

BULLETIN
OF
TEXAS TECHNOLOGICAL COLLEGE

DIVISION OF GRADUATE STUDIES

LUBBOCK, TEXAS
JANUARY, 1951

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COLLEGE CALENDAR

TWENTY-SIXTH ANNUAL SESSION—1950-1951

1951

SPRING SEMESTER

Jan. 28	Sunday, 12 noon. Dormitory rooms open to new occupants.
Jan. 30-31	Tuesday, Wednesday. Registration for spring semester.
Feb. 1	Thursday, 8 A.M. Classes begin.
Feb. 3	Saturday. Late registration fee charged after this date.
Feb. 6	Tuesday. Last day a student may register in the spring semester.
Mar. 15	Thursday. Last day for filing with Graduate Dean statement of intention to graduate on May 21, 1951.
Mar. 22	Thursday, 10 P.M. Easter vacation begins.
Mar. 27	Tuesday, 8 A.M. Classes resumed.
May 5	Saturday. Last day for submission of first draft of thesis for Master's Degree by May graduates.
May 18	Friday. Last day for submission of thesis for binding.
May 19-25	Saturday-Friday. Final examinations for spring semester.
May 20	Sunday, 8 P.M. Baccalaureate sermon.
May 21	Monday, 8 P.M. Commencement.
May 25	Friday, 5 P.M. Spring semester ends.

SUMMER SESSION 1951

First Term

June 4	Monday. Summer Session begins. Registration for first term. Breakfast served as first meal in dormitories.
July 13	Friday. First term ends.

Second Term

July 16	Monday. Registration for second term.
Aug. 24	Friday. Second term ends. Summer Session closes. Commencement 7:15 P.M.

TWENTY-SEVENTH ANNUAL SESSION 1951-1952

1951

FALL SEMESTER

- Sept. 16 Sunday, 12 noon. Dormitory rooms open for occupancy. First meal, breakfast Monday, Sept. 17.
- Sept. 17 Monday. Fall semester begins.
- Sept. 19 Wednesday. Pre-registration consultations for all students.
- Sept. 20-21 Thursday-Friday. Registration for fall semester.
- Sept. 22 Saturday, 8 A.M. Classes begin.
- Sept. 24 Monday. Late registration fee will be charged after this date.
- Sept. 27 Thursday. Last day a student may register for the fall semester. Last day to add courses.
- Nov. 21 Wednesday, 10 P.M. Classes dismissed for Thanksgiving holidays.
- Nov. 26 Monday, 8 A.M. Classes resumed.
- Dec. 21 Friday, 10 P.M. Classes dismissed for Christmas holidays.

1952

- Jan. 3 Thursday, 8 A.M. Classes resumed.
- Jan. 26-Feb. 1 Saturday-Friday. Final examinations for fall semester.
- Feb. 2 Saturday. Students without room reservations for spring semester must vacate dormitory rooms not later than noon this date. Fall semester ends.

SPRING SEMESTER

- Feb. 3 Sunday, 12 noon. Dormitory rooms open to new occupants.
- Feb. 5-6 Tuesday, Wednesday. Registration for spring semester.
- Feb. 7 Thursday, 8 A.M. Classes begin.
- Feb. 9 Saturday. Late registration fee charged after this date.
- Feb. 12 Tuesday. Last day a student may register in the spring semester.
- Mar. 17 Monday. Last day for filing with Graduate Dean statement of intention to graduate on May 26, 1952.
- Apr. 10 Thursday, 10 P.M. Classes dismissed for Easter vacation.
- Apr. 15 Tuesday, 8 A.M. Classes resumed.
- May 10 Saturday. Last day for submission of first draft of thesis for Master's degree by May graduates.
- May 23 Friday. Last day for submission of thesis for binding.
- May 24-30 Saturday-Friday. Final examinations for spring semester.
- May 25 Sunday, 8 P.M. Baccalaureate sermon.
- May 26 Monday, 8 P.M. Commencement.
- May 30 Friday, 5 P.M. Spring semester ends.

SUMMER SESSION 1952

- June 2 Monday. Summer session begins.

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MARK MCGEE.....Fort Worth

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CHANSOR E. WEYMOUTH.....Amarillo

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Finance:	PRICE, INCE, WOOLDRIDGE, McLAUGHLIN.
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* Fall Semester.

** Spring Semester

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1950-1951

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JOHN S. CARROLL, Ph.D., Professor of Education

WARREN PERRY CLEMENT, M.A., Registrar and Director of Ad-
missions

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DYSART E. HOLCOMB, Ph.D., Dean of Engineering

WILLIAM CURRY HOLDEN, Ph.D., Professor of History and Director
of the Museum

MARGARET WATSON WEEKS, M.S., Dean of Home Economics

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*On leave of absence.

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WILLIAM CURRY HOLDEN, Ph.D., Professor of History and Anthropology and Director of the Museum.

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JAMES THOMAS SHAVER, M.A., Associate Professor of Education.
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ASSISTANT PROFESSORS

RENDEL BURDETTE ALLDREDGE, B.S., Assistant Professor of Economics.

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HARRY RAY BURKHART, M.S., Assistant Professor of Animal Husbandry.

*EARL BURNETT, M.S., Assistant Professor of Agronomy.

MARTHA WASHINGTON BUTTRILL, M.A., Assistant Professor of Foods and Nutrition.

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GEORGIA ELLEN WRIGHT, M.S., Assistant Professor of Clothing and Textiles.

GEOGRAPHICAL AND HISTORICAL STATEMENT

Texas Technological College is a state-supported coeducational institution comprising six major schools or divisions: Agriculture, Arts and Sciences, Business Administration, Engineering, Home Economics, and Graduate. Lubbock, its seat, is a city of about seventy-three thousand inhabitants. It is situated in the Plains area of West Texas at an altitude of more than three thousand feet. Dry, crisp air and sunny days throughout practically the entire year provide a healthful and invigorating climate. Three air lines, two railways, and a network of bus routes make the city easily accessible from all directions.

Graduate work has been offered at Texas Technological College since 1927. In 1935 this work was set apart as the Division of Graduate Studies, and since 1937 the Division has operated as a unit under its own Dean and Council.

PURPOSE OF THE DIVISION AND THE DEGREES OFFERED

The Division of Graduate Studies was established to provide facilities for advanced study and research in the humanities, the social sciences, and the physical sciences, as well as in more specialized areas of learning. A high grade of scholarly work rather than the fulfillment of mere routine requirements should be the goal of every member of the Division.

Because of the regulations governing them, the graduate degrees offered by Texas Technological College fall into two groups:

I

Master of Arts Master of Science Doctor of Philosophy

II

Master of Business Administration Master of Education

Master of Science in the various areas of Agriculture,
Engineering, and Home Economics

Professional Degrees in Engineering

Doctor of Education

GENERAL REGULATIONS

RESPONSIBILITY OF THE STUDENT. For graduate students, the publication of information in the Bulletin is considered sufficient notification regarding all of the regulations. Every graduate student should therefore thoroughly familiarize himself with the material in this Bulletin. Failure to do so may lead to complications for which the Division of Graduate Studies cannot assume the responsibility.

The regulations set forth herein will become effective on June 1, 1951, but none published here for the first time shall be interpreted to the disadvantage of students whose enrollment in the Division of Graduate Studies precedes that date. A student may choose to satisfy the regulations published for the year of his admission or for the year of his graduation.

The General Regulations apply to all degree plans unless exceptions are specifically noted.

ADMISSION AND ELIGIBILITY FOR ENROLLMENT. Applicants with a Bachelor's degree from a recognized college or university will be admitted on the basis of a complete transcript of their previous work. Well in advance of registration, the prospective student (including students who hold a Bachelor's degree from Texas Technological College) should make formal application for admission to the Division of Graduate Studies. This application is made at the Office of the Registrar, not at the Office of the Dean of Graduate Studies.

Full-time members of the faculty may not enroll for courses without special permission from the President of the College. No member of the faculty with a rank above instructor is eligible to receive an advanced degree from Texas Technological College.

An undergraduate student who lacks nine semester hours, or less, of graduation and who has at least a "B" average (Grade point average of 2.00 or above) in his major and minor subjects may enroll for courses carrying graduate credit, subject to the approval of the dean of the undergraduate division and the Dean of Graduate Studies. Such a student may not register for more than fifteen semester hours, including graduate and undergraduate courses, and he is expected to complete his undergraduate requirements within the academic year in which he first enrolls for graduate courses.

In exceptional instances, a senior may, upon the recommendation of the department concerned, enroll for some of the courses listed as "Primarily for Graduates," but each case will be considered individually.

REGISTRATION. A few days before registration (See the Calendar at the front of this Bulletin), the student should apply at the office of the Registrar for instructions for registration. At the time of enrollment, the student should have his complete schedule made out and approved by the head of his major department, or by some one designated

to act for him, and have each of the individual courses approved by the department which offers it. When all of these approvals have been secured, the student should take his card to the Graduate Office for the Dean's approval. The registration cards of all graduate students and of all students enrolling for any graduate credit must be approved by the Dean of Graduate Studies.

GRADUATE ADVISERS. Throughout the first year of graduate work, the head of the student's major department, or some professor designated by the department head, serves as the student's adviser. If he is an applicant for a Master's degree requiring a thesis, a thesis committee will be appointed by the Dean upon the recommendation of the adviser.

The function of the Advisory Committee for applicants for one of the Doctors' degrees is discussed under the special requirements for those degrees.

PREREQUISITES IN THE MAJOR AND MINOR SUBJECTS. For full acceptance by the major department, the student must have completed an undergraduate major in that department or at least twelve semester hours of advanced work in it (with the necessary prerequisites for such courses), together with sufficient advanced work in closely allied subjects to bring the total up to the equivalent of a major in that particular department at this institution.

Full acceptance by the minor department requires an undergraduate minor in that department or at least six semester hours of advanced work in it (with the necessary prerequisites for such courses).

Students who cannot satisfy these requirements upon entrance must take sufficient undergraduate leveling work (without graduate credit) to remove their deficiencies.

In certain of the professional curricula, these requirements may be somewhat modified; such modifications (if any) are shown in the departmental material or in the requirements for the particular specialized degree.

REQUIREMENTS IN MAJOR AND MINOR SUBJECTS. Candidates for the Master's degree will ordinarily complete from eighteen to twenty-four semester hours, including the thesis (if any) in the major subject and the remainder in one or two minor subjects. At least six hours must be in a department other than the major. Fewer than six hours will not be considered a minor.

Candidates for the Doctor's degree will devote about half of their time to the major subject and the remainder to two minors. The first minor may be a division of the major if that department has several components, but the second minor must be in a department other than the major.

COURSES, CREDIT, AND GRADES. Courses listed in this Bulletin under the numbers "300" and "400" may be taken for graduate credit provided the graduate student does in them additional work beyond that required

of undergraduates. Courses numbered "500" are primarily for graduate students. At least nine semester hours of the work credited toward the Master's degree (exclusive of the thesis) must be in "500" courses. It is expected that most of the courses credited toward the Doctor's degree will be in the group numbered "500."

No course may count for graduate credit unless it forms part of a logical plan made out by the representatives of the student's major and minor departments and unless registration for it was approved by the Dean of Graduate Studies. This regulation applies to extension classes and those meeting in the evenings and on Saturdays as well as to those in the regular schedule.

The grade average of all work credited toward a graduate degree must be at least "B" (Grade point average of 2.00 or above). No grade less than "C" will be counted.

The grade of "I" or "Inc" may be given by a professor whenever a student's work in a course shows a major deficiency in quantity though not in quality, provided that the deficiency was occasioned by causes beyond the student's control. Within four weeks after the beginning of the next period in residence, the student must initiate a petition for the completing of the work. Failure to do so may result in the grade of "F" on the course. When the grade of "I" or "Inc" stands for one year without action, it becomes "F," and an "I" or "Inc" at midsemester before graduation is considered "F" if the student has taken no steps to complete the work. These regulations do not apply to the grade for a thesis.

ADDING OR DROPPING COURSES AND WITHDRAWING FROM COLLEGE. No course may be added or dropped without the approval of the Dean of Graduate Studies. Students who find it necessary to withdraw from college must apply at the office of the Dean of Graduate Studies for official withdrawal blanks.

CREDIT BY TRANSFER AND EXTENSION. A maximum of six semester hours of credit toward the Master's degree may be accepted from another graduate school of recognized standing; a maximum of six semester hours of graduate work completed by extension may be credited toward the Master's degree provided the work was done under the direction of a recognized institution, but the combination of transferred credit and that earned by extension cannot exceed six semester hours.

Regulations concerning credit toward the Doctors' degrees for work completed elsewhere are given under the special requirements for those degrees.

RESIDENCE REQUIREMENTS. The minimum residence requirement for those Masters' degrees listed in Group I is thirty weeks, of which at least eighteen must be spent in regular residence work in a long session or summer sessions. Credit for the remaining twelve weeks may be earned by work completed in residence, in the Evening Program, at another graduate

school, or by extension, but not more than six weeks' residence credit may be obtained for work completed elsewhere or by extension or a combination of these two methods.

The residence requirements for those Masters' degrees listed in Group II are the same as those for Group I with the exception that mature students actively engaged in the profession for which they are preparing may complete all residence requirements through the Evening Program of this college provided admission to candidacy for the Master's degree is predicated upon satisfactory completion of written examinations covering the major and minor fields of interest. Such examinations are to be taken upon completion of twelve semester hours of work applicable to the Master's degree.

Residence requirements for the Doctors' degrees are discussed under the special requirements for those degrees.

TIME LIMIT ON WORK FOR THE MASTER'S DEGREE. It is expected that work credited toward the Master's degree will be completed within a period of six calendar years, but for veterans, the period is extended by the length of time they were in military service.

STUDENT LOAD. Graduate students devoting their full time to their studies may earn a maximum of fifteen semester hours of credit in a semester or six hours in a six-weeks summer term. For teaching fellows, assistants, 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 is three hours in any semester or summer term.

FOREIGN LANGUAGE REQUIREMENTS. Candidates for the Master of Arts degree and candidates for the Master of Science degree in mathematics and the pure sciences must have a reading knowledge of a foreign language. Satisfactory completion of at least twelve semester hours of undergraduate work in a foreign language acceptable to the major department may be considered as satisfying this requirement, but any department may require a language examination.

A foreign language is not required in the programs leading to the Master of Education, Master of Business Administration, Master of Science in some of the specialized fields, or for the professional degrees in Engineering.

Applicants for the degree of Doctor of Philosophy must pass a reading examination in at least two modern foreign languages, usually French and German. Further details will be found under the special requirements for the Doctor of Philosophy degree.

STATE OF TEXAS REQUIREMENT IN GOVERNMENT. By an act of the Texas Legislature, a student who enters a state-supported college after

September 1, 1937, must satisfactorily complete a course in State and Federal Government before he may receive a degree. Graduate students should consult the Dean about this requirement.

CANDIDACY FOR THE MASTER'S DEGREE. Admission to the Division of Graduate Studies does not automatically make a student a candidate for an advanced degree. A formal application for admission to candidacy must be made at the Dean's office when the applicant has completed twelve semester hours, or a little more, in residence in his major and minor; the application must be made at least twelve weeks before graduation. Before this application can be approved and the student admitted to candidacy, he must have completed the following stages in his work: (a) He must have at least a "B" average (Grade point average of 2.0 or above) in all graduate work taken up to the time of application; (b) He must have satisfied the foreign language requirement—if any; (c) His graduate work up to this point must be acceptable in quality and quantity to the major and minor departments; and (d) The thesis subject (if a thesis is required) must have been approved by the adviser.

Admission to candidacy for the Doctors' degrees is discussed under the requirements for those degrees.

THESIS REQUIREMENTS FOR THE MASTER'S DEGREE. The completion of an acceptable thesis is required of candidates for all Masters' degrees except Master of Education, Master of Business Administration with a major in Business Education, and Master of Science with a major in Home Economics Education, in the programs for which the thesis is optional.

Research leading to the thesis is supervised by a committee appointed by the Dean upon the recommendation of the head of the student's major department or the professor designated to act as the adviser. Primary responsibility for the direction of the thesis rests upon this adviser, who is chairman of the thesis committee, but he and the student should consult frequently with the other members of the committee.

A complete typewritten draft of the thesis, in a form acceptable to all members of the committee and bearing their approval, must be submitted to the Dean at least thirty days before a long-session commencement or at least twenty days before a summer-session commencement. Failure to comply with these regulations will be considered grounds for rejection of the thesis.

Not later than five days before graduation, at least three copies of the final typewritten version of the thesis, signed by each member of the committee, must be presented to the Dean. One of these copies is for the major department; the original or ribbon copy and one carbon copy are for the Library. Any other copies needed by the candidate should be arranged for at the time the three official copies are being typewritten.

Accompanying these final copies of the thesis must be three copies of a digest of the thesis, about one hundred words in length, bearing the

approval of the chairman of the thesis committee. At the time the copies of the thesis and digest are submitted to the Dean, the student will pay the fee for binding the thesis. No candidate will be certified for graduation until all of these requirements have been satisfied.

DEPARTMENTAL REQUIREMENTS. Subject to the approval of the Dean, a department may impose any additional requirements deemed necessary, such as a qualifying examination for admission to candidacy for the Master's degree, special reading assignments, and examinations, oral or written or both. Such requirements (if any) will be found under the particular departmental material in this Bulletin.

SPECIAL REQUIREMENTS FOR THE VARIOUS DEGREES

MASTER OF ARTS AND MASTER OF SCIENCE

AMOUNT OF WORK. The minimum course requirement for the Master of Arts and Master of Science is thirty semester hours, including the thesis. From eighteen to twenty-four of these hours (including those credited for the thesis) must be in the major subject. The student may have one minor or two, but at least six semester hours must be completed in a department other than the major.

Other requirements are listed under "General Regulations."

MAJORS. As a general policy, the Master of Arts degree will be conferred on students who satisfactorily complete majors in Economics, Education, English, Government, History (Anthropology, Sociology), Psychology, Spanish, and Speech. The Master of Science degree will usually be conferred on those who complete majors in Biology, Chemistry, Geology, Mathematics, and Physics. Upon the recommendation of the head of the student's major department, however, this policy may be changed for a particular student.

MASTER OF BUSINESS ADMINISTRATION

Students who hold a Bachelor's degree in commerce or business administration or whose work for the Bachelor's degree includes a major in business and economic subjects may find it possible to satisfy the requirements for the degree of Master of Business Administration in two semesters. Students who lack adequate preparation will require more than two semesters. So far as possible, programs of study are individualized to meet the specific needs of each candidate.

PREREQUISITES. A Bachelor's degree with thirty semester hours in business and economic subjects, including six hours of accounting and six of economics, three of which must be in principles. The applicant must also have had as an undergraduate, or must take as a part of his graduate program, the following courses or their equivalents: Finance 331 (Corporation Finance), Finance 338-9 (Business Law), Marketing 332

(Principles of Marketing), and Marketing 336 (Introduction to Business Statistics). Not more than nine hours of these fifteen hours may apply toward the Master's degree.

In addition to these general prerequisites, certain other prerequisite courses or their equivalents may be required by the individual major departments, as follows:

ACCOUNTING

9 hours above elementary work

BUSINESS EDUCATION

12 hours in Education, including
Educational Psychology

BUSINESS MANAGEMENT

15 hours in Management

ECONOMICS

Economics 331

FINANCE

None beyond the general list

INTERNATIONAL TRADE

Economics 331

MARKETING

None beyond the general list

OFFICE MANAGEMENT

Secretarial Administration 122

Management 231

Accounting 321

Secretarial Administration 333

Management 334

Secretarial Administration 338

Management 431

Management 435

Management 436

PERSONNEL MANAGEMENT

Psychology 230

Psychology 330

Management 331

Management 333

Management 334

Management 433

Management 435

Until the student has satisfied these requirements or is enrolled for courses which complete them, he cannot be admitted to candidacy for the degree, but he will be permitted to take graduate courses for which he has the necessary background.

REQUIREMENTS FOR THE DEGREE. A minimum of thirty semester hours of graduate work. Of this number, at least eighteen, including the thesis,* must be in the major subject. A minimum of six hours must be in a minor subject.

The major must be one of the subjects listed above in capital letters. The minor may be another of those listed or Advertising, Business Administration, Business Law, Business Statistics, Insurance, Real Estate, Retailing, Secretarial Administration, or some subject outside the Division of Business Administration.

MASTER OF EDUCATION

The degree of Master of Education is offered for teachers and administrators, both pre-service and in-service. It is based upon the Core

* Candidates who major in Business Education may omit the thesis and follow this plan: Eighteen hours in Business Education, fifteen of which must be in "500" courses, including Business Education 534; a minor of at least six hours within the Division of Business Administration.

Curriculum in Professional Education which leads to the degree of Bachelor of Science in Education or its equivalent, this same core extending through the successive stages of graduate work. The Masters' degrees are increasingly intended as preparation for teacher competence, with additional work beyond these degrees being offered for the specialized endorsements leading to certification in particular aspects of professional education.

Candidates for the Master of Education will select one of the plans listed below. Prerequisite for this degree under Plans I, II, III, and IV is the Bachelor of Science in Education or another approved Bachelor's degree with adequate undergraduate preparation in Education.

PLAN I, WITH THESIS: Designed especially for those working toward additional certificate endorsements. Required: Thirty semester hours of advanced and graduate courses including the thesis. The major in Education is a continuation of the undergraduate core curriculum in professional education and includes three hours of advanced educational psychology (530), three hours of advanced educational sociology (534), three hours of advanced curriculum workshop (5314), and the thesis (631-2). The program includes also fifteen elective hours in graduate level courses in which the student has the necessary prerequisites and which are related to teacher competency or to additional certificate endorsements.

PLAN II, WITH THESIS: Designed especially for those working toward advanced certificates in the field of teacher competency. Required: Thirty semester hours of advanced and graduate courses including the thesis. The major in Education consists of twelve to eighteen hours in Education and includes the nine hours which constitute the core curriculum in professional education—advanced educational psychology (530), advanced educational sociology (534), advanced curriculum workshop (5314)—and the thesis (631-2). The remainder may be in one subject-area field or in two such fields, but the usual graduate requirements for a minor must be observed. With the consent of the departments concerned, the candidate may write his thesis in a subject-area department provided it deals with the subject in such a way as to emphasize the professional aspects of the material.

PLAN III, WITHOUT THESIS: Required: Forty-two semester hours of course work, including thirty semester hours of courses on the advanced and graduate levels. At least nine hours must be on the graduate level. As few as twelve hours and as many as twenty-four may be taken in Education. The remainder may be completed in one subject-area department or in two such fields, but the usual graduate requirements for a minor must be observed. Twelve of the forty-two hours may be selected from any department in the college and may be of any level. These twelve hours may not be counted both as leveling work and as part of the required work for the degree.

PLAN IV, WITHOUT THESIS: Required: Thirty semester hours of advanced and graduate courses, nine of which must be on the graduate level. From twelve to eighteen hours may be taken in Education, the remainder of the thirty hours to be in one or two minor departments in which the candidate has the necessary prerequisites. The required work includes the course in educational research (531) and the course in applied educational research (5311). Since the latter involves one or more practicum projects in educational research, this plan is regarded as the equivalent of those indicated above.

PLAN V, WITHOUT THESIS: Designed especially for teachers of vocational agriculture. Prerequisite: Bachelor of Science in Agriculture with a major in Agricultural Education or its equivalent. Required: Thirty semester hours of advanced and graduate work. From twelve to eighteen hours must be in Agricultural Education and must include the course in Research Methods (Plant Industry 535) and that in Investigations in the Field of Agricultural Education (Agricultural Education 531). The remainder of the thirty hours may be completed in one or two minor departments in which the student has the necessary prerequisites.

MASTER OF SCIENCE IN SPECIALIZED FIELDS

The degree of Master of Science is offered with majors in the following subjects:

Agricultural Economics	Electrical Engineering
Agronomy	Foods and Nutrition
Animal Husbandry	Farm Machinery
Chemical Engineering	General Home Economics
Clothing and Textiles	Home Economics Education
Dairy Manufactures	Horticulture

The requirements for this degree are, in general, the same as those for the Masters' degrees listed in Group I except as specified in the General Regulations. Special prerequisites necessary for some of these majors will be found under the proper head in "Departments of Instruction."

PROFESSIONAL DEGREES IN ENGINEERING

The professional degrees of Chemical Engineer, Civil Engineer, Electrical Engineer, Industrial Engineer, Mechanical Engineer, Petroleum Engineer, and Textile Engineer are open, upon application, to graduates of the Division of Engineering of Texas Technological College and to others upon the invitation of the faculty of the Division of Engineering.

The applicant must have had a superior record as an undergraduate; he must have engaged in the engineering profession for at least five years after graduation, and in two of these years must have been in engineering

positions of direct responsibility and trust, with the result that he may be considered an honor to his profession; and he must submit an acceptable thesis.

The quality of the experience and the thesis will be judged by the faculty of the Division of Engineering, the Graduate Council, and such specialists as may be considered necessary. A Master's degree in engineering may count in lieu of two years of professional experience. The thesis must be based on original investigation or discoveries by the applicant and must be a distinct contribution to engineering.

Not later than eight months before the degree is to be conferred, a written application for the degree must be submitted to the Dean of Graduate Studies to be passed upon by the faculty of the Division of Engineering and the Graduate Council. This application must include a statement as to the degree sought, a summary of professional experience, with pertinent documentary evidence, and a comprehensive outline of the thesis. If these documents are acceptable to the faculty of the Division of Engineering and the Graduate Council, the applicant will be admitted to candidacy for the degree.

Eight weeks before commencement, the candidate must submit to the Dean of Graduate Studies three typewritten copies of the thesis, in a form acceptable to the Graduate Council.

DOCTOR OF PHILOSOPHY

The degree of Doctor of Philosophy is awarded in recognition of superior attainments in scholarship, not simply for faithfulness in satisfying certain routine requirements.

Major work leading to the Doctor of Philosophy is offered in American Civilization, Chemistry, Education, English, Geology, and History.

ADMISSION. For admission to work leading to the degree of Doctor of Philosophy, the applicant must have a Bachelor's degree from a recognized college or university and an undergraduate record which shows promise of success in independent study. At their discretion, departments may require examinations to test the applicant's fitness for doctoral work. The possession of a Master's degree is not a requirement.

RESIDENCE REQUIREMENTS. A minimum of three years of graduate study is required for the Ph.D. degree. Residence for this degree may be fulfilled through the Evening Program and Extension only to the extent applicable to the Masters' degrees. Transferred work will be considered on an individual basis, and residence credit allowed accordingly. In all cases at least one year of residence work must be completed at this college. If this is the only year of residence, it must be the year in which the degree is conferred. The terms of residence for graduate fellows and assistants will be adjusted in accordance with their teaching load, but,

in general, will be two years. The remainder of the residence requirement may be satisfied by work in the regular session or in the summer sessions.

FIELDS OF STUDY. The applicant for the Ph.D. will devote about one half of his time to his major subject and will divide the remainder between two minors. One of these may be a division of the major department, but the second minor must be in a department other than the major though related to it.

PROGRAM OF WORK. Although the applicant is not required to complete his work in a series of successive years, and although no definite number of semester hours can be stated as a specific requirement, the general program of work toward the Ph.D. degree should be something like this:

First Year beyond the Bachelor's Degree: Complete about twenty-four semester hours of work in the major and minor subjects and take the reading examinations in foreign languages.

Second Year: Complete about twenty-four additional hours of course work in the major and minor; take the preliminary or qualifying examination; and choose a dissertation subject and proceed in the investigation connected with it.

Third Year and beyond: Finish whatever course work may be recommended by the advisory committee; finish the dissertation; and, by extensive reading, prepare for and take the final examinations.

It must be emphasized that the requirements for the degree of Doctor of Philosophy cannot be listed merely in semester hours. Some applicants will find that three years are not enough for completing all of the work. The outline given above is merely suggestive.

ADVISORY COMMITTEE. Shortly after the beginning of the student's second year of work toward the doctorate, an advisory committee will be appointed to guide him through the remainder of his work. This committee is appointed by the Dean on the recommendation of the head of the student's major department and includes representatives from the minor departments as well as from the major department. This committee will hold meetings with the student as often as may be necessary. Once each semester, the chairman of the committee will make a written report to the Dean showing the student's progress in graduate study.

When the applicant has passed the qualifying examination for admission to candidacy for the Ph.D. degree, the committee will at once prepare the student's definitive program, outlining the remaining courses to be completed and any other requirements which the candidate must satisfy. This program will be submitted to the Dean of Graduate studies for approval.

FOREIGN LANGUAGE REQUIREMENTS. A satisfactory reading knowledge of at least two foreign languages is required before the applicant is

admitted to candidacy. The examinations in these languages will usually cover critical material in the area of the student's major interest, and they will be given by the Department of Foreign Languages of Texas Technological College. French and German are the usual languages, but a department may recommend the substitution of another language for one of these if the student's research would benefit by the substitution.

PRELIMINARY OR QUALIFYING EXAMINATION. Early in the second year of his graduate work, the student should undergo the qualifying examinations, which determine whether he is to be admitted to candidacy for the Ph.D. degree. These examinations, conducted by the advisory committee and other members of the faculty appointed for this purpose by the Dean, will cover the major and minor subjects and will investigate as thoroughly as possible the applicant's scholarly competence.

ADMISSION TO CANDIDACY FOR THE PH.D. DEGREE. When the student has satisfied the language requirements and has passed the qualifying examinations, his major professor or the chairman of the advisory committee will make a formal written request to the Dean that the applicant be admitted to candidacy for the degree. This request should include a statement about the quality of the student's preliminary examinations, the status of the research on his dissertation, and a general estimate of his fitness for further graduate study. This request must be approved by the Graduate Council before the student is admitted to candidacy.

THE DISSERTATION. The subject of the dissertation must be approved by the advisory committee and the Dean at least eight months before the candidate expects to receive his degree.

The dissertation should demonstrate a mastery of the techniques of research, a thorough understanding of the subject matter, skill in organizing and presenting the material, and an adequate command of the English language. The work on the dissertation will be constantly under the supervision of the advisory committee and any other professors considered necessary.

Not later than one month before graduation, three typewritten copies of the dissertation, in an acceptable form and ready for binding, must be approved by the advisory committee and the Dean. Three typewritten copies of an abstract, about one thousand words in length, must accompany the manuscript and must also have the approval of the advisory committee and the Dean.

The cost of binding the three typewritten copies of the dissertation, of preparing other reproductions that may be considered necessary, and other fees incident to graduation must be paid before the candidate will be certified to receive his degree.

THE FINAL EXAMINATIONS. Final examinations are required of all candidates for the Ph.D. degree. They may be oral or written or both. They will cover the entire field of the major subject and those portions of the minor subjects in which the student has concentrated his study.

Generally, the field of the dissertation will also be considered in the examinations, but, by special permission from the Graduate Council, the student may (under exceptional circumstances) take the final examinations before the dissertation is quite finished. The examiners will be some members of the advisory committee and several other professors appointed by the Dean.

DOCTOR OF EDUCATION AND DOCTOR OF PHILOSOPHY IN THE FIELD OF PROFESSIONAL EDUCATION

Each year, a selected number of students interested in the doctorate in professional education, and identified with special reference to their intellectual maturity and capacity for independent thinking, are accepted for advanced graduate work in this field. The scope and sequence of the work for these students are designed so as to be most advantageous for the development of their general and special abilities in terms of responsibility for leadership.

While for the most part there is a common core of the professional education curriculum which extends from the undergraduate work through the successive stages of the graduate program and which is required of both the Ed.D. and the Ph.D. candidates, there is a differentiation between the two programs.

This differentiation is based primarily upon such factors as the interest of the student in the two foreign languages which are required of candidates for the Ph.D. degree and his need for them, or his interest in advanced statistical and analytical procedures and his need for these disciplines. Among other differentiations is an analysis, based on a conference between the Head of the Department of Education and the Dean of Graduate Studies, of the professional needs of the individual student.

The basic requirements for the Ph.D. degree in Education are the same as those for other majors and may be found in the general material relating to this degree. Likewise, the requirements for the Ed.D., so far as residence and distribution of work are concerned, are comparable to those for the Ph.D.

In general, the work leading to a Doctor's degree in Education consists of three stages, at all points of which the student's program is under the supervision of the Head of the Department of Education and the Dean of Graduate Studies.

1. The first stage is the achievement of the Master's degree in Education or its equivalent. As previously indicated, this program continues the core curriculum in professional education and provides the basis for the second stage.

2. During the second stage of the graduate work, emphasis is placed upon the importance of the student's securing a thorough and unified understanding of the whole field of professional education and whatever minor subjects he may have selected. The basic Education course for the second stage is the "General Education Seminar" (5351).

This seminar is required of all graduate students in Education and provides preparation for the third stage of graduate work, which comprises intensive action research and documentary research culminating in the Doctor's dissertation.

In addition to the work in the "General Education Seminar," the second stage of graduate study provides an opportunity for extending the broad base of general education through work in other divisions and departments of the college and through study in special seminars, the selection of which will be determined in part by the student's interest in a particular certificate endorsement or a special field of education.

Among such special seminars are these: history and philosophy, comparative education, educational psychology, educational sociology, elementary education, secondary education, the junior college, educational administration, supervision and curriculum development, audio-visual education, health education, counseling and guidance, and others which may be developed as the need arises. Admission to any of the special seminars is through approval of the admissions committee of the education faculty and the faculty committee assigned to the particular seminar.

3. The third stage of the graduate program is normally devoted to the intensive research leading to the dissertation. A student is not admitted to this stage of the work until he has secured from the admissions committee of the education faculty and the Dean of Graduate Studies approval of the dissertation subject and of the graduate work which has been completed.

Examinations: Before the acceptance of the dissertation, the candidate must qualify by passing three groups of examinations:

(a) Comprehensive examinations in Education and the minor subjects are administered in relation to the program completed during the first stage or Master's degree work. These examinations may be taken at specified intervals during the second stage of the work through arrangement with the Head of the Department of Education and the Dean of Graduate Studies.

(b) An intensive written examination is administered in the fields of the major and minor interests and supplements the comprehensive examinations mentioned above. It is designed to measure the student's basic knowledge of his special fields, with particular reference to his dissertation problem. This examination is prepared and conducted by a committee appointed by the Dean of Graduate Studies on the recommendation of the heads of the departments concerned. It should be taken near the end of the second stage of graduate work and before much research has been done on the dissertation.

(c) The oral examination consists primarily of an advocacy of the completed dissertation, but it may include also questions on the student's major and minor subjects. It is conducted by a committee appointed by the Dean of Graduate Studies on the recommendation of the heads of the departments concerned.

GENERAL INFORMATION

FEES AND DEPOSITS

All fees and deposits are payable in full at the time of registration, and a student is not considered enrolled in the college until he has paid them. All checks, drafts, and money orders are accepted subject to final payment. The student is referred to the General Catalog for further details about fees.

REGISTRATION FEE FOR RESIDENTS OF TEXAS.* For students enrolled for twelve or more semester hours, the registration fee is \$25.00 each semester. For those enrolled for fewer than twelve hours, the fee is charged as follows:

For 11 semester hours \$23.50	For 7 semester hours \$15.50
10 semester hours \$21.50	6 semester hours \$13.50
9 semester hours \$19.50	5 semester hours \$11.50
8 semester hours \$17.50	4 semester hours \$ 9.50
3 semester hours \$7.50	

REGISTRATION FEE FOR NON-RESIDENTS OF TEXAS.* Non-resident students are required to pay a registration fee of \$150.00 per semester of the long session. Non-resident students enrolled for fewer than twelve semester hours will be charged at the rate of \$12.50 per semester hour for which they enroll.

VISITOR'S FEE. A fee of \$5.00 for each course is required for the privilege of attending courses as a visitor. No credit may be obtained from courses audited in this manner.

LATE REGISTRATION FEE. Any student who fails to register and pay fees within three days of the regular registration period shall be required to pay an additional service charge of \$2.00.

GENERAL PROPERTY DEPOSIT. Each student enrolled in the college must make a general property deposit of \$7.00. This deposit is subject to charges for property loss or damages or breakage or violations of rules in the library or laboratories. If the charges incurred for any semester reduce the deposit by fifty per cent, the student, upon notice from the Auditor, will be required to restore the deposit to its original amount by paying the charges at once; pending payment, no credit will be allowed on the work of that semester or term, and the student will be ineligible to re-enter college. This deposit, less any charges against it, will be re-

* A "resident of the State" may be defined as a person who has maintained his legal residence in Texas for at least twelve months prior to his enrollment in Texas Technological College, or, if a minor, one whose family has maintained legal residence in the State for at least this length of time. Prospective graduate students whose status is not clearly defined by this statement should consult the General Catalog or write to the Director of Admissions for a clarification of their legal residence.

turned to the student at the end of his career as a student in Texas Technological College.

LABORATORY FEES. For all courses in which the combined credit of lecture and laboratory is from one to three semester hours, a laboratory fee of \$1.00 is charged for each semester. For courses in which the semester credit is four hours or more, the laboratory fee is \$2.00 per semester.

GRADUATION FEE. The graduation fee is \$5.00.

STUDENT HEALTH AND ACTIVITY FEE. Pursuant to an act of the Texas Legislature,* each student is required to pay a health and activity fee of \$30.00 per year, payable \$15.00 per semester. This fee covers recreational activities, health and infirmary service (see Health Service), student publications, admission to intercollegiate athletic contests and to the programs on the Artists' Course.

STUDENT HEALTH SERVICE. Each student currently enrolled in the college is entitled to the medical services given in the out-patient clinic and to admission to the infirmary within its maximum capacity of twenty beds. The out-patient clinic is open during the day to students in need of consultation and treatment by the College Physician and nurses on the health service staff. Students judged to be in need of infirmary care by the College Physician may be admitted to the infirmary, where they are under the constant supervision of the physician and a registered nurse. Under the present plan, no charge is made for infirmary care up to a maximum of seven days in each semester. A minimum fee to cover the cost of food, drugs, and supplies is charged the student for each additional day he remains in the infirmary. In case the infirmary is filled to capacity, the college is not under obligation to provide students with hospital service elsewhere.

Further details about the Health Service may be found in the General Catalog.

FELLOWSHIPS AND SCHOLARSHIPS

A number of graduate assistantships and teaching fellowships are available. Prospective graduate students are invited to correspond with the head of the department in which they plan to do their major work since these scholarships and fellowships are under the administration of the departments rather than the Division of Graduate Studies.

HOUSING ACCOMMODATIONS

The college owns and operates eight dormitories with a normal capacity of almost three thousand students. Charges for room and board vary with the cost of living and are subject to change without notice. Inquiries

* Fortieth Legislature, General Session. Amended Fiftieth Legislature, General Session.

regarding dormitory accommodations should be addressed to Mr. H. L. Burgess, Office of Dormitory Reservations.

Information regarding living accommodations off the campus may be obtained from the Office of the Dean of Women and the Office of the Assistant Dean of Men.

THE LIBRARY

The Library of Texas Technological College, erected in 1937, provides two large reading rooms and three special reading rooms for students. Graduate students may secure individual study carrels in the stacks, and a few small private study rooms are available for the use of those graduate students who are writing doctoral dissertations.

At the beginning of the session of 1950-1951, the Library holdings consisted of 82,766 catalogued volumes, 17,751 periodicals, and 247,647 documents. Approximately ten thousand items are being added each year.

The Southwest Collection, which is housed in a separate room on the second floor, was established for the acquisition and preservation of materials of particular interest in this region. It includes documents and manuscripts, catalogued volumes, many not obtainable in other Texas libraries, and a large collection of early Texas newspapers on microfilm, a gift of Lewis W. McNaughton of Dallas. The archive material includes a group of papers connected with the estate of James Bowie, given to the Library by the late Senator Arthur P. Duggan of Littlefield, Texas; a collection of records of the Matador Land and Cattle Company, a gift of Maurice Reilly; and a collection of records of the Spur Ranch, given by President Emeritus Clifford B. Jones. With the aid of several residents of Spur, Texas, a file of the *Texas Spur* from 1909 to 1940 has been secured for this collection.

The Library is open from 8 A.M. to 10 P.M., Monday through Friday, and from 8 A.M. to 5 P.M. on Saturday. During the summer session it is open from 7:30 A.M. to 9:30 P.M., Monday through Friday, and from 7:30 A.M. to 4:30 P.M. on Saturday. The Library is closed on Sundays and holidays.

DEPARTMENTS OF INSTRUCTION

Not all of the courses shown in this Bulletin are offered every year; some are given every other year, and some only every three or four years. The class schedule, published just before the opening of each term or semester, indicates the particular courses to be offered and the hours at which they meet.

Every department reserves the right, however, to cancel any scheduled course for insufficient enrollment or for any other reason involving the best interests of the department as a whole.

Students who wish detailed descriptions of the courses and further statements about prerequisites for them should request from the Registrar a copy of the General Catalog. However, since each course listed on a student's schedule must be approved by an official representative of that department, and the whole program of courses must be approved by the head of the major department and the Dean of Graduate Studies, the brief course descriptions employed in this Bulletin will usually be adequate for registration purposes.

For bookkeeping purposes in determining fees and veterans' allotments, the Master's thesis is listed as Course No. 631-2 and the Doctor's dissertation as course No. 731-2.

ACCOUNTING AND FINANCE

Professor Reginald Rushing
Head of the Department

Majors and Minors for the Master's Degree

ACCOUNTING

- 321. ANALYSIS OF FINANCIAL STATEMENTS. Cr. 2.
- 322. PAYROLL ACCOUNTING. Cr. 2.
- 334. INTERMEDIATE ACCOUNTING I. Cr. 3. Mr. Whittington.
- 335. INTERMEDIATE ACCOUNTING II. Cr. 3. Mr. Whittington.
- 336. PRINCIPLES OF COST ACCOUNTING. Cr. 3. Mr. Norwood.
- 337. ADVANCED COST ACCOUNTING. Cr. 3. Mr. Norwood.
- 338. BUDGETING. Cr. 3. Mr. Whittington.
- 430. INCOME TAX ACCOUNTING. Cr. 3. Mr. Hearn.
- 431. ADVANCED INCOME TAX ACCOUNTING. Cr. 3. Mr. Hearn.
- 432. GOVERNMENTAL ACCOUNTING. Cr. 3. Mr. Whittington.
- 433. PETROLEUM ACCOUNTING. Cr. 3. Mr. Rushing.
- 434-5. ADVANCED ACCOUNTING. Cr. 3, each. Mr. Rushing.
- 436. ACCOUNTING SYSTEMS. Cr. 3. Mr. Norwood.
- 437. PRINCIPLES OF AUDITING. Cr. 3. Mr. Norwood.
- 438. ADVANCED AUDITING. Cr. 3. Mr. Norwood.
- 441. MACHINE ACCOUNTING. Cr. 4. Mrs. Eaves.
Machine service fee, \$4.00.

442. MACHINE ACCOUNTING. Cr. 4. Mrs. Eaves.
Machine service fee, \$4.00.
531. C. P. A. PROBLEMS I. Cr. 3. Mr. Rushing.
532. C. P. A. PROBLEMS II. Cr. 3. Mr. Rushing.
533. CURRENT ACCOUNTING THEORY. Cr. 3. Mr. Rushing.
- 631-2. MASTER'S THESIS. Cr. 6. Staff.

FINANCE

331. CORPORATION FINANCE. Cr. 3.
333. PRINCIPLES OF MONEY, BANKING AND CREDIT. Cr. 3.
334. CREDITS AND COLLECTIONS. Cr. 3. Mr. Hooper.
336. LIFE INSURANCE. Cr. 3. Mr. Hooper.
337. PROPERTY AND CASUALTY INSURANCE I. Cr. 3. Mr. Hooper.
- 338-9. BUSINESS LAW. Cr. 3, each.
3310. OIL AND GAS LAW. Cr. 3.
3311. REAL ESTATE LAW. Cr. 3.
3312. INSURANCE LAW. Cr. 3.
431. THE FEDERAL RESERVE SYSTEM. Cr. 3.
432. REAL ESTATE. Cr. 3. Mr. Hooper.
433. CORPORATE FINANCIAL PROBLEMS AND CASES. Cr. 3.
434. INVESTMENTS. Cr. 3.
437. PROPERTY AND CASUALTY INSURANCE II. Cr. 3. Mr. Hooper.
438. PROPERTY AND CASUALTY INSURANCE III. Cr. 3. Mr. Hooper.
439. PROPERTY AND CASUALTY INSURANCE IV. Cr. 3. Mr. Hooper.
4310. C. P. A. LAW REVIEW. Cr. 3.
531. CURRENT FINANCIAL PROBLEMS. Cr. 3.
- 631-2. MASTER'S THESIS. Cr. 6. Staff.

AGRICULTURAL ECONOMICS

Professor Elmer L. McBride

Head of the Department

Majors and Minors for the Master's Degree

AGRICULTURAL ECONOMICS

322. MARKETING AGRICULTURAL PRODUCTS. Cr. 2. Mr. Pinson.
323. ADVANCED AGRICULTURAL ECONOMICS. Cr. 2. Mr. Bennett.
331. STATISTICAL PROBLEMS. Cr. 3.
332. ADVANCED AGRICULTURAL STATISTICS. Cr. 3.
333. COOPERATION IN AGRICULTURE. Cr. 3. Mr. Pinson.
335. FARM APPRAISAL AND FINANCE. Cr. 3. Mr. Leonard.
411. AGRICULTURAL ECONOMICS SEMINAR. Cr. 1. Mr. McBride.
412. AGRICULTURAL ECONOMICS SEMINAR. Cr. 1. Mr. McBride.
421. LAND ECONOMICS. Cr. 2. Mr. Leonard.
422. AGRICULTURAL PRICES AND FORECASTING. Cr. 2. Mr. Bennett.
425. FARM LAWS. Cr. 2. Mr. Leonard.
431. LIVESTOCK MARKETING. Cr. 3. Mr. Pinson.

- 433. FARM MANAGEMENT AND RECORDS. Cr. 3. Mr. Leonard.
- 434. ADVANCED FARM MANAGEMENT. Cr. 3. Mr. Leonard.
- 435. INTERNATIONAL AGRICULTURAL ECONOMICS. Cr. 3. Mr. Pinson.
- 436. MARKETING DAIRY PRODUCTS. Cr. 3. Mr. Pinson.
- 511. PROBLEMS. Cr. 1. Mr. McBride.
- 531. PROBLEMS IN LAND USE. Cr. 3. Mr. Leonard.
- 533. MARKETING PROBLEMS. Cr. 3. Mr. Pinson.
- 534. RESEARCH IN AGRICULTURAL ECONOMICS. Cr. 3.
- 535. RESEARCH IN AGRICULTURAL ECONOMICS. Cr. 3.
- 631-2. MASTER'S THESIS. Cr. 6. Staff.

RURAL SOCIOLOGY

- 431. SOCIO-ECONOMIC SURVEYS OF RURAL AREAS. Cr. 3.
Mr. McBride.
- 432. RURAL SOCIOLOGY. Cr. 3. Mr. McBride.
- 532. CURRENT PROBLEMS IN RURAL SOCIOLOGY. Cr. 3. Mr. McBride.

AGRICULTURAL EDUCATION

Professor Ray L. Chappelle

Head of the Department

Majors and Minors for the Master's Degree

- 423. PROBLEMS IN TEACHING VOCATIONAL AGRICULTURE. Cr. 2.
- 424. ORGANIZATION AND ADMINISTRATION OF VOCATIONAL
AGRICULTURE. Cr. 2. Mr. Leach.
- 425. FUTURE FARMER ACTIVITIES. Cr. 2. Mr. Hargrave.
- 431. METHODS OF TEACHING VOCATIONAL AGRICULTURE IN THE
HIGH SCHOOL. Cr. 3. Mr. Chappelle.
- 432. METHODS OF TEACHING VOCATIONAL AGRICULTURE IN ADULT
WORK. Cr. 3. Mr. Chappelle.
- 451. PRACTICE TEACHING IN VOCATIONAL AGRICULTURE. Cr. 5.
- 511. PROBLEMS IN TEACHING VOCATIONAL AGRICULTURE. Cr. 1.
- 522. ADVANCED METHODS IN TEACHING VOCATIONAL AGRICULTURE
IN ALL-DAY CLASSES. Cr. 2. Mr. Chappelle.
- 523. ADVANCED METHODS IN TEACHING VOCATIONAL AGRICULTURE
TO ADULTS. Cr. 2. Mr. Leach.
- 524. ADVANCED METHODS IN TEACHING FUTURE FARMER WORK.
Cr. 2. Mr. Hargrave.
- 531. INVESTIGATIONS IN THE FIELD OF AGRICULTURAL EDUCATION.
Cr. 3.
- 532. INVESTIGATIONS IN THE FIELD OF AGRICULTURAL EDUCATION.
Cr. 3.
- 537. ADVANCED METHODS IN TEACHING FARM SHOP WORK. Cr. 3.
Mr. Chappelle.
- 631-2. MASTER'S THESIS. Cr. 6. Mr. Chappelle.

AMERICAN CIVILIZATION

COMMITTEE IN CHARGE:

Professors T. W. Camp (English), J. W. Davis (Government),
and W. C. Holden (History)

Majors Only for the Doctor of Philosophy

American Civilization is an interdepartmental major dealing with the historical, literary, and political development of the United States. Most of the courses are drawn from regular work in American history, American literature, and American government, but courses in economics, education, philosophy, and the fine arts may be prescribed.

Applicants will be expected to have the usual course prerequisites in at least two of the principal areas of study—government, history, and literature, but, with the consent of the advisory committee and the heads of the departments concerned, they may enroll for graduate courses in the other departments without having all of the customary prerequisites.

The dissertation must be on a subject crossing departmental lines to include at least two of the major areas of concentration.

ANIMAL HUSBANDRY

Professor Ray C. Mowery

Head of the Department

Majors and Minors for the Master's Degree

The Department of Animal Husbandry offers major work in the fields of animal breeding, animal production, animal nutrition, dairy husbandry, poultry husbandry, range management, and wool. In special cases, certain courses offered by other departments of the college, such as chemistry and biology, may be accepted for major credit.

ANIMAL HUSBANDRY

- 322. FARM MEATS. Cr. 2.
- 324. DAIRY BREEDS, PEDIGREES AND RECORDS. Cr. 2. Mr. Neeley.
- 331. PRINCIPLES OF FEEDING. Cr. 3. Mr. Baumgardner.
- 334. WOOL AND MOHAIR. Cr. 3. Mr. Burkhart.
- 411. ANIMAL HUSBANDRY SEMINAR. Cr. 1. Mr. Stangel,
Mr. Mowery.
- 4111. DAIRY HUSBANDRY SEMINAR. Cr. 1. Mr. Neeley.
- 412. DAIRY CATTLE BREEDING. Cr. 1. Mr. Harbaugh.
- 420. MEAT AND MEAT PRODUCTS. Cr. 2.
- 422. ANIMAL BREEDING. Cr. 2. Mr. Fine.
- 423. ANIMAL NUTRITION. Cr. 2. Mr. Baumgardner, Mr. Turner.
- 424. BEEF CATTLE PRODUCTION. Cr. 2. Mr. Stangel.
- 425. HORSE AND MULE PRODUCTION. Cr. 2. Mr. Harbaugh.
- 426. SHEEP AND WOOL PRODUCTION. Cr. 2. Mr. Mowery.

420. PROFESSIONAL PRACTICE. Cr. 2. Mr. Lockard.

423-4. LIFE DRAWING II, III. Cr. 2, each. Mr. Hale.

ALLIED ARTS

426-7. OIL PAINTING OR ADVANCED WATER COLOR. Cr. 2, each.
Mr. Hale.

428-9. HISTORY OF PAINTING. Cr. 2, each. Mrs. Sasser.

439-10. METHODS OF TEACHING ART INTEGRATED FOR THE
ELEMENTARY SCHOOL. Cr. 3, each. Mrs. Sasser.

4311-12. CERAMICS. Cr. 3, each. Mr. Tracy, Mr. Kleinschmidt.

4313-14. METHODS OF TEACHING ART INTEGRATED FOR THE
HIGH SCHOOL. Cr. 3, each. Mrs. Sasser.

BIOLOGY

Professor James C. Cross

Head of the Department

Majors and Minors for the Master's Degree

Before being admitted to candidacy for the Master's degree with a major in this department, the student must take a preliminary examination to determine whether he is prepared to do graduate work in the subject chosen. The scope of this examination will be determined by the major professor, but it will ordinarily include all work usually required of undergraduates who major in this department. If the graduate major is botany, the emphasis will be upon botany; if the graduate major is zoology, the emphasis will be upon zoology. If the examination reveals serious weaknesses in any necessary subject matter, the student may be required to register for or repeat such courses as may be designated by the major professor.

Likewise before being approved for candidacy for the Master's degree, the student must pass a reading examination in French or German or some other 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 area of the student's major subject.

If the student's major is botany, his minor may be chemistry, geology, mathematics, physics, or zoology; if his major is zoology, his minor may be botany, chemistry, mathematics, or physics, but, as indicated in the General Regulations, at least six semester hours of the work must be done outside of this department.

BACTERIOLOGY

331-2. PRINCIPLES OF BACTERIOLOGY. Cr. 3, each. Mr. Sealey.

333. COMMUNICABLE DISEASE. Cr. 3. Mr. Sealey.

334. BACTERIOLOGY OF FOODS AND FOOD SANITATION. Cr. 3.
Mr. Sealey.

BIOLOGY

- 333. BIO-ECOLOGY. Cr. 3. Mr. Studhalter.
- 334. BIO-ECOLOGY. Cr. 3. Mr. Studhalter.
- 431. ADVANCED HEREDITY. Cr. 3.
- 432-3. ADVANCED BIO-ECOLOGY. Cr. 3, each. Mr. Studhalter.
- 533. PLANKTON. Cr. 3.

BOTANY

- 331. PLANT PHYSIOLOGY. Cr. 3.
- 339. PLANT ANATOMY. Cr. 3. Mr. Studhalter.
- 411. BOTANY SEMINAR. Cr. 1. Mr. Studhalter.
- 431. PLANT MICROTECHNIQUE. Cr. 3.
- 433. ADVANCED MORPHOLOGY. Cr. 3. Mr. Studhalter.
- 435. ADVANCED TAXONOMY. Cr. 3. Mr. Studhalter.
- 436-7. PLANT GEOGRAPHY. Cr. 3, each. Mr. Studhalter.
- 438. MORPHOLOGY OF FUNGI. Cr. 3. Mr. Studhalter.
- 531. PROBLEMS IN BOTANY. Cr. 3.
- 534. ADVANCED PLANT ANATOMY. Cr. 3.
- 535. FIELD BOTANY. Cr. 3.
- 536. TAXONOMY OF GRASSES. Cr. 3. Mr. Studhalter.
- 631-2. MASTER'S THESIS. Cr. 6. Staff.

ZOOLOGY

- 331. ANIMAL HISTOLOGY. Cr. 3. Mr. Landwer.
For minor only.
- 332. COMPARATIVE VERTEBRATE EMBRYOLOGY. Cr. 3. Mr. Landwer.
For minor only.
- 333. PARASITOLOGY. Cr. 3. Mr. Strandtmann.
- 334. ENTOMOLOGY. Cr. 3. Mr. Strandtmann.
- 335. ENTOMOLOGY. Cr. 3. Mr. Strandtmann.
- 411. ZOOLOGY SEMINAR. Cr. 1.
- 435. CYTOLOGY. Cr. 3. Mr. Cross.
- 436. ZOOLOGICAL MICROTECHNIQUE. Cr. 3. Mr. Cross.
- 437. MAMMALOLOGY. Cr. 3. Mr. Landwer.
- 438. FIELD ENTOMOLOGY. Cr. 3. Mr. Strandtmann.
- 4312. ADVANCED PARASITOLOGY. Cr. 3. Mr. Strandtmann.
- 531. PROBLEMS IN ZOOLOGY. Cr. 3.
- 535. FIELD ZOOLOGY. Cr. 3. Mr. Landwer.
- 631-2. MASTER'S THESIS. Cr. 6. Staff.

BUSINESS EDUCATION AND
SECRETARIAL ADMINISTRATION

Professor Clifford B. Shipley

Head of the Department

Majors and Minors for the Master's Degree

- 321. OFFICE MACHINES. Cr. 2.
Machine service fee, \$4.

- 331-2. SECRETARIAL PRACTICE. Cr. 3, each. Mrs. Terrell.
- 333. BUSINESS CORRESPONDENCE. Cr. 3.
- 337. REPORT WRITING. Cr. 3. Mr. Shipley.
- 421. VOICE WRITING AND DUPLICATING. Cr. 2.
- 422. IMPROVEMENT OF INSTRUCTION IN BOOKKEEPING AND THE
SOCIAL BUSINESS SUBJECTS. Cr. 2. Mr. Shipley.
- 423. IMPROVEMENT OF INSTRUCTION IN TYPEWRITING AND
SHORTHAND. Cr. 2. Mrs. Terrell, Mr. Shipley.
- 424. IMPROVEMENT OF INSTRUCTION IN BASIC BUSINESS. Cr. 2.
Mr. Shipley.
- 425. IMPROVEMENT OF INSTRUCTION IN OFFICE MACHINES. Cr. 2.
- 433. SECRETARIAL PROBLEMS AND PRACTICES. Cr. 3. Mrs. Terrell.
- 530. OBJECTIVES AND PRINCIPLES OF BUSINESS EDUCATION. Cr. 3.
- 531. CURRICULUM PROBLEMS OF BUSINESS EDUCATION. Cr. 3.
Mr. Shipley.
- 532. GUIDANCE IN BUSINESS EDUCATION. Cr. 3.
- 533. SUPERVISION AND ADMINISTRATION OF BUSINESS EDUCATION.
Cr. 3. Mr. Shipley.
- 534. RESEARCH SEMINAR IN BUSINESS EDUCATION. Cr. 3.
Mr. Shipley.
- 631-2. MASTER'S THESIS. Cr. 6. Mr. Shipley.

CHEMISTRY AND CHEMICAL ENGINEERING

Professor Joe Dennis

Head of the Department

Majors and Minors for the Master's Degree
and Doctor of Philosophy

Special Regulations Concerning the Master's Degree

Before being admitted to candidacy for the Master's degree with a major in this department, the student must take written preliminary examinations on his undergraduate work. The scope of these examinations is as follows: For applicants for the Master's degree in Chemistry: Inorganic, organic, and analytical chemistry and either physical or biological chemistry. For applicants for the Master's degree in Chemical Engineering: Inorganic, organic, analytical, and physical chemistry and chemical engineering.

The examinations are given during the first week of each semester, according to schedules posted on the departmental bulletin board. The student will have an opportunity to register for such remedial courses as the examination 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 or chemical engineering.

No student may receive a Master's degree in Chemistry or Chemical Engineering without having done satisfactory work in physical chemistry (Chemistry 441-2 or its equivalent).

The Master's thesis must be based on experimental work if at all feasible; 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 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.

The minor must consist of at least eighteen semester hours of work done outside of this department.

CHEMISTRY

- 331-2. QUANTITATIVE ANALYSIS. Cr. 3, each. Mr. Craig.
For minor only.
- 342. PHYSIOLOGICAL CHEMISTRY. Cr. 4. Mr. Watson.
For Agriculture and Home Economics students only.
- 353-4. ORGANIC CHEMISTRY. Cr. 5, each. Mr. Goodwin.
For minor only.
- 411-2. SEMINAR. Cr. 1, each.
For minor only.
- 421. HISTORY OF CHEMISTRY. Cr. 2. Mr. Craig, Mr. Slagle.
- 431. QUALITATIVE ORGANIC ANALYSIS. Cr. 3. Mr. Dennis.
- 433. INORGANIC PREPARATIONS. Cr. 3.
- 434. ORGANIC PREPARATIONS. Cr. 3.
- 436. BIOLOGICAL CHEMISTRY. Cr. 3. Mr. Dennis.
- 437. BIOLOGICAL CHEMISTRY. Cr. 3. Mr. Dennis.
- 438. ADVANCED PHYSICAL CHEMISTRY. Cr. 3. Mr. Oberg.
- 439. INSTRUMENTAL METHODS OF ANALYSIS. Cr. 3.
- 441-2. PHYSICAL CHEMISTRY. Cr. 4, each. Mr. Craig.
- 511-2. SEMINAR. Cr. 1, each.
- 5202. THE NATURE OF THE CHEMICAL BOND. Cr. 2.
Prerequisite: Chemistry 5301.
- 5204. COORDINATION COMPOUNDS. Cr. 2. Mr. Slagle.
Prerequisite: Chemistry 5301.
- 5301. ADVANCED INORGANIC CHEMISTRY. Cr. 3.
Prerequisite: Chemistry 441-2.
- 5305. THE CHEMISTRY OF THE LESS FAMILIAR ELEMENTS. Cr. 3.
Prerequisite: Chemistry 5301.
- 5314. ADVANCED ANALYTICAL CHEMISTRY. Cr. 3.
- 5315. SPECTROGRAPHIC ANALYSIS I, EMISSION SPECTRA. Cr. 3.
Mr. Craig.
Prerequisite: Consent of instructor. Recommended: Physics 331.

5318. CHEMICAL MICROSCOPY. Cr. 3.
 5321. ADVANCED ORGANIC CHEMISTRY. Cr. 3. Mr. Goodwin.
 5322. ORGANIC REACTIONS. Cr. 3.
 Prerequisite: Chemistry 5321.
 5324. QUANTITATIVE ORGANIC ANALYSIS. Cr. 3.
 5325. SELECTED TOPICS IN ORGANIC CHEMISTRY. Cr. 3.
 Prerequisite: Chemistry 5321.
 5326. INDUSTRIAL CHEMICALS FROM PETROLEUM. Cr. 3. Mr. Berst,
 Mr. Detman.
 Prerequisite or parallel: Chemistry 5321.
 5327. PHYSICAL ORGANIC CHEMISTRY. Cr. 3.
 Prerequisite: Chemistry 5321 and 5342.
 5328. MECHANISMS OF ORGANIC REACTIONS. Cr. 3. Mr. Berst.
 Prerequisite: Chemistry 5321.
 5331. BIOCHEMICAL TECHNIQUES. Cr. 3. Mr. Dennis.
 Prerequisite: Chemistry 436 and 437.
 5334. SELECTED TOPICS IN BIOCHEMISTRY. Cr. 3. Mr. Dennis.
 Mr. Watson.
 Prerequisite: Chemistry 436 and 437. Prerequisite or parallel:
 Chemistry 441-2.
 5335. PHYSICAL BIOCHEMISTRY. Cr. 3.
 Prerequisite: Chemistry 436, 437, and 5342.
 5336. THE CHEMISTRY OF ENZYMES. Cr. 3. Mr. Watson.
 Prerequisite: Chemistry 436, 437, and 441-2.
 5342. ADVANCED PHYSICAL CHEMISTRY. Cr. 3.
 5343. COLLOIDAL CHEMISTRY. Cr. 3.
 Prerequisite: Chemistry 5342.
 5344. KINETICS OF CHEMICAL REACTIONS. Cr. 3.
 Prerequisite: Chemistry 5342.
 5346. ELECTROCHEMISTRY. Cr. 3. Mr. Dodge.
 Prerequisite: Chemistry 5342.
 5347. ADVANCED CHEMICAL THERMODYNAMICS. Cr. 3. Mr. Oberg.
 Prerequisite: Chemistry 5342.
 5348. SPECTROGRAPHIC ANALYSIS II, ABSORPTION SPECTRA. Cr. 3.
 Mr. Craig.
 Prerequisite: Chemistry 5315.
 537-8. ADVANCED WORK IN SPECIFIC FIELDS. Cr. 3, each.
 631-2. MASTER'S THESIS. Cr. 6. Staff.
 731-2. DOCTOR'S DISSERTATION. Cr. 6. Staff.

CHEMICAL ENGINEERING

- 331-2. PRINCIPLES OF CHEMICAL ENGINEERING. Cr. 3, each. Mr.
 Oberg.
 For minor only.
 425-6. UNIT OPERATIONS LABORATORY. Cr. 2, each. Mr. Detman,
 Mr. Dodge.
 For minor only.

430. CHEMICAL ENGINEERING PLANT DESIGN. Cr. 3. Mr. Dodge.
For minor only.
- 431-2. CHEMICAL TECHNOLOGY. Cr. 3. Mr. Dodge.
For minor only.
- 433-4. CHEMICAL ENGINEERING THERMODYNAMICS. Cr. 3, each.
Mr. Oberg.
For minor only.
435. INSTRUMENTATION. Cr. 3. Mr. Detman.
437. ADVANCED CHEMICAL ENGINEERING. Cr. 3. Mr. Detman.
For minor only.
438. PETROLEUM REFINING ENGINEERING. Cr. 3. Mr. Detman.
531. ADVANCED CHEMICAL ENGINEERING THERMODYNAMICS. Cr. 3.
Mr. Holcomb.
Prerequisite: Chemical Engineering 433-4 and 437.
532. CHEMICAL ENGINEERING DESIGN. Cr. 3. Mr. Dodge.
Prerequisite: Chemical Engineering 430, 431-2, and 437.
533. ORGANIC UNIT PROCESSES. Cr. 3. Mr. Dodge.
Prerequisite: Chemistry 343-4.
534. ABSORPTION AND EXTRACTION. Cr. 3.
Prerequisite: Chemical Engineering 433-4 and 437.
535. HEAT TRANSFER. Cr. 3.
Prerequisite: Chemical Engineering 433-4 and 437.
536. DISTILLATION. Cr. 3.
Prerequisite: Chemical Engineering 433-4 and 437.
- 537, 538. ADVANCED WORK IN SPECIFIC FIELDS. Cr. 3 or 6.
- 631-2. MASTER'S THESIS. Cr. 6. Staff.

CHILD DEVELOPMENT AND FAMILY RELATIONS

Professor Sannie Callan

Head of the Department

Minors Only for the Master's Degree

432. NURSERY SCHOOL EDUCATION. Cr. 3. Miss Callan.
433. FAMILY RELATIONS. Cr. 3. Miss Callan.
435. STUDENT TEACHING IN NURSERY SCHOOL. Cr. 3. Miss Callan.

CIVIL ENGINEERING

Professor James H. Murdough

Head of the Department

Minors Only for the Master's Degree

339. FLUID MECHANICS. Cr. 3. Mr. Whetstone.
3311. HYDRAULIC MACHINERY. Cr. 3. Mr. Whetstone.
411. SOIL MECHANICS AND FOUNDATIONS LABORATORY. Cr. 1.
Mr. Overby.
423. ECONOMICS OF HIGHWAY DESIGN. Cr. 2. Mr. McRee.

- 424. MATERIALS. Cr. 2. Mr. Bowden, Mr. McRee.
Properties and tests of concrete materials.
- 425. MATERIALS. Cr. 2. Mr. Decker.
Properties and tests of wood and steel.
- 426. MUNICIPAL SANITATION. Cr. 2.
Principles of community sanitation.
- 431. REINFORCED CONCRETE. Cr. 3. Mr. Murdough.
- 432. REINFORCED CONCRETE. Cr. 3. Mr. Murdough.
- 433. STRUCTURES. Cr. 3. Mr. Murdough.
Design and detail of steel structures.
- 434. STRUCTURES. Cr. 3. Mr. Murdough.
Statically indeterminate structures.
- 437. WATER SUPPLY AND TREATMENT. Cr. 3. Mr. Decker.
- 438. SEWERAGE AND SEWAGE TREATMENT. Cr. 3. Mr. Decker.
- 439. LAW AND ETHICS IN ENGINEERING. Cr. 3. Mr. Adams,
Mr. McRee.
- 4310. AIRPLANE STRUCTURES. Cr. 3. Mr. Harding.
Stress analysis of airplane structures.
- 4312. SOIL MECHANICS AND FOUNDATIONS. Cr. 3. Mr. Overby.
- 4313. WATER PURIFICATION. Cr. 3. Mr. Decker.
- 4314. SEWAGE TREATMENT. Cr. 3. Mr. Decker.

CLOTHING AND TEXTILES

Professor Mabel D. Erwin

Head of the Department

Majors and Minors for the Master's Degree

- 311. HISTORIC TEXTILES. Cr. 1. Miss Erwin, Miss Wright.
- 331. TAILORING. Cr. 3. Mrs. Kinchen, Miss Wright.
- 332. ADVANCED DRESSMAKING. Cr. 3. Miss Wright.
- 334. FAMILY CLOTHING PROBLEMS. Cr. 3. Mrs. Buster, Mrs. Kinchen.
- 336. TEXTILE APPRECIATION. Cr. 3. Mrs. Buster.
- 431. TEXTILE ECONOMICS. Cr. 3. Mrs. Buster.
- 432. ADVANCED TEXTILES. Cr. 3. Mrs. Buster, Miss Wright.
- 433. HISTORY OF COSTUME. Cr. 3. Miss Erwin.
- 435. HOME FURNISHINGS. Cr. 3. Miss Erwin.
- 531. ADVANCED GARMENT FITTING. Cr. 3. Mrs. Kinchen.
- 532-3. SPECIAL PROBLEMS IN CLOTHING. Cr. 3, each.
- 631-2. MASTER'S THESIS. Cr. 6. Staff.

DAIRY MANUFACTURES

Professor J. J. Willingham

Head of the Department

Majors and Minors for the Master's Degree

- 323. JUDGING DAIRY PRODUCTS. Cr. 2. Mr. Willingham.
- 333. DOMESTIC DAIRYING. Cr. 3. Mr. Willingham.

- 334. FUNDAMENTALS OF DAIRY SCIENCE. Cr. 3. Mr. Harmon.
- 335. DAIRY BACTERIOLOGY. Cr. 3. Mr. Harmon.
- 336. FOOD INDUSTRIES. Cr. 3. Mr. Tinney.
- 337. DAIRY PLANT EQUIPMENT. Cr. 3. Mr. Willingham.
- 338. TESTING DAIRY PRODUCTS. Cr. 3.
- 341. MARKET MILK. Cr. 4. Mr. Harmon.
- 411. DAIRY SEMINAR. Cr. 1. Mr. Willingham.
- 412. STARTERS AND CULTURED MILK. Cr. 1. Mr. Harmon.
- 413. ADVANCED JUDGING OF DAIRY PRODUCTS. Cr. 1.
Mr. Willingham.
- 422. CONDENSED AND POWDERED MILK. Cr. 2.
- 430. ADVANCED PROBLEMS IN FUNDAMENTALS OF DAIRY SCIENCE.
Cr. 3. Mr. Harmon.
- 431. CHEESE MAKING. Cr. 3. Mr. Tinney.
- 432. DAIRY INDUSTRY PROBLEMS. Cr. 3. Mr. Harmon.
- 433. ICE CREAM MAKING. Cr. 3. Mr. Willingham.
- 434. BUTTERMILKING. Cr. 3. Mr. Harmon.
- 435. DAIRY AND FOOD INSPECTION. Cr. 3. Mr. Tinney.
- 436. FOOD BEVERAGES. Cr. 3. Mr. Tinney.
- 437. CREAMERY MANAGEMENT AND MERCHANDISING. Cr. 3.
Mr. Willingham.
- 438. ADVANCED DAIRY BACTERIOLOGY. Cr. 3. Mr. Harmon.
- 512. ADVANCED DAIRY PRODUCTS QUALITY CONTROL. Cr. 1.
Mr. Willingham.
- 531-2. DAIRY MANUFACTURING PROBLEMS. Cr. 3, each. Mr.
Willingham.
- 533-4. DAIRY MANUFACTURING PROBLEMS. Cr. 3, each. Mr. Tinney.
- 535-6. DAIRY BACTERIOLOGY RESEARCH. Cr. 3, each. Mr. Harmon.
- 631-2. MASTER'S THESIS. Cr. 6. Mr. Willingham.

ECONOMICS

Professor Thomas F. Wiesen

Head of the Department

Majors and Minors for the Master's Degree

- 331. INTERMEDIATE ECONOMIC PRINCIPLES. Cr. 3.
- 332. PUBLIC UTILITY ECONOMICS. Cr. 3. Mr. Moore.
- 333. PUBLIC EXPENDITURES. Cr. 3. Mr. Clover.
- 334. TAXATION. Cr. 3. Mr. Clover.
- 335. TRANSPORTATION PRINCIPLES AND PRACTICES. Cr. 3.
Mr. Moore.
- 337. ECONOMIC SYSTEMS. Cr. 3. Mr. Anderson.
- 338. FOREIGN TRADE. Cr. 3. Mr. Wiesen.
- 339. LATIN AMERICA AND THE UNITED STATES. Cr. 3. Mr. Wiesen.
- 3311. NATIONAL INCOME ANALYSIS. Cr. 3. Mr. Rouse.
- 3312. ECONOMICS OF LABOR. Cr. 3. Mr. Clover.

- 3313. CONSUMER ECONOMICS. Cr. 3. Mr. Clover.
- 432. FOREIGN MARKET SURVEYS. Cr. 3. Mr. Wiesen.
- 433. INTERNATIONAL ECONOMIC RELATIONS. Cr. 3. Mr. Wiesen.
- 434. AIR TRANSPORTATION. Cr. 3. Mr. Moore.
- 435. TRANSPORTATION ECONOMICS. Cr. 3. Mr. Moore.
- 436. DEVELOPMENT OF ECONOMIC DOCTRINES. Cr. 3. Mr. Wiesen.
- 437. CURRENT ECONOMIC PROBLEMS. Cr. 3. Mr. Clover.
- 438. RESEARCH IN ECONOMICS AND BUSINESS. Cr. 3. Mr. Clover.
- 4310. ADVANCED ECONOMIC PRINCIPLES. Cr. 3. Mr. Anderson.
- 4311. THEORIES OF DEPRESSIONS. Cr. 3. Mr. Anderson.
- 4312. DISTRIBUTION THEORY. Cr. 3. Mr. Alldredge.
- 531. ECONOMIC RESEARCH. Cr. 3.
- 532. SEMINAR IN CURRENT ECONOMIC TRENDS. Cr. 3.
- 533. SEMINAR IN RECENT ECONOMIC THEORY. Cr. 3.
- 534. SEMINAR IN PUBLIC FINANCE. Cr. 3.
- 535. READINGS IN ECONOMICS. Cr. 3.
- 631-2. MASTER'S THESIS. Cr. 6. Staff.

EDUCATION AND PHILOSOPHY

Professor John S. Carroll

Head of the Department

Majors and Minors for the Master's Degree,
Doctor of Education, and Doctor of Philosophy

Attention is called to the Special Requirements for the degrees of Master of Education, Doctor of Education, and Doctor of Philosophy in Education.

- 330. PRINCIPLES OF MODERN EDUCATION. Cr. 3. Mr. Garlin.
(Formerly Education 331).
- 333. CURRICULUM DEVELOPMENT IN ELEMENTARY EDUCATION.
Cr. 3. Mr. Livingston.
- 334. CURRICULUM DEVELOPMENT IN SECONDARY EDUCATION, Cr. 3.
Mr. Jackson.
- 335. ELEMENTARY EDUCATION METHODS. Cr. 3.
- 336. SECONDARY EDUCATION METHODS. Cr. 3.
(Formerly 235).
- 3310. CHILDREN'S LITERATURE. Cr. 3.
- 3311. READING DEVELOPMENT IN THE ELEMENTARY SCHOOL. Cr. 3.
- 3314. SECONDARY SCHOOL ORGANIZATION AND ADMINISTRATION.
Cr. 3.
- 3315. AUDIO-VISUAL EDUCATION. Cr. 3. Mr. Cooper.
- 430. HISTORY AND PHILOSOPHY OF EDUCATION. Cr. 3. Mr. Jackson.
(Formerly 431).
- 431. STUDENT OBSERVATION AND TEACHING IN THE ELEMENTARY
SCHOOL. Cr. 3. Mr. Livingston.
(Formerly 3317).

432. STUDENT OBSERVATION AND TEACHING IN THE SECONDARY SCHOOL. Cr. 3.
(Formerly 3316).
433. CURRICULUM PRACTICUM IN ELEMENTARY EDUCATION. Cr. 3.
Mr. Livingston.
434. CURRICULUM PRACTICUM IN SECONDARY EDUCATION. Cr. 3.
435. EDUCATIONAL EVALUATION. Cr. 3.
436. PUBLIC SCHOOL ADMINISTRATION. Cr. 3.
(Formerly 432).
437. PUBLIC SCHOOL RELATIONS. Cr. 3. Mr. Garlin.
(Formerly 433).
438. SUPERVISION AND CURRICULUM DEVELOPMENT. Cr. 3.
Mr. Carroll.
(Formerly 434).
4312. ELEMENTARY SCHOOL ORGANIZATION AND ADMINISTRATION.
Cr. 3.
4316. WORKSHOP IN CURRICULUM DEVELOPMENT. Cr. 3.
4317. CURRICULUM DEVELOPMENT PRACTICUM. Cr. 3.
531. EDUCATIONAL RESEARCH. Cr. 3. Mr. Cooper.
532. PHILOSOPHY OF EDUCATION. Cr. 3. Mr. Jackson.
534. ADVANCED EDUCATIONAL SOCIOLOGY. Cr. 3.
535. FEDERAL, STATE, COUNTY AND LOCAL SCHOOL ADMINISTRATION.
Cr. 3.
536. ELEMENTARY SCHOOL ADMINISTRATION. Cr. 3.
537. SECONDARY SCHOOL ADMINISTRATION. Cr. 3.
538. ADVANCED AUDIO-VISUAL EDUCATION. Cr. 3. Mr. Davidson.
539. ADMINISTRATION OF BUSINESS SERVICES. Cr. 3.
(Formerly 535).
5310. AUDIO-VISUAL WORKSHOP. Cr. 3. Mr. Davidson.
5311. APPLIED EDUCATIONAL RESEARCH. Cr. 3. Mr. Cooper.
5312. ELEMENTARY SUPERVISION AND CURRICULUM DEVELOPMENT.
Cr. 3. Mr. Livingston.
5313. SECONDARY SUPERVISION AND CURRICULUM DEVELOPMENT.
Cr. 3.
5314. ADVANCED CURRICULUM WORKSHOP. Cr. 3.
5315. ADULT EDUCATION. Cr. 3. Mr. Garlin.
(Formerly 538).
5316. JUNIOR COLLEGE EDUCATION. Cr. 3. Mr. Garlin.
5351. GENERAL EDUCATION SEMINAR. Cr. 3.
5352. SEMINAR IN THE HISTORY AND PHILOSOPHY OF EDUCATION.
Cr. 3. Mr. Jackson.
5353. SEMINAR IN COMPARATIVE EDUCATION. Cr. 3.
5354. SEMINAR IN EDUCATIONAL SOCIOLOGY. Cr. 3.
5355. SEMINAR IN ELEMENTARY EDUCATION. Cr. 3. Mr. Livingston.
5356. SEMINAR IN SECONDARY EDUCATION. Cr. 3. Mr. Jackson.
5357. SEMINAR IN JUNIOR COLLEGE. Cr. 3. Mr. Garlin.

5358. SEMINAR IN EDUCATIONAL ADMINISTRATION. Cr. 3.
5359. SEMINAR IN SUPERVISION AND CURRICULUM DEVELOPMENT.
Cr. 3.
5360. SEMINAR IN AUDIO-VISUAL EDUCATION. Cr. 3.
5361. SEMINAR IN HEALTH EDUCATION. Cr. 3.
631-2. MASTER'S THESIS SEMINAR. Cr. 6. Mr. Carroll, Staff.
731-2. DOCTOR'S DISSERTATION SEMINAR. Cr. 6. Mr. Carroll, Staff.

EDUCATIONAL PSYCHOLOGY

331. CHILD PSYCHOLOGY. Cr. 3. Miss True.
333. STATISTICAL METHODS. Cr. 3. Mr. Barnett.
335. ADOLESCENT PSYCHOLOGY. Cr. 3. Miss True.
337. INTRODUCTION TO COUNSELING AND GUIDANCE. Cr. 3.
Mr. Barnett.
431. TESTS AND MEASUREMENTS. Cr. 3. Mr. Barnett.
433. MENTAL HYGIENE. Cr. 3. Miss True.
530. ADVANCED EDUCATIONAL PSYCHOLOGY. Cr. 3. Mr. Hutchins.
531. INTRODUCTION TO PROJECTIVE TECHNIQUES. Cr. 3.
Mr. Hutchins.
533. EXPERIMENTAL CHILD PSYCHOLOGY. Cr. 3. Miss True.
534. PRACTICUM IN INTELLIGENCE TESTING. Cr. 3. Mr. Barnett.
(Formerly 530).
535. INTRODUCTION TO RORSCHACH TEST. Cr. 3. Mr. Hutchins.
537. ADVANCED STATISTICAL METHODS. Cr. 3. Mr. Richards.
539. VOCATIONAL INFORMATION. Cr. 3. Mr. Barnett.
5310-11. PRACTICUM IN TECHNIQUES OF COUNSELING AND GUIDANCE.
Cr. 3, each.
5312-13. PRACTICUM IN ADVANCED PSYCHOLOGICAL TESTING. Cr. 3,
each.
5314. SEMINAR IN EDUCATIONAL PSYCHOLOGY. Cr. 3. Mr. Hutchins.
5315. SEMINAR IN COUNSELING AND GUIDANCE. Cr. 3.
560-1. INTERNSHIP IN COUNSELING AND GUIDANCE. Cr. 12.

PHILOSOPHY

332. HISTORY OF PHILOSOPHY. Cr. 3.
333. DEVELOPMENT OF AMERICAN PHILOSOPHY. Cr. 3. Mr. Little.
335. ORIENTAL PHILOSOPHIES. Cr. 3. Mr. Little.
337. LOGIC. Cr. 3.
431. AESTHETICS. Cr. 3. Mr. Little.
432. PHILOSOPHY OF VALUE. Cr. 3. Mr. Little.
436. PHILOSOPHY OF RELIGION. Cr. 3. Mr. Little.
438. SEMINAR IN PHILOSOPHICAL PROBLEMS. Cr. 3. Mr. Little.

ELECTRICAL ENGINEERING

Professor Charles V. Bullen
Head of the Department

Majors and Minors for the Master's Degree

- 322. ALTERNATING CURRENT CIRCUITS LABORATORY. Cr. 2.
Mr. Stenis, Mr. Bullen.
- 323. ELECTRONICS LABORATORY. Cr. 2. Mr. Stenis.
- 324. COMMUNICATIONS CIRCUITS LABORATORY. Cr. 2. Mr. Stenis.
- 325. ELECTRONICS. Cr. 2. Mr. Stenis.
- 332. ALTERNATING CURRENT CIRCUITS. Cr. 3. Mr. Bullen,
Mr. Stenis.
- 334. COMMUNICATIONS CIRCUITS. Cr. 3. Mr. Stenis.
- 336. ILLUMINATION. Cr. 3.
- 410. CURRENT ELECTRICAL ENGINEERING. Cr. 1. Mr. Bullen.
- 4112-13. ELECTRICAL MACHINERY LABORATORY. Cr. 1, each.
Mr. Minter, Mr. Smith.
- 4114. COMMUNICATIONS CIRCUITS LABORATORY. Cr. 1. Mr. Houston.
- 429. ENGINEERING ELECTRONICS. Cr. 2. Mr. Spuhler, Mr. Stenis.
- 4210. VACUUM TUBE CIRCUITS LABORATORY. Cr. 2. Mr. Stenis.
Mr. Spuhler.
- 4211. RADIO ENGINEERING LABORATORY. Cr. 2.
- 4212-13. ELECTRICAL MACHINERY LABORATORY. Cr. 2, each.
Mr. Smith.
- 4216. ENGINEERING ELECTRONIC LABORATORY. Cr. 2. Mr. Spuhler,
Mr. Stenis.
- 432-3. ELECTRIC POWER TRANSMISSION. Cr. 3, each. Mr. Smith.
- 435. ADVANCED ILLUMINATION. Cr. 3.
- 436-7. ELECTROMAGNETIC FIELD THEORY. Cr. 3, each. Mr. Bennett,
Mr. Houston.
- 4310. VACUUM TUBE CIRCUITS. Cr. 3. Mr. Spuhler, Mr. Stenis.
- 4311. RADIO ENGINEERING. Cr. 3. Mr. Spuhler, Mr. Houston.
- 4312-13. ELECTRICAL MACHINERY. Cr. 3, each. Mr. Smith.
- 4314. COMMUNICATIONS CIRCUITS. Cr. 3. Mr. Houston.
- 411-2. ENGINEERING SEMINAR. Cr. 1, each. Mr. Bullen.
- 521-2. ADVANCED ELECTRONIC LABORATORY. Cr. 2, each. Mr.
Houston, Mr. Stenis.
- 523. SYMMETRICAL COMPONENTS LABORATORY. Cr. 2. Mr. Smith.
- 526. CONTROLS AND SERVO-MECHANISMS LABORATORY. Cr. 2.
Mr. Smith, Mr. Spuhler.
- 528-9. ADVANCED ELECTRICAL MACHINES LABORATORY. Cr. 2, each.
Mr. Smith.
- 531-2. ELECTRON TUBES. Cr. 3, each. Mr. Houston.
- 533. SYMMETRICAL COMPONENTS. Cr. 3. Mr. Smith.

535. PROTECTION OF ELECTRIC POWER SYSTEMS. Cr. 3. Mr. Smith.
 536-7. ADVANCED NETWORK THEORY. Cr. 3, each. Mr. Bennett,
 Mr. Houston.
 538-9. ADVANCED ELECTRICAL MACHINE THEORY. Cr. 3, each.
 Mr. Smith.
 631-2. MASTER'S THESIS. Cr. 6. Mr. Bullen, Staff.

ENGLISH

Professor Truman W. Camp
 Head of the Department

Majors and Minors for the Master's Degree
 and Doctor of Philosophy

A student majoring in English should confer with the head of the department concerning his minor subjects, which will be in such closely related fields as history, foreign languages, philosophy, psychology, government, and speech. A student working for the doctorate in English literature may choose American literature as one of his two minors.

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 take his Doctor's degree in English will be given a preliminary comprehensive examination in English literature, and in American literature if he plans to minor in it, to determine his degree of proficiency in these subjects.

A student seeking the doctorate in English literature should have at least one graduate course in each of the following fields: Old English, Middle English, Renaissance, Shakespeare, Seventeenth Century, Eighteenth Century, Romanticism, Nineteenth Century. He will select one field (or two or more closely related fields) as the area of concentration, in which he will take additional courses and write his dissertation.

332. HISTORY OF THE ENGLISH LANGUAGE. Cr. 3. Mr. Gunn.
 333. AMERICAN PROSE. Cr. 3. Mr. Smallwood.
 338. AMERICAN POETRY. Cr. 3. Mr. Smallwood.
 3316. THE AMERICAN NOVEL. Cr. 3. Mr. Mills, Mr. Male.
 3317. THE ENGLISH NOVEL FROM LYLLY TO SCOTT. Cr. 3. Mr. Allen.
 3318. ENGLISH AND FOREIGN FICTION FROM 1825 TO 1910. Cr. 3.
 Mr. Murphy.
 3320. AMERICAN DRAMA. Cr. 3. Mr. Smallwood.
 3322. MODERN BRITISH AND AMERICAN POETRY. Cr. 3. Mr. Gillis.
 430. CHAUCER. Cr. 3. Mr. Gunn.
 431. RESTORATION AND EIGHTEENTH CENTURY DRAMA. Cr. 3.
 Mr. Camp.
 432. SHAKESPEARE. Cr. 3. Mr. Gates, Mr. McCullen.
 433. SHAKESPEARE. Cr. 3. Mr. Gates, Mr. McCullen.
 434. MILTON AND HIS AGE. Cr. 3. Mr. Allen.
 435. ENGLISH ROMANTICISM. Cr. 3. Mr. Strout.

436. THE LATER ROMANTIC POETS. Cr. 3. Mr. Strout.
 437. ENGLISH DRAMA FROM THE BEGINNINGS TO 1642. Cr. 3.
 Mr. McCullen.
 439. CURRENT ENGLISH. Cr. 3. Mr. Gunn.
 4311. EARLY EIGHTEENTH CENTURY ENGLISH POETRY AND PROSE.
 Cr. 3. Mr. Camp.
 4312. AGE OF JOHNSON. Cr. 3. Mr. Camp.
 4314. NON-DRAMATIC POETRY AND PROSE OF THE SEVENTEENTH
 CENTURY. Cr. 3. Mr. McCullen.
 4315. TUDOR POETRY AND PROSE. Cr. 3. Mr. Strout.
 4316. THE STRUCTURE OF THE NOVEL. Cr. 3. Mr. Allen.
 4318. EARLY VICTORIAN PROSE AND POETRY. Cr. 3. Miss Teague.
 4319. LATER VICTORIAN PROSE AND POETRY. Cr. 3. Miss Teague.
 4320. AMERICAN LITERATURE AND ITS BACKGROUNDS. Cr. 3.
 Mr. Gates, Mr. White.
 4321. AMERICAN LITERATURE AND ITS BACKGROUNDS. Cr. 3.
 Mr. Gates, Mr. White.
 4322. LIFE AND LITERATURE OF THE SOUTHWEST. Cr. 3. Mr. Gillis.
 4326. TYPES OF AMERICAN FICTION. Cr. 3. Mr. Gates, Mr. Male.
 530. MIDDLE ENGLISH LITERATURE. Cr. 3. Mr. Gunn.
 531. BIBLIOGRAPHY AND METHODS OF LITERARY RESEARCH. Cr. 3.
 Required of all graduate students majoring in the department of
 English, preferably at the beginning of their work.
 532. ENGLISH LITERARY HISTORY. Cr. 3.
 Required of all graduate students majoring in English literature.
 533. ELIZABETHAN DRAMA. Cr. 3. Mr. Gates, Mr. McCullen.
 534. OLD ENGLISH. Cr. 3. Mr. Gunn.
 536. STUDIES IN AMERICAN LITERATURE. Cr. 3. Mr. Gates.
 537. SPENSER. Cr. 3. Mr. Strout.
 538. STUDIES IN THE ENGLISH ROMANTIC POETS. Cr. 3. Mr. Strout.
 539. AMERICAN CRITICAL THEORIES. Cr. 3. Mr. Gates.
 5311. LITERARY CRITICISM. Cr. 3. Mr. Strout.
 5319. STUDIES IN SHAKESPEARE. Cr. 3. Mr. Gates.
 631-2. MASTER'S THESIS. Cr. 6. Staff.
 731-2. DOCTOR'S DISSERTATION. Cr. 6. Staff.

FOODS AND NUTRITION

Professor Jonnie M. Michie

Head of the Department

Majors and Minors for the Master's Degree

FOODS AND COOKERY

311. HISTORY OF FOOD CUSTOMS. Cr. 1. Miss Twyford.
 331. FOOD DEMONSTRATION. Cr. 3. Miss Twyford.
 332. FOOD PURCHASING. Cr. 3. Miss Twyford, Miss Buttrill.
 333. EXPERIMENTAL COOKERY. Cr. 3. Mrs. Lamb.

335. FOOD PRESERVATION. Cr. 3. Miss Buttrill.
 431. PROBLEMS OF THE SCHOOL LUNCH PROGRAM. Cr. 3.
 Mrs. Lamb.
 433. ADVANCED FOOD PREPARATION AND TABLE SERVICE. Cr. 3.
 Miss Twyford.
 531. RESEARCH METHODS IN COOKERY. Cr. 3. Mrs. Michie,
 Mrs. Lamb.

NUTRITION AND DIETETICS

431. NUTRITION IN DISEASE. Cr. 3. Mrs. Michie.
 432. ADVANCED NUTRITION. Cr. 3. Mrs. Lamb.
 433. PROBLEMS IN NUTRITION OF CHILDREN. Cr. 3. Mrs. Michie.
 434. METHODS OF TEACHING NUTRITION. Cr. 3. Mrs. Michie,
 Mrs. Lamb.
 531. TECHNIQUES OF NUTRITION RESEARCH. Cr. 3. Mrs. Michie,
 Mrs. Lamb.
 532. STUDIES IN ENERGY METABOLISM. Cr. 3. Mrs. Michie,
 Mrs. Lamb.
 533. READINGS IN NUTRITION. Cr. 3. Mrs. Michie,
 Mrs. Lamb.
 631-2. MASTER'S THESIS. Cr. 6. Mrs. Michie, Mrs. Lamb.

FOREIGN LANGUAGES

Professor Charles B. Qualia
 Head of the Department

Minors Only for the Doctor of Philosophy

SPANISH

Majors and Minors for the Master's Degree

- 431-2. THE MODERN NOVEL. Cr. 3, each. Mr. Qualia.
 433-4. THE MODERN DRAMA. Cr. 3, each. Mr. Qualia.
 435. TEACHER'S COURSE IN METHODS OF TEACHING SPANISH. Cr. 3.
 436-7. ADVANCED GRAMMAR, COMPOSITION AND STYLE. Cr. 3, each.
 Mr. Qualia.
 438. THE DRAMA BEFORE LOPE DE VEGA. Cr. 3. Mrs. Gates.
 4310-11. SPANISH CIVILIZATION IN MEXICO. Cr. 3, each.
 Mr. Hamilton.
 4312-13. THE PROSE OF THE GOLDEN AGE. Cr. 3, each.
 Mr. Hamilton.
 4314-15. THE DRAMA OF THE GOLDEN AGE. Cr. 3, each.
 Mr. Hamilton.
 4316-17. A SURVEY OF SPANISH LITERATURE. Cr. 3, each. Mr. Strehli.
 4318. CONTEMPORARY DRAMA. Cr. 3. Mr. Qualia.
 4320. CONTEMPORARY SPANISH NOVEL. Cr. 3. Mr. Qualia.
 4324. READINGS IN LATIN-AMERICAN LITERATURE. Cr. 3. Mrs. Gates.
 4325. READINGS IN LATIN-AMERICAN LITERATURE. Cr. 3. Mrs. Gates.

4326-27. A SURVEY OF SPANISH-AMERICAN LITERATURE. Cr. 3, each.
Mrs. Gates.

5312-13. STUDIES IN SPANISH AND SPANISH-AMERICAN LITERATURE.
Cr. 3, each.

631-2. MASTER'S THESIS. Cr. 6. Staff.

FRENCH

Minors Only for the Master's Degree

431-2. THE MODERN DRAMA. Cr. 3, each. Mr. Qualia.

433-4. THE LITERATURE OF THE NINETEENTH CENTURY. Cr. 3, each.
Mr. Hamlett.

435-6. READINGS IN FRENCH LITERATURE. Cr. 3, each. Mr. Qualia,
Mr. Hamlett.

GENERAL HOME ECONOMICS

Dean Margaret W. Weeks
in charge

Majors Only for the Master's Degree

General Home Economics is an interdepartmental major leading to the degree of Master of Science. The courses are drawn from most of the areas of Home Economics, but as many as six semester hours may be selected from the physical sciences, the natural sciences, the social sciences, or education.

An approved Bachelor's degree in Home Economics or its equivalent is prerequisite for this program. The minimum requirement for the Master of Science in General Home Economics is twenty-four semester hours of course work and a thesis.

The student's graduate program must be approved by the professor in charge of the thesis, the Dean of the Division of Home Economics, and the Dean of Graduate Studies.

GEOLOGY

Professor Raymond G. Sidwell
Head of the Department

Majors and Minors for the Master's Degree
and Doctor of Philosophy

Before being admitted 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 repeat such courses as may be designated by the major professor.

Likewise before being approved for candidacy for the Master's de-

gree, the student must satisfy the requirements in foreign languages as indicated in the General Regulations.

Requirements for the Doctor's degree in Geology are covered by the general statements concerning this degree, but prospective students who have special problems are invited to write to the head of the department for further details.

- 333-4. PETROLOGY AND PETROGRAPHY. Cr. 3, each. Mr. Patton.
- 335-6. GENERAL PALEONTOLOGY. Cr. 3, each. Mr. Bond.
- 363. FIELD GEOLOGY. Cr. 6.
- 433. STRUCTURAL GEOLOGY. Cr. 3. Mr. Robinson.
- 434. GEOLOGY OF OIL AND GAS. Cr. 3. Mr. Robinson.
- 435. INDEX FOSSILS. Cr. 3. Mr. Brand.
- 436. MICROPALAEONTOLOGY. Cr. 3. Mr. Brand.
- 437. SEDIMENTOLOGY, ENVIRONMENTS. Cr. 3. Mr. Sidwell.
- 438. SEDIMENTOLOGY, PRODUCTS. Cr. 3. Mr. Sidwell.
- 4310. ELEMENTARY VERTEBRATE PALEONTOLOGY. Cr. 3. Mr. Meade.
- 4311. ADVANCED VERTEBRATE PALEONTOLOGY. Cr. 3. Mr. Meade.
- 4316. AERIAL PHOTOTOPOGRAPHY. Cr. 3. Mr. Warn.
- 511-2. RESEARCH METHODS. Cr. 1, each.
- 531-2. ADVANCED SEDIMENTATION. Cr. 3, each. Mr. Sidwell.
- 533-4. STRUCTURE OF OIL AND GAS RESERVOIRS. Cr. 3, each.
Mr. Robinson.
- 535-6. ADVANCED WORK IN A SPECIFIC FIELD. Cr. 3, each.
- 537. FIELD GEOLOGY. Cr. 3. Mr. Meade.
- 538. GEOLOGY OF THE SOUTHWEST. Cr. 3. Mr. Meade.
- 539. ADVANCED INVERTEBRATE PALEONTOLOGY OF PALEOZOIC.
Cr. 3. Mr. Bond.
- 5310. ADVANCED INVERTEBRATE PALEONTOLOGY OF MESOZOIC.
Cr. 3. Mr. Bond.
- 5311. PALEOZOIC MICROPALAEONTOLOGY. Cr. 3. Mr. Brand.
- 5312. MESOZOIC MICROPALAEONTOLOGY. Cr. 3. Mr. Brand.
- 5313-14. STRATIGRAPHY OF THE UNITED STATES. Cr. 3, each.
Mr. Weart.
- 5317-18. SEISMOLOGY. Cr. 3, each. Mr. Patton.
- 5319. EOLIAN SEDIMENTATION, MATERIALS. Cr. 3. Mr. Sidwell,
Mr. Warn.
- 5320. EOLIAN SEDIMENTATION, PROCESSES. Cr. 3. Mr. Sidwell,
Mr. Warn.
- 5321. GEOCHEMISTRY OF SEDIMENTARY PROCESSES. Cr. 3. Mr. Weart,
Mr. Warn.
- 5322. ADVANCED FIELD GEOLOGY. Cr. 3. Mr. Sidwell, Mr. Warn.
- 5324. PROBLEMS IN SEDIMENTATION. Cr. 3. Mr. Sidwell.
- 5326. PROBLEMS IN STRATIGRAPHY. Cr. 3. Mr. Weart.
- 5327. PROBLEMS IN MICROPALAEONTOLOGY. Cr. 3. Mr. Brand.

5328. PROBLEMS IN STRUCTURAL GEOLOGY. Cr. 3. Mr. Robinson.
 631-2. MASTER'S THESIS. Cr. 6. Staff.
 731-2. DOCTOR'S DISSERTATION. Cr. 6. Staff.

ECONOMIC GEOLOGY

337. GROUND WATER. Cr. 3. Mr. Dennis.
 338. METALLIC ORES. Cr. 3. Mr. Dennis.
 339. NON-METALLIC DEPOSITS. Cr. 3. Mr. Dennis.

GEOGRAPHY

331. GENERAL METEOROLOGY. Cr. 3. Mr. Warn.
 332. PRACTICAL METEOROLOGY. Cr. 3. Mr. Warn.

GOVERNMENT

Professor J. William Davis
 Head of the Department

Majors and Minors for the Master's Degree
 and Minors Only for the Doctor of Philosophy

331. LOCAL GOVERNMENT. Cr. 3.
 332. LOCAL ADMINISTRATION. Cr. 3.
 334. AMERICAN POLITICAL PARTIES. Cr. 3.
 335. AMERICAN FOREIGN RELATIONS. Cr. 3.
 336. AMERICAN DIPLOMACY. Cr. 3.
 337. PUBLIC ADMINISTRATION, ORGANIZATION. Cr. 3. Mr. Jackson.
 338. PUBLIC ADMINISTRATION, PROCEDURE. Cr. 3. Mr. Jackson.
 339. GOVERNMENT AND BUSINESS. Cr. 3. Mr. Abernethy.
 3311. POLITICAL INSTITUTIONS. Cr. 3. Mr. Abernethy.
 3312. GOVERNMENT AND LABOR. Cr. 3. Mr. Abernethy.
 431-2. AMERICAN CONSTITUTIONAL LAW. Cr. 3, each. Mr. Davis.
 433. EUROPEAN POLITICAL IDEAS. Cr. 3. Mr. Davis.
 434. AMERICAN POLITICAL IDEAS. Cr. 3. Mr. Davis.
 435. INTERNATIONAL ORGANIZATION. Cr. 3.
 436. INTERNATIONAL LAW. Cr. 3.
 437. POLITICAL GEOGRAPHY. Cr. 3. Mr. Kennedy.
 438. WORLD POLITICS. Cr. 3. Mr. Kennedy.
 439. MODERN POLITICAL IDEAS. Cr. 3. Mr. Abernethy.
 531. SEMINAR IN AMERICAN GOVERNMENT AND POLITICS. Cr. 3.
 532. SEMINAR IN POLITICAL THEORY. Cr. 3. Mr. Davis,
 Mr. Abernethy.
 533. SEMINAR IN PUBLIC ADMINISTRATION. Cr. 3. Mr. Jackson.
 534. SEMINAR IN PUBLIC LAW. Cr. 3. Mr. Davis.
 535. SEMINAR IN INTERNATIONAL RELATIONS. Cr. 3. Mr. Kennedy.
 536. SEMINAR IN COMPARATIVE GOVERNMENTS AND INSTITUTIONS.
 Cr. 3. Mr. Abernethy, Mr. Kennedy.
 631-2. MASTER'S THESIS. Cr. 6. Staff.

HISTORY, ANTHROPOLOGY, AND SOCIOLOGY

Professor W. C. Holden
Head of the Department

HISTORY

Majors and Minors for the Master's Degree
and Doctor of Philosophy

Candidates for the Degree of Doctor of Philosophy in History will be accepted subject to the general requirements of the Division of Graduate Studies and may major in either American History or European History (British, Modern Continental-British). If a student majors in American History, European History should be his first minor; if he majors in European History, American History should be his first minor. Requests for further information should be addressed to the Head of the Department.

- 331. GREEK CIVILIZATION. Cr. 3. Mr. Eaves.
- 332. ROMAN CIVILIZATION. Cr. 3. Mr. Eaves.
- 333. RENAISSANCE AND REFORMATION. Cr. 3. Mr. Pearce.
- 334. FRENCH REVOLUTION AND NAPOLEON. Cr. 3. Mr. Pearce.
- 335. GEOPOLITICS OF WORLD WAR II. Cr. 3. Mr. Eaves.
- 336. TUDOR ENGLAND. Cr. 3. Mr. Kinchen.
- 337. STUART ENGLAND. Cr. 3. Mr. Kinchen.
- 338. EIGHTEENTH CENTURY ENGLAND. Cr. 3. Mr. Kinchen.
- 339. NINETEENTH CENTURY ENGLAND. Cr. 3. Mr. Kinchen.
- 3311. THE CANADIAN DOMINION. Cr. 3. Mr. Kinchen.
- 3313. EUROPE FROM 1815 TO 1918. Cr. 3. Mr. Eaves.
- 3314. EUROPE SINCE 1919. Cr. 3. Mr. Eaves.
- 3315. JAPAN AND CHINA. Cr. 3. Mr. Eaves.
- 3316. THE BRITISH EMPIRE. Cr. 3. Mr. Kinchen.
- 3319. TWENTIETH CENTURY BRITAIN. Cr. 3. Mr. Kinchen.
- 430. ENGLISH COLONIAL AMERICA. Cr. 3. Mr. Kinchen, Mr. Dupree.
- 433. THE AMERICAN REVOLUTION. Cr. 3. Mr. McKay, Mr. Dupree.
- 434. EARLY AMERICAN CONSTITUTIONAL DEVELOPMENT. Cr. 3.
Mr. McKay.
- 435. ANGLO-AMERICAN DIPLOMACY. Cr. 3. Mr. McKay.
- 436. THE FEDERALIST AND REPUBLICAN PERIODS. Cr. 3.
Mr. Wallace, Mr. Dupree.
- 437. THE JACKSONIAN PERIOD. Cr. 3. Mr. Wallace, Mr. Dupree.
- 438. HISTORY OF TEXAS TO 1846. Cr. 3. Mr. Wallace.
- 439. HISTORY OF TEXAS, 1846-1900. Cr. 3. Mr. Wallace.
- 4310. EXPANSION OF THE UNITED STATES. Cr. 3. Mr. McKay.
- 4311. THE CIVIL WAR. Cr. 3. Mr. McKay.
- 4312. RECONSTRUCTION. Cr. 3. Mr. McKay.
- 4313. HISTORY OF THE UNITED STATES, 1877-1898. Cr. 3.
Mr. Dupree.

4314. HISTORY OF THE UNITED STATES, 1898-1918. Cr. 3.
Mr. Dupree.
4315. CONSTITUTIONAL DEVELOPMENT IN TEXAS. Cr. 3. Mr. McKay.
4316. HISTORY OF THE UNITED STATES, 1919-1932. Cr. 3.
Mr. McKay.
4317. HISTORY OF THE UNITED STATES SINCE 1933. Cr. 3.
Mr. McKay.
4319. LATIN AMERICAN DIPLOMACY. Cr. 3. Mrs. Vernon.
4320. SOCIAL HISTORY OF TEXAS, 1821-1860. Cr. 3. Mr. Holden.
4321. RECENT HISTORY OF TEXAS, 1900-1940. Cr. 3. Mr. McKay.
4322. LIFE AND LITERATURE OF THE SOUTHWEST. Cr. 3. Mr. Gillis.
4323. HISTORY OF SOUTH AMERICA. Cr. 3. Mrs. Vernon.
4324. HISTORY OF SOUTH AMERICA. Cr. 3. Mrs. Vernon.
4325. HISTORY OF SPANISH NORTH AMERICA. Cr. 3. Mrs. Vernon.
4326. HISTORY OF SPANISH NORTH AMERICA. Cr. 3. Mrs. Vernon.
530. SEMINAR IN SOUTHWESTERN HISTORY. Cr. 3. Mr. Holden.
531. SEMINAR IN TEXAS HISTORY. Cr. 3. Mr. Wallace.
532. SEMINAR IN AMERICAN HISTORY. Cr. 3. Mr. McKay.
533. SEMINAR IN LATIN AMERICAN HISTORY. Cr. 3. Mrs. Vernon.
534. SEMINAR IN ENGLISH HISTORY. Cr. 3. Mr. Kinchen.
535. TECHNIQUE OF RESEARCH. Cr. 3.
536. SEMINAR IN EUROPEAN HISTORY. Cr. 3. Mr. Eaves.
- 631-2. MASTER'S THESIS. Cr. 6. Staff.
- 731-2. DOCTOR'S DISSERTATION. Cr. 6. Staff.

ANTHROPOLOGY

Majors and Minors for the Master's Degree

330. CULTURES AND PEOPLES OF THE SOUTHWEST. Cr. 3.
Mr. Pearce.
333. SOCIAL CUSTOMS OF THE PLAINS INDIANS. Cr. 3. Mr. Wallace.
334. RACES, PEOPLES AND LANGUAGES OF NORTH AMERICA. Cr. 3.
Mr. Holden.
335. ARCHAEOLOGY IN AMERICA NORTH OF MEXICO. Cr. 3.
Mr. Holden.
- 336-7. MEXICAN ARCHAEOLOGY. Cr. 3, each. Mr. Pearce.
430. RACES, PEOPLES, AND LANGUAGES OF SOUTH AMERICA. Cr. 3.
Mr. Wallace.
431. FIELD ARCHAEOLOGY. Cr. 3. Mr. Holden.
- 433-4. SOUTHWESTERN ARCHAEOLOGY. Cr. 3, each. Mr. Holden.
531. SEMINAR. Cr. 3. Mr. Holden.
532. SEMINAR. Cr. 3. Mr. Holden.
- 631-2. MASTER'S THESIS. Cr. 6. Staff.

SOCIOLOGY

Majors and Minors for the Master's Degree

332. MARRIAGE. Cr. 3. Mr. Little.
333. AMERICAN MINORITY PROBLEMS. Cr. 3.

334. PATTERNS OF CULTURAL TRADITIONS. Cr. 3. Mr. Eaves.
 336. SOCIAL LIFE AND CULTURE OF MEXICO. Cr. 3.
 337. SOCIAL ORGANIZATION. Cr. 3. Mr. Moore.
 338. THE SOCIOLOGY OF THE PERSON. Cr. 3. Mr. Moore.
 339. COLLECTIVE BEHAVIOR. Cr. 3. Mr. Moore.
 3310. SOCIAL CONTROL. Cr. 3. Mr. Moore.
 3311. POPULATION PROBLEMS. Cr. 3. Mr. Moore.
 3312. COMMUNITY ORGANIZATION. Cr. 3. Mr. Moore.
 431. PATTERNS OF RURAL LIFE IN THE UNITED STATES. Cr. 3.
 Mr. Wallace.
 432. PROBLEMS IN SOCIAL WORK. Cr. 3.
 433. CRIMINOLOGY. Cr. 3.
 435. HUMAN ECOLOGY. Cr. 3. Mr. Moore.
 436. DEVELOPMENT OF SOCIOLOGICAL THOUGHT. Cr. 3.
 Mr. Kinchen.
 437. SOCIAL CHANGE. Cr. 3. Mr. Moore.
 438. SEMINAR IN SOCIAL PROBLEMS. Cr. 3. Mr. Moore.
 439. CONTEMPORARY SOCIOLOGICAL THEORY. Cr. 3. Mr. Moore.
 4310. RESEARCH METHODS (NONSTATISTICAL). Cr. 3. Mr. Moore.
 531. RESEARCH METHODS (STATISTICAL). Cr. 3. Mr. Moore.
 532. SEMINAR IN SYSTEMATIC SOCIOLOGICAL THEORY. Cr. 3.
 Mr. Moore.
 631-2. MASTER'S THESIS. Cr. 6. Mr. Moore.

HOME ECONOMICS EDUCATION

Professor Vivian J. Adams

Head of the Department

Majors and Minors for the Master's Degree

PREREQUISITE FOR A MAJOR: The degree of Bachelor of Science in Home Economics with a major in Home Economics Education or a Bachelor's degree including a program substantially equivalent to a major in this department.

REQUIREMENTS: Thirty semester hours, of which fifteen, including the six hours for the thesis, must be in Home Economics Education. Students who prefer to omit the thesis will take fifteen hours of course work, including Home Economics Education 534. Also required of all applicants are three hours in general education or psychology and a minor of twelve hours distributed as follows: six hours from one field and six hours from the remaining subject matter fields.

432. PROBLEMS IN TEACHING CLOTHING. Cr. 3. Miss Erwin,
 Mrs. Kinchen.
 434. METHODS OF TEACHING ART IN THE HOMEMAKING
 CURRICULUM. Cr. 3. Miss Poindexter.
 435. METHODS OF ADULT LEADERSHIP. Cr. 3. Miss Clewell.

441. STUDENT TEACHING IN HOME ECONOMICS. Cr. 4.
 534. TECHNIQUES OF RESEARCH IN HOME ECONOMICS. Cr. 3.
 536. PROBLEMS IN TEACHING HOME ECONOMICS. Cr. 3.
 Miss Nesbitt, Mrs. Adams.
 537. TECHNIQUES OF SUPERVISION IN HOME ECONOMICS. Cr. 3.
 Mrs. Adams, Miss Nesbitt.
 631-2. MASTER'S THESIS. Cr. 6. Staff.

HOME MANAGEMENT

Professor Margaret W. Weeks

Head of the Department

Minors Only for the Master's Degree

431. HOUSING, HOUSE CARE, AND MANAGEMENT. Cr. 3. Miss Drew.
 433. HOUSEHOLD EQUIPMENT. Cr. 3. Miss Drew.
 434. CONSUMER PROBLEMS. Cr. 3. Miss Drew.

INDUSTRIAL ENGINEERING

Professor Oscar A. St. Clair

Head of the Department

Minors Only for the Master's Degree

331. TIME AND MOTION STUDY. Cr. 3. Mr. Green.
 332. MANAGEMENT. Cr. 3. Mr. St. Clair, Mr. Penick, Mr. Green.
 333. MANUFACTURING METHODS. Cr. 3. Mr. St. Clair, Mr. Green.
 336. TOOL DESIGN. Cr. 3. Mr. Penick.
 337. INDUSTRIAL CONTROL. Cr. 3. Mr. Green.
 411. INDUSTRIAL ENGINEERING PROBLEMS. Cr. 1. Mr. St. Clair.
 421-2. CHEMICAL PLANT DESIGN. Cr. 2, each. Mr. Penick.
 423. PURCHASING. Cr. 2. Mr. St. Clair, Mr. Green.
 432-3. INDUSTRIAL PLANT DESIGN. Cr. 3, each. Mr. Green.
 435. INDUSTRIAL SAFETY ENGINEERING. Cr. 3. Mr. St. Clair,
 Mr. Penick.
 436. PRINCIPLES OF ENGINEERING ECONOMICS. Cr. 3. Mr. Penick.

JOURNALISM

Professor J. Russell Heitman

Head of the Department

Minors Only for the Master's Degree

332. MAGAZINE ARTICLE WRITING. Cr. 3. Mrs. Allen.
 333. PROBLEMS OF THE COMMUNITY NEWSPAPER. Cr. 3.
 Mr. Heitman.
 430. PRINCIPLES OF JOURNALISM. Cr. 3. Mr. Heitman.
 432. HIGH SCHOOL PUBLICATIONS. Cr. 3. Mrs. Allen.
 434. EDITORIAL WRITING. Cr. 3. Mrs. Allen.
 435-6. ADVERTISING. Cr. 3, each. Mr. Heitman.

MANAGEMENT

Professor F. L. Mize
Head of the Department

Majors and Minors for the Master's Degree

- 331. INDUSTRIAL MANAGEMENT. Cr. 3.
- 332. MANAGEMENT OF SMALL BUSINESS ENTERPRISE. Cr. 3.
- 333. LABOR PROBLEMS. Cr. 3. Mr. Fox.
- 334. PERSONNEL ADMINISTRATION. Cr. 3. Mr. Fox.
- 335. PURCHASING, STORES, AND INVENTORY CONTROL. Cr. 3.
- 431. OFFICE MANAGEMENT. Cr. 3. Mr. Shipley.
- 433. LABOR RELATIONS. Cr. 3. Mr. Fox.
- 434. JOB EVALUATION AND WAGE ADMINISTRATION. Cr. 3. Mr. Fox.
- 435. EMPLOYEE SUPERVISION. Cr. 3. Mr. Mize.
- 436. PROBLEMS IN OFFICE MANAGEMENT. Cr. 3. Mr. Shipley.
- 437. HUMAN RELATIONS IN INDUSTRY. Cr. 3. Mr. Mize.
- 438. INTERVIEWING, SELECTING, AND COUNSELING EMPLOYEES.
Cr. 3. Mr. Mize.
- 439. PERSONNEL TESTS AND RATING SCALES. Cr. 3. Mr. Mize.
- 531. RESEARCH IN MANAGEMENT. Cr. 3.
- 532. RESEARCH IN MANAGEMENT. Cr. 3.
- 631-2. MASTER'S THESIS. Cr. 6. Staff.

MARKETING

Professor George G. Heather
Head of the Department

Majors and Minors for the Master's Degree

- 321. PUBLIC RELATIONS. Cr. 2.
- 332. PRINCIPLES OF MARKETING. Cr. 3. Mr. Golden.
- 333. MARKETING PROBLEMS. Cr. 3. Mr. Golden.
- 334. PRINCIPLES OF ADVERTISING. Cr. 3.
- 335. PRINCIPLES OF RETAILING. Cr. 3.
- 336. INTRODUCTION TO BUSINESS STATISTICS. Cr. 3. Mr. Alldredge.
- 337. INTERMEDIATE BUSINESS STATISTICS. Cr. 3.
- 339. PRINCIPLES OF SALESMANSHIP. Cr. 3.
- 421. ADVERTISING COPY. Cr. 2.
- 431. COMMODITY MARKETING. Cr. 3. Mr. Golden.
- 434. TRENDS IN WHOLESALE DISTRIBUTION. Cr. 3. Mr. Golden.
- 435. BUSINESS CYCLES AND FORECASTS. Cr. 3. Mr. Alldredge.
- 437. ADVANCED BUSINESS STATISTICS. Cr. 3.
- 438. DISPLAY. Cr. 3.
- 439. SALES ADMINISTRATION. Cr. 3. Mr. Golden.

- 4310. TRENDS IN RETAILING SYSTEMS. Cr. 3.
- 4315. RETAIL BUYING. Cr. 3.
- 4316. GRAPHIC ANALYSIS. Cr. 3.
- 4317. ADVERTISING LAYOUT. Cr. 3.
- 4318. MECHANICAL PRODUCTION OF ADVERTISING. Cr. 3.
- 531. RESEARCH IN MARKETING. Cr. 3. Mr. Golden.
- 532. ADVANCED MARKETING PROBLEMS. Cr. 3. Mr. Golden.
- 534. PROBLEMS IN ADVERTISING. Cr. 3.
- 539. PROBLEMS IN SALES ADMINISTRATION. Cr. 3. Mr. Golden.
- 631-2. MASTER'S THESIS. Cr. 6. Mr. Golden.

MATHEMATICS

Professor Emmett A. Hazlewood
Head of the Department

Majors and Minors for the Master's Degree
and Minors Only for the Doctor of Philosophy

- 321. DIFFERENTIAL EQUATIONS. Cr. 2.
- 331. APPLICATIONS OF CALCULUS. Cr. 3.
- 332. DIFFERENTIAL EQUATIONS. Cr. 3.
- 333. ADVANCED ALEGBRA. Cr. 3. Mr. Woodward.
- 337. COLLEGE GEOMETRY. Cr. 3.
- 339. STATISTICAL METHODS. Cr. 3. Miss May.
- 431. THE TEACHING OF SECONDARY MATHEMATICS. Cr. 3.
- 432. ADVANCED DIFFERENTIAL EQUATIONS. Cr. 3. Mr. Fuller.
- 433. THEORY OF EQUATIONS. Cr. 3. Mr. Heineman.
- 434. ADVANCED CALCULUS I. Cr. 3.
- 435. ADVANCED CALCULUS II. Cr. 3.
- 436. INTRODUCTION TO FINITE GROUPS. Cr. 3. Mr. Heineman.
- 437. THEORY OF NUMBERS. Cr. 3. Mr. Underwood.
- 438. SOLID ANALYTIC GEOMETRY. Cr. 3.
- 439. VECTOR ANALYSIS. Cr. 3. Mr. Hazlewood.
- 533. ADVANCED TOPICS IN ANALYSIS. Cr. 3. Mr. Hazlewood.
- 534. SYNTHETIC PROJECTIVE GEOMETRY. Cr. 3. Mr. Parker.
- 535. ANALYTIC PROJECTIVE GEOMETRY. Cr. 3. Mr. Underwood.
- 536. MODERN ALEGBRA I. Cr. 3. Mr. Moser.
- 537. MODERN ALEGBRA II. Cr. 3. Mr. Moser.
- 539. SPECIAL TOPICS IN NUMBER THEORY. Cr. 3. Mr. Moser.
- 5312. FUNCTIONS OF A COMPLEX VARIABLE I. Cr. 3. Mr. Sparks.
- 5313. FUNCTIONS OF A COMPLEX VARIABLE II. Cr. 3. Mr. Sparks.
- 5314. FUNCTIONS OF A REAL VARIABLE I. Cr. 3. Mr. Fuller.
- 5315. FUNCTIONS OF A REAL VARIABLE II. Cr. 3. Mr. Fuller.
- 631-2. MASTER'S THESIS. Cr. 6. Staff.

MECHANICAL ENGINEERING

Professor Harry F. Godeke

Head of the Department

Minors Only for the Master's Degree

- 322. ELEMENTARY MACHINE DESIGN. Cr. 2.
- 330-1. THERMODYNAMICS. Cr. 3, each.
- 423-4. INTERNAL COMBUSTION ENGINES. Cr. 2, each.
- 432. POWER PLANT DESIGN. Cr. 3.
- 437. MACHINE DESIGN. Cr. 3.
- 438-9. HEATING, VENTILATING AND AIR CONDITIONING. Cr. 3, each.
- 4310. AERODYNAMICS. Cr. 3.
- 4311. AERODYNAMICS. Cr. 3.

MUSIC

Professor Gene L. Hemmle

Head of the Department

Minors Only for the Master's Degree

Prerequisite for a minor in Music Education is a Bachelor's degree from an approved college, with the following courses having been completed in undergraduate study: Applied Music, Principal Instrument: twelve semester hours; Secondary Instrument: six semester hours; Music Education: twelve semester hours; and Theory: eight semester hours.

Beginning on June 1, 1951, entering candidates for the degree of Master of Education with a minor in Music Education will be expected to include either Music Education 530 or Music Education 531. A maximum of four semester hours in applied music may be included. Graduate students are required to pass a placement examination prior to enrolling for courses in applied music.

APPLIED MUSIC

- 415, 416. WIND INSTRUMENTS. Cr. 1, each.
- 425, 426. VOICE OR INSTRUMENT. Cr. 2, each.

MUSIC LITERATURE

- 431, 432. HISTORY OF MUSIC. Cr. 3, each. Mr. Elliott.

MUSIC EDUCATION

- 521. INSTRUMENTAL CONDUCTING. Cr. 2. Mr. Wiley.
- 522. CHORAL CONDUCTING. Cr. 2. Mr. Hemmle.
- 530, 531. SEMINAR IN MUSIC EDUCATION. Cr. 3, each. Mr. Hemmle, Mr. Wiley, Mr. Elliott, Mr. Haddon.

THEORY

- 322, 323. FORM AND COMPOSITION. Cr. 2, each.
- 424. PEDAGOGY OF THEORY. Cr. 2.
- 427, 428. INSTRUMENTATION. Cr. 2, each.

PETROLEUM ENGINEERING

Professor William L. Ducker

Head of the Department

Minors Only for the Master's Degree

- 331. PETROLEUM DEVELOPMENT METHODS. Cr. 3.
- 333. PETROLEUM PRODUCTION METHODS. Cr. 3.
- 410-11. SEMINAR IN ENGINEERING PRACTICES. Cr. 1, each.
Mr. Ducker.
- 433. ADVANCED PRODUCTION ENGINEERING. Cr. 3.
- 434. NATURAL GAS ENGINEERING. Cr. 3. Mr. Ducker.
- 435. ADVANCED NATURAL GAS ENGINEERING. Cr. 3. Mr. Ducker.
- 436. RESERVOIR ENGINEERING. Cr. 3. Mr. Ducker.

PHYSICAL AND HEALTH EDUCATION

Professor Ramon W. Kireilis

Head of the Department

Minors Only for the Master's Degree

- 423. ORGANIZATION AND ADMINISTRATION OF INTERSCHOLASTIC
ATHLETIC PROGRAM. Cr. 2. Mr. Jennings.
- 425. ORGANIZATION AND ADMINISTRATION OF INTRAMURAL SPORTS.
Cr. 2. Mr. Philbrick.
- 434. PRINCIPLES OF PHYSICAL EDUCATION. Cr. 3. Miss Rainey.
- 435. MODERN TRENDS IN PHYSICAL EDUCATION. Cr. 3.
Mr. Kireilis.
- 436. PHYSICAL EXAMINATIONS IN PHYSICAL EDUCATION. Cr. 3.
Mr. Kireilis.
- 437. MEASUREMENTS IN PHYSICAL EDUCATION. Cr. 3.
Mr. Kireilis.
- 438. CURRICULUM CONSTRUCTION IN PHYSICAL EDUCATION. Cr. 3.
Mr. Kireilis.
- 531. ADMINISTRATION OF PHYSICAL EDUCATION. Cr. 3.
Mr. Kireilis.
- 532. SUPERVISION OF PHYSICAL EDUCATION. Cr. 3. Mr. Kireilis.
- 533. FACILITIES FOR PHYSICAL EDUCATION. Cr. 3. Mr. Kireilis.
- 534. ADMINISTRATION OF THE SCHOOL HEALTH PROGRAM. Cr. 3.
Mr. Kireilis.

PHYSICS

Professor Clarence C. Schmidt

Head of the Department

Majors and Minors for the Master's Degree

- 312-3. MODERN PHYSICS LABORATORY. Cr. 1, each. Mr. Gott.
- 331. LIGHT. Cr. 3. Mr. Merrymon.
- 332. HEAT. Cr. 3. Mr. Steffy.

- 333-4. ELECTRICITY AND MAGNETISM. Cr. 3, each. Mr. Day.
 337. INTRODUCTION TO MODERN PHYSICS. Cr. 3. Mr. Gott.
 338. INTRODUCTION TO MODERN PHYSICS. Cr. 3. Mr. Gott.
 411-2. PHYSICS SEMINAR. Cr. 1, each. Mr. Schmidt.
 413-4. PHYSICS SEMINAR. Cr. 1, each. Mr. Schmidt.
 415-6. SPECIAL PROJECTS. Cr. 1, each.
 423-4. ELECTRICAL MEASUREMENTS. Cr. 2, each. Mr. Schmidt.
 435. MECHANICS. Cr. 3. Mr. Merrymon.
 531-2. THEORETICAL PHYSICS. Cr. 3. Mr. McKinney.
 533-4. QUANTUM MECHANICS, ATOMIC AND MOLECULAR PHYSICS.
 Cr. 3, each. Mr. Glaser.
 535. NUCLEAR PHYSICS. Cr. 3. Mr. Glaser.
 536. X-RAYS. Cr. 3. Mr. Glaser.
 539-10. GEOMETRICAL AND PHYSICAL OPTICS. Cr. 3, each.
 Mr. Merrymon.
 631-2. MASTER'S THESIS. Cr. 6. Staff.

PLANT INDUSTRY

Professor Arthur W. Young
 Head of the Department

Majors and Minors for the Master's Degree

The Department of Plant Industry offers major work in Agronomy, Farm Machinery, and Horticulture. Major work is not offered in Plant Industry itself. Courses designated as Plant Industry may be used to satisfy the requirements for a minor or may be accepted as part of the work required for a major, when approved by the Head of the Department and the Dean of the Division of Graduate Studies.

A final oral examination is required of all candidates for the Master's degree with a major in this department, and a written examination may also be required when the staff considers it desirable.

PLANT INDUSTRY

431. PLANT BREEDING AND IMPROVEMENT. Cr. 3. Mr. Ayers.
 535. RESEARCH METHODS. Cr. 3. Mr. Young.

AGRONOMY

332. GRAIN CROPS. Cr. 3. Mr. Leidigh.
 333. RANGE PLANTS. Cr. 3. Mr. Morrow.
 421. COTTON AND OTHER FIBER CROPS. Cr. 2. Mr. Ayers.
 422. SOIL MANAGEMENT. Cr. 2. Mr. Young.
 423. SOIL MANAGEMENT. Cr. 2. Mr. Young.
 424. ADVANCED CROP JUDGING AND GRAIN GRADING. Cr. 2.
 Mr. Ayers.
 425. AGRONOMY PROBLEMS. Cr. 2.
 430. AGRONOMY PROBLEMS. Cr. 3.
 434. SOIL CONSERVATION AND LAND USE PLANNING. Cr. 3.
 Mr. Peterson.

- 435. SOIL MORPHOLOGY AND GENESIS. Cr. 3. Mr. Peterson.
- 436. SOIL CHEMISTRY. Cr. 3. Mr. Young.
- 437. RANGE MANAGEMENT. Cr. 3. Mr. Morrow.
- 439. SOIL MICROBIOLOGY. Cr. 3. Mr. Young.
- 441. PLANT PRODUCTION. Cr. 4. Mr. Morrow.
- 512-3-4. AGRONOMY SEMINAR. Cr. 1, 2, or 3.
- 531-2-3. AGRONOMY PROBLEMS. Cr. 3, 6, or 9. Mr. Young,
Mr. Leidigh, Mr. Ayers.
- 631-2. MASTER'S THESIS. Cr. 6. Staff.

FARM MACHINERY

- 411. SOIL MANAGEMENT LABORATORY. Cr. 1. Mr. Sullivan,
Mr. Williams.
- 412. SOIL MANAGEMENT LABORATORY. Cr. 1. Mr. Sullivan,
Mr. Williams.
- 425. AGRICULTURAL ENGINEERING PROBLEMS. Cr. 2.
- 430. AGRICULTURAL ENGINEERING PROBLEMS. Cr. 3.
- 431. FARM BUILDINGS. Cr. 3. Mr. Sullivan.
- 432. LAND MAPPING AND MEASUREMENT. Cr. 3. Mr. Williams.
- 433. ADVANCED FARM SHOP. Cr. 3. Mr. Sullivan.
- 434. ADVANCED FARM MACHINERY. Cr. 3. Mr. Williams.

HORTICULTURE

- 421. CITRICULTURE. Cr. 2. Mr. Yocum.
- 422. DESIGN AND OPERATION OF PARKS AND RECREATION SYSTEMS.
Cr. 2. Mr. Urbanovsky.
- 423. DESIGN AND OPERATION OF PARKS AND RECREATION SYSTEMS.
Cr. 2. Mr. Urbanovsky.
- 425. HORTICULTURAL PROBLEMS. Cr. 2. Mr. Yocum,
Mr. Urbanovsky.
- 430. HORTICULTURAL PROBLEMS. Cr. 3. Mr. Yocum,
Mr. Urbanovsky.
- 431-2. POMOLOGY. Cr. 3, each. Mr. Yocum.
- 433. SYSTEMATIC POMOLOGY. Cr. 3. Mr. Yocum.
- 434. LANDSCAPE PLANNING. Cr. 3. Mr. Urbanovsky.
- 512-3-4. HORTICULTURE SEMINAR. Cr. 1, 2, or 3.
- 531-2-3. HORTICULTURAL PROBLEMS. Cr. 3, 6, or 9.
- 631-2. MASTER'S THESIS. Cr. 6. Staff.

PSYCHOLOGY

Professor Lehman C. Hutchins
Head of the Department

Majors and Minors for the Master's Degree and Minors Only for
the Doctor of Philosophy and Doctor of Education

The Department of Psychology offers graduate work leading to the Master's degree in the following areas: General Theoretical Psychology, Industrial Psychology, and Clinical Psychology. Candidates for the Mas-

ter's degree in these areas will be expected to have completed the equivalent of an undergraduate major in psychology, including twelve semester hours of advanced work. Students who have not previously had a course in experimental psychology will be required to take Psychology 437 and 438. Psychology 537 is required of all candidates. In cooperation with the Department of Education, work is offered leading to the Doctor of Philosophy or Doctor of Education in Counseling and Guidance.

The following courses are listed also under Educational Psychology in the Department of Education: 331, 333, 335, 337, 431, 433, 530, 531, 533, 534, 535, 537, 539, 5310-11, 5312-13, 5314, 5315, and 560-1.

- 331. CHILD PSYCHOLOGY. Cr. 3. Miss True.
- 333. STATISTICAL METHODS. Cr. 3. Mr. Barnett.
- 335. ADOLESCENT PSYCHOLOGY. Cr. 3. Miss True.
- 336. PHYSIOLOGICAL PSYCHOLOGY. Cr. 3. Mr. Richards.
- 337. INTRODUCTION TO COUNSELING AND GUIDANCE. Cr. 3.
Mr. Barnett.
- 431. TESTS AND MEASUREMENTS. Cr. 3. Mr. Barnett.
- 432. TRADE AND APTITUDE TESTING. Cr. 3.
- 433. MENTAL HYGIENE. Cr. 3. Miss True.
- 434. SOCIAL PSYCHOLOGY. Cr. 3.
- 435. ABNORMAL PSYCHOLOGY. Cr. 3. Miss True.
- 436. PERSONALITY DEVELOPMENT. Cr. 3. Mr. Hutchins.
- 437. EXPERIMENTAL PSYCHOLOGY. Cr. 3. Mr. Richards.
- 438. EXPERIMENTAL PSYCHOLOGY. Cr. 3. Mr. Richards.
- 439. INDUSTRIAL PSYCHOLOGY. Cr. 3.
- 4310. METHODS IN CLINICAL PSYCHOLOGY. Cr. 3. Mr. Hutchins.
- 530. ADVANCED EDUCATIONAL PSYCHOLOGY. Cr. 3.
- 531. INTRODUCTION TO PROJECTIVE TECHNIQUES. Cr. 3.
Mr. Hutchins.
- 532. PROBLEMS IN PSYCHOLOGY. Cr. 3.
- 533. EXPERIMENTAL CHILD PSYCHOLOGY. Cr. 3. Miss True.
- 534. PRACTICUM IN INTELLIGENCE TESTING. Cr. 3. Mr. Barnett.
- 535. INTRODUCTION TO RORSCHACH TEST. Cr. 3. Mr. Hutchins.
- 537. ADVANCED STATISTICAL METHODS. Cr. 3. Mr. Richards.
- 539. VOCATIONAL INFORMATION. Cr. 3. Mr. Barnett.
- 5310-11. PRACTICUM IN TECHNIQUES OF COUNSELING AND GUIDANCE.
Cr. 6.
- 5312-13. PRACTICUM IN ADVANCED PSYCHOLOGICAL TESTING. Cr. 6.
- 5314. SEMINAR IN EDUCATIONAL PSYCHOLOGY. Cr. 3. Mr. Hutchins.
- 5315. SEMINAR IN COUNSELING AND GUIDANCE. Cr. 3.
- 560-1. INTERNSHIP IN COUNSELING AND GUIDANCE. Cr. 12.
- 631-2. MASTER'S THESIS. Cr. 6. Staff.

SPEECH

Professor P. Merville Larson

Head of the Department

Majors and Minors for the Master's Degree

432. SPEECH CORRECTION. Cr. 3. Miss Lindell.
433. SPEECH CORRECTION. Cr. 3. Miss Lindell.
435. INTERPRETATIVE READING. Cr. 3. Miss Thompson.
439. THE TEACHING OF SPEECH. Cr. 3. Mr. Larson.
4310-11. ADVANCED STAGE DIRECTING. Cr. 3, each. Miss Thompson.
4312. HISTORY AND APPRECIATION OF THEATER. Cr. 3.
Miss Thompson.
4314. SPEECH PATHOLOGY. Cr. 3. Miss Lindell.
531. STUDIES IN THE FIELD OF SPEECH THERAPY. Cr. 3.
Miss Lindell.
532. STUDIES IN THE FIELD OF SPEECH THERAPY. Cr. 3.
Miss Lindell.
533. PROBLEMS IN RESEARCH. Cr. 3.
534. PROBLEMS IN RESEARCH. Cr. 3.
631-2. MASTER'S THESIS. Cr. 6. Staff.

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