  
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE

(All degree programs are to be cleared through the Committee on Graduate Study in the School of Business Administration.)

A thesis is required for the Master's Degree.

FOR UNDERGRADUATES AND GRADUATES

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|---|--|
| 421. Job Evaluation. Cr. 2                          | 452. Industrial Management Problems. Cr. 5 |
| 422. Administrative Policies and Procedures. Cr. 2  |  |
| 433. Labor Legislation. Cr. 3                       | FOR GRADUATES                              |
| 435. Employee Supervision. Cr. 3                    | 511. Individual Problems. Cr. 1            |
| 436. Problems in Office Management. Cr. 3           | May be repeated for credit.                |
| 437. Industrial Traffic Management. Cr. 3           | 524. Seminar in Management. Cr. 2          |
| 441. Management of Small Business Enterprise. Cr. 4 | 531. Current Problems in Management. Cr. 3 |
| 451. Advanced Personnel Management. Cr. 5           | 532. Research in Management. Cr. 3         |
|   | 534. Seminar in Management. Cr. 3          |
|   | Not open to Management majors.             |
|   | 631-632. Master's Thesis. Cr. 6            |

## MARKETING

Professor J. A. Ryan  
Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

(All degree programs are to be cleared through the Committee on  
Graduate Study in the School of Business Administration.)

A thesis is required for the Master's Degree.

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|--|---|
| FOR UNDERGRADUATES AND GRADUATES                             | 4315. Retail Buying. Cr. 3                        |
| 426. Index Numbers. Cr. 2                                    | 4317. Advertising Layout. Cr. 3                   |
| 431. Industrial Marketing. Cr. 3                             | 4318. Mechanical Production of Advertising. Cr. 3 |
| 433. Marketing Problems. Cr. 3                               | 4319. Advertising Internship. Cr. 3               |
| 434. Wholesaling. Cr. 3                                      |   |
| 435. Business Cycles and Forecasts. Cr. 3                    | FOR GRADUATES                                     |
| 436. Marketing Research and Analysis. Cr. 3                  | 531. Advanced Marketing Problems. Cr. 3           |
| 437. Advanced Business Statistics. Cr. 3                     | 532. Advanced Marketing Research. Cr. 3           |
| 438. Sales Promotion, Retail Advertising, and Display. Cr. 3 | 534. Seminar in Marketing. Cr. 3                  |
| 439. Sales Management. Cr. 3                                 | Not open to Marketing majors.                     |
| 4314. Advertising Copy. Cr. 3                                | 631-632. Master's Thesis. Cr. 6                   |

## MATHEMATICS

Professor Emmett A. Hazlewood  
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE  
AND MINORS ONLY FOR THE DOCTOR'S DEGREE

Master's Degree work is offered under both the thesis and the non-thesis plans.

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|---|---|
| FOR UNDERGRADUATES AND GRADUATES                                      | 4312. Numerical Mathematical Analysis. Cr. 3            |
| 331. Applications of Calculus. Cr. 3                                  | 4313. Probability. Cr. 3                                |
| 332. Differential Equations. Cr. 3                                    | 4314, 4315. Mathematical Statistics. Cr. 3 each         |
| 334. History of Mathematics. Cr. 3                                    | 4317. Actuarial Mathematics. Cr. 3                      |
| 335, 336. Higher Mathematics for Engineers and Scientists. Cr. 3 each | 4321. Elementary Modern Algebra. Cr. 3                  |
| 337. College Geometry. Cr. 3  | Formerly 333.   |
| 430. Synthetic Projective Geometry. Cr. 3                             | 4324. Matrix Theory and Applications. Cr. 3             |
| 431. The Teaching of Secondary Mathematics. Cr. 3                     | FOR GRADUATES   |
| 432. Advanced Differential Equations. Cr. 3                           | 531. Advanced Problems. Cr. 3                           |
| 433. Theory of Equations. Cr. 3                                       | May be repeated for credit.                             |
| 434, 435. Advanced Calculus. Cr. 3 each                               | 533. Advanced Topics in Analysis. Cr. 3                 |
| 436. Introduction to Finite Groups. Cr. 3                             | 535. Analytic Projective Geometry. Cr. 3                |
| 437. Theory of Numbers. Cr. 3   | 536, 537. Modern Algebra. Cr. 3 each                    |
| 438. Solid Analytic Geometry. Cr. 3                                   | 538. Foundations of Mathematics. Cr. 3                  |
| 439. Vector Analysis. Cr. 3   | 539. Tensor Analysis. Cr. 3                             |
| 4310. Introductory Point-Set Topology. Cr. 3                          | 5312, 5313. Functions of a Complex Variable. Cr. 3 each |
| 4311. Extended Analytic Geometry. Cr. 3                               |   |

5314, 5315. Functions of a Real Variable. Cr. 3 each

5321. Methods of Applied Mathematics. Cr. 3

631-632. Master's Thesis. Cr. 6

## MECHANICAL ENGINEERING

Professor L. J. Powers  
Head of the Department

### MAJORS AND MINORS FOR THE MASTER'S DEGREE

(All degree programs are to be cleared through the Committee on Graduate Study in the School of Engineering.)

Master's Degree work is offered under both the thesis and the non-thesis plans.

#### FOR UNDERGRADUATES AND GRADUATES

- 410. Special Problems Laboratory. Cr. 1
- 412. Physical Metallurgy Laboratory. Cr. 1
- 420. Special Problems. Cr. 2
- 422. Physical Metallurgy. Cr. 2
- 430. Mechanical Equipment Laboratory. Cr. 3
- 431. Mechanical Equipment Laboratory. Cr. 3
- 435. Fluid Dynamics. Cr. 3
- 4212, 4213. Thermodynamics. Cr. 2 each
- 4315. Heat and Mass Transfer. Cr. 3

#### FOR GRADUATES

- 531, 532. Statistical Thermodynamics. Cr. 3 each
- 533. Heat Transmission. Cr. 3
- 534. Gas Dynamics. Cr. 3
- 538. Machine Computations. Cr. 3
- 539. Physics of Metals. Cr. 3
- 5311. Experimental Stress Analysis. Cr. 3
- 5312. Mechanical Vibrations. Cr. 3
- 5313. Classical Dynamics. Cr. 3
- 630. Master's Report. Cr. 3
- 631-632. Master's Thesis. Cr. 6

## MUSIC

Professor G. L. Hemmle  
Head of the Department

### MAJORS AND MINORS FOR THE MASTER'S DEGREE

Master's Degree work is offered under both the thesis and the non-thesis plans.

**PREREQUISITES:** In order to determine whether he has the prerequisites for his proposed courses, the student should consult the Head of the Department in advance of registration.

#### APPLIED MUSIC

##### FOR UNDERGRADUATES AND GRADUATES

- Baritone 425, 426; 435, 436. Cr. 2 each; Cr. 3 each
- Bassoon 425, 426; 435, 436. Cr. 2 each; Cr. 3 each
- Clarinet 425, 426; 435, 436. Cr. 2 each; Cr. 3 each
- Coronet or Trumpet 425, 426; 435, 436. Cr. 2 each; Cr. 3 each
- Double Bass 425, 426; 435, 436. Cr. 2 each; Cr. 3 each
- Flute 425, 426; 435, 436. Cr. 2 each; Cr. 3 each
- French Horn 425, 426; 435, 436. Cr. 2 each; Cr. 3 each
- Oboe 425, 426; 435, 436. Cr. 2 each; Cr. 3 each

- Organ 425, 426; 435, 436; 445, 446. Cr. 2 each; Cr. 3 each; Cr. 4 each
- Piano 425, 426; 435, 436; 445, 446. Cr. 2 each; Cr. 3 each; Cr. 4 each
- Saxophone 425, 426; 435, 436. Cr. 2 each; Cr. 3 each
- Trombone 425, 426; 435, 436. Cr. 2 each; Cr. 3 each
- Viola 425, 426; 435, 436. Cr. 2 each; Cr. 3 each
- Violin 425, 426; 435, 436. Cr. 2 each; Cr. 3 each
- Violoncello 425, 426; 435, 436. Cr. 2 each; Cr. 3 each
- Voice 425, 426; 435, 436; 445, 446. Cr. 2 each; Cr. 3 each; Cr. 4 each

## MUSIC EDUCATION

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| FOR UNDERGRADUATES AND GRADUATES                 | 532. Choral Music Workshop. Cr. 3                                |
| 433. Piano Pedagogy. Cr. 3                       | 533. Instrumental Music Workshop. Cr. 3                          |
| 437. Voice Pedagogy. Cr. 3                       | 534. Marching Band Direction. Cr. 3                              |
| 4317. Choral Conducting. Cr. 3                   | 535. Music for Children. Cr. 3                                   |
| 4318. Instrumental Conducting. Cr. 3             | Enrollment limited to graduate students in Elementary Education. |
| FOR GRADUATES                                    | 631-632. Master's Thesis. Cr. 6                                  |
| 530, 531. Seminar in Music Education. Cr. 3 each |  |

## MUSIC LITERATURE

- |                                  |   |
|----------------------------------|---|
| FOR UNDERGRADUATES AND GRADUATES | 431, 432. History of Music. Cr. 3 each    |
| 330. Voice Repertoire. Cr. 3     | 4351. Music in the General Culture. Cr. 3 |
| 332. Piano Repertoire. Cr. 3     |   |

## THEORY

- |  |                                 |
|--|---------------------------------|
| FOR UNDERGRADUATES AND GRADUATES           | 427. Instrumentation. Cr. 2     |
| 322, 323. Form and Composition. Cr. 2 each | 428. Instrumentation. Cr. 2     |
| 333, 334. Form and Composition. Cr. 3 each | 4312. Pedagogy of Theory. Cr. 3 |

## PETROLEUM ENGINEERING

Professor W. L. Ducker  
Head of the Department

## MINORS ONLY FOR THE MASTER'S DEGREE

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|--|---|
| FOR UNDERGRADUATES AND GRADUATES                   | 430. Special Natural Gas and Production Problems. Cr. 3 |
| 413. Natural Gas Laboratory. Cr. 1                 | 433. Reservoir Engineering. Cr. 3                       |
| 414. Production Laboratory. Cr. 1                  | 434. Natural Gas Engineering. Cr. 3                     |
| 416. Reservoir Engineering Laboratory. Cr. 1       | 435. Advanced Natural Gas Engineering. Cr. 3            |
| 420. Special Petroleum Engineering Problems. Cr. 2 | 436. Advanced Reservoir Engineering. Cr. 3              |

## PHYSICS

Professor H. C. Thomas  
Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

A thesis is required for the Master's Degree.

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|---|--|
| FOR UNDERGRADUATES AND GRADUATES  | 439. Solid-State Physics. Cr. 3  |
| 422. Selected Topics. Cr. 2<br>May be repeated for credit.                      | FOR GRADUATES  |
| 432. Thermodynamics. Cr. 3  | 511, 512. Seminar. Cr. 1 each<br>Required of graduate majors in physics. |
| 433. Statistical Mechanics. Cr. 3   | 530. Advanced Topics. Cr. 3<br>May be repeated for credit.               |
| 434, 435. Mechanics. Cr. 3 each   |  |
| 436. Individual Study of Specified Fields. Cr. 3<br>May be repeated for credit. |  |

- 531, 532. Theoretical Physics.  
Cr. 3 each
- 533, 534. Quantum Mechanics.  
Cr. 3 each
- 5351, 5352. Nuclear Physics.  
Cr. 3 each

536. Advanced Dynamics. Cr. 3
537. Electromagnetic Theory. Cr. 3
538. Graduate Optics. Cr. 3
- 631-632. Master's Thesis. Cr. 6

## PSYCHOLOGY

Professor Sylvan J. Kaplan  
Head of the Department

### MAJORS AND MINORS FOR THE MASTER'S DEGREE AND THE DOCTOR'S DEGREE

Students seeking the Master's Degree with a major in Psychology must consult the Head of the Department before enrolling for any courses.

Applicants for the Doctor's Degree with a major in Psychology must possess or achieve the Master's Degree before proceeding to doctoral study. During their first semester of residence they are required to take a preliminary examination, the results of which will enable the staff to counsel them concerning the course work prior to the taking of the qualifying examination for admission to candidacy.

Applicants for either the Master's Degree or the Doctor's Degree may pursue one of two courses of study: (1) Counseling Psychology, or (2) General Experimental Psychology.

On the Master's level, the student may work toward a certificate as a Public School Counselor in the usual 30 semester-hour program\* or a certificate as a Vocational Rehabilitation Counselor in a program involving 45 semester hours of work and, in addition, a full semester of internship in one or more of several centers established for this purpose.\*\*

On the doctoral level the student specializing in Counseling Psychology will be expected to complete a year of internship over and above the customary course work, that is, approximately 90 semester hours beyond the Bachelor's Degree, exclusive of the internship.

The program in general experimental psychology is designed to permit a student to have a major emphasis in any one or two of the following areas: (1) Learning, (2) Developmental, (3) Social and Personal, (4) Clinical, (5) Counseling, (6) Industrial, (7) Physiological and Comparative. This program, embodying a minimum of 90 semester hours beyond the Bachelor's Degree, places considerable emphasis on experimental design and laboratory training.

Master's Degree work is offered under both the thesis and the non-thesis plans, but students contemplating doctoral study are advised to submit a thesis for the Master's Degree.

#### FOR UNDERGRADUATES AND GRADUATES

432. Personnel Testing. Cr. 3
434. Introduction to Social Psychology. Cr. 3
435. Abnormal Psychology. Cr. 3
436. Personality Development. Cr. 3
437. Experimental Psychology. Cr. 3  
Special Fee: \$2.
439. Industrial Psychology. Cr. 3

4312. Methods in Clinical Psychology.  
Cr. 3

4313. Counseling Psychology. Cr. 3
4314. The Human Element in Engineering. Cr. 3
4316. History of Psychology. Cr. 3
4317. The Psychology of Learning. Cr. 3
4318. Industrial Training. Cr. 3

\* The program leading to certification as a counselor in the public schools is a joint enterprise of the Department of Education and the Department of Psychology. Students interested in this program are invited to write to the head of either of these departments.

\*\* For specific information related to the curriculum in this program the student is invited to write to the Head of the Department of Psychology.

4321. Interviewing: Principles and Practice. Cr. 3  
 4326. Individual Problems Course. Cr. 3  
 4327. Physiological Psychology. Cr. 3  
 Formerly 336.

## FOR GRADUATES

531. Introduction to Projective Techniques. Cr. 3  
 532. Problems in Psychology. Cr. 3  
 533. Seminar in Developmental Psychology. Cr. 3  
 534. Practicum in Intelligence Testing. Cr. 3  
 536. Advanced Experimental Psychology and Psychodynamics. Cr. 3  
 537. Advanced General Psychology. Cr. 3  
 538. Experimental Design and Quantitative Methods in Psychology. Cr. 3  
 539. Occupational Information. Cr. 3  
 5127, 5128. Seminar. Cr. 1 each  
 5314. Tests and Measurements. Cr. 3  
 5316. Introduction to Adjustment Counseling and Psychotherapy. Cr. 3  
 5317. Techniques of Counseling: Career Guidance. Cr. 3  
 5318. Practicum in Techniques of Counseling. Cr. 3  
 5319. Seminar in Industrial Psychology. Cr. 3
5321. Seminar in Learning Theory. Cr. 3  
 5322. Seminar in Physiological Psychology. Cr. 3  
 5324. Seminar in Personality Theory. Cr. 3  
 5325. Case Studies in Vocational Rehabilitation. Cr. 3  
 5326. Medical Aspects of Rehabilitation. Cr. 3  
 5327. The Psychology of Disability. Cr. 3  
 5331, 5332. Internship in Counseling and Guidance. Cr. 3 each  
 5333. Seminar in Perception. Cr. 3  
 5335. Advanced Projective Techniques. Cr. 3  
 5342. Advanced Statistical Methods. Cr. 3  
 5343. Survey of Services and Facilities for the Blind. Cr. 3  
 Formerly 4325.  
 631-632. Master's Thesis. Cr. 6  
 731, 732. Research. Cr. 3 each.  
 At the discretion of the Department, may be required of students working on the Doctor's dissertation.  
 831-832. Doctor's Dissertation. Cr. 6  
 Required as the final registration for the dissertation.

## SOCIOLOGY

Professor W. G. Steglich  
 Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

A thesis is required for the Master's Degree.

## FOR UNDERGRADUATES AND GRADUATES

432. Introduction to Health and Welfare Services. Cr. 3  
 433. Criminology. Cr. 3  
 435. Collective Behavior and Social Movements. Cr. 3  
 436. Contemporary Sociological Theories. Cr. 3  
 437. Social Change. Cr. 3  
 438. Population Problems. Cr. 3  
 439. Methods of Sociological Research. Cr. 3  
 Formerly 339.  
 4311. The Sociology of the Person. Cr. 3  
 Formerly 338.
4312. The Community. Cr. 3  
 Formerly 3312.  
 4313. American Minority Problems. Cr. 3  
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 4314. Social Stratification. Cr. 3

## FOR GRADUATES

531. Seminar in Sociological Theory. Cr. 3  
 532. Seminar in Sociological Research. Cr. 3  
 631-632. Master's Thesis. Cr. 6

## SPEECH

Professor P. Merville Larson  
Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

Master's Degree work is offered under both the thesis and the non-thesis plans.

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- 430. Advanced Public Speaking. Cr. 3
- 431. Creative Dramatics. Cr. 3
- 433. Introduction to Hearing Problems. Cr. 3
- 434. Principles of Audiometry. Cr. 3
- 435. Interpretative Reading. Cr. 3
- 436. Radio and Television Program Planning and Management. Cr. 3
- 437. Persuasion. Cr. 3
- 438. Advanced Discussion, Debate, and Conference Methods. Cr. 3
- 439. Methods in Teaching Speech. Cr. 3
- 4311. Stage Directing Methods. Cr. 3
- 4318. Introduction to Speech Correction. Cr. 3
- 4319. Speech Correction Methods. Cr. 3
- 4321, 4322. Supervised Clinical Practice in Speech Correction. Cr. 3 each

- 4325. Directing School Speech Activities. Cr. 3
- 4351. History of Speech. Cr. 3
- 4352. History of the Theater. Cr. 3

## FOR GRADUATES

- 531. Studies and Problems in Speech. Cr. 3  
May be repeated once for credit.
- 535. Pathology of the Hard-of-Hearing. Cr. 3
- 536. Speech Pathology. Cr. 3
- 5335. Basic Speech for Elementary Teachers. Cr. 3  
Enrollment limited to graduate students in Elementary Education.
- 631-632. Master's Thesis. Cr. 6

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The Graduate Council, assisted by the Graduate Faculty, is charged with the responsibility of formulating the policies of the Graduate School and the requirements for graduate degrees. These policies are administered by the Dean.

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