

BULLETIN

*Of The*

Texas Technological College

*Published Monthly*

---

---

Vol. XXIII

FEBRUARY, 1947

No. 2

---

---

DIVISION OF GRADUATE STUDIES

1947



TEXAS TECHNOLOGICAL COLLEGE  
LUBBOCK, TEXAS

---

---

Entered as second-class matter December, 1924, at the Postoffice at  
Lubbock, Texas, under the Act of August 24, 1912

## OFFICERS OF ADMINISTRATION

WILLIAM MARVIN WHYBURN, B. A., M. A., Ph. D., President.

217 Administration Building.

WILLIAM CURRY HOLDEN, B. A., M. A., Ph. D., Dean of Division of Graduate Studies.

209 Administration Building.

JOHNNYE GILKERSON LANGFORD, B. B. A., M. A., Dean of Women.

107 Administration Building.

JAMES GEORGE ALLEN, B. A., M. A., Dean of Men.

114 Administration Building.

WARREN PERRY CLEMENT, B. A., M. A., Registrar.

111 Administration Building.



## GRADUATE COMMITTEE

WILLIAM CURRY HOLDEN, Ph. D., Dean of Division of Graduate Studies, Chairman.

ALBERT BARNETT, Ph. D., Professor of Education and Psychology.

WILLIAM MOORE CRAIG, Ph. D., Professor of Chemistry.

WALDO SUMNER GLOCK, Ph. D., Associate Professor of Geology.

FRED GEORGE HARBAUGH, D. V. M., Professor of Animal Husbandry.

## Faculty Members Offering Courses for Graduate Credit

OTTO VINCENT ADAMS, M. S. E., Sc. D., Professor of Civil Engineering.

JAMES GEORGE ALLEN, M. A., Professor of English.

\*LOUISE CRAWFORD ALLEN, M. A., Assistant Professor of Journalism.

HUGH A. ANDERSON, M. A., Assistant Professor of Economics.

CECIL IRVY AYRES, M. S., Assistant Professor of Agronomy.

HATTIE CHARLOTTE BALLEW, M. A., Assistant Professor of Child Development and Family Relations.

ALBERT BARNETT, Ph. D., Professor of Education and Psychology.

JOHN HENRY BAUMGARDNER, M. S., Assistant Professor of Animal Husbandry.

LUCY RICHARDSON BIBB, M. S., Assistant Professor of Clothing and Textiles.

JULIEN PAUL BLITZ, D. Mus., Professor of Music.

WELDON LEROY BRADSHAW, B. S., Professor of Architecture.

CHARLES VICTOR BULLEN, M. S. in E. E., Professor of Electrical Engineering.

EDNA WALKER BUSTER, M. A., Associate Professor of Clothing and Textiles.

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

SANNIE CALLAN, M. A., Professor of Child Development and Family Relations.

TRUMAN WILDES CAMP, Ph. D., Associate Professor of English.

RAY LEON CHAPPELLE, M. S., Professor of Agricultural Education.

\*GERALDINE CLEWELL, M. S., Associate Professor of Home Economics Education.

LEWIS B. COOPER, Ph. D., Associate Professor of Education and Psychology.

WILLIAM MOORE CRAIG, Ph. D., Professor of Chemistry.

JAMES HOLLIE CROSS, M. A., Assistant Professor of Physics.

\*ALBERT BENJAMIN CUNNINGHAM, Ph. D., Litt. D., Professor of English.

JAMES WILLIAM DAVIS, Ph. D., Professor of Government.

JAMES WENDELL DAY, M. A., Assistant Professor of Physics.

CHARLES GARFIELD DECKER, M. S., Associate Professor of Civil Engineering.

JOE DENNIS, Ph. D., Associate Professor of Chemistry.

MARY WOODWARD DOAK, M. A., Professor of English.

LOLA MARIE DREW, M. A., Assistant Professor of Home Management.

---

\* On Leave, 1946-47.

- MABEL EVANS DUGGER, M. A., Assistant Professor of Clothing and Textiles.
- BONNIE KATHERINE DYSART, M. A., Associate Professor of Education and Psychology.
- \*CHARLES DUDLEY EAVES, Ph. D., Professor of History.
- GEORGE O. ELLE, M. S., Assistant Professor of Horticulture.
- MABEL DEANE ERWIN, M. A., Professor of Clothing and Textiles.
- NEIL CASEY FINE, M. S., Associate Professor of Animal Husbandry.
- RAYMOND ERNEST GARLIN, Ph. D., Professor of Education and Psychology.
- ERNEST WILLIS GIBSON, M. A., C. P. A., Assistant Professor of Accounting and Finance.
- LUCILLE AVO POWELL GILL, M. A., Associate Professor of English.
- WALDO SUMNER GLOCK, Ph. D., Associate Professor of Geology.
- HARRY FREDERICK GODEKE, M. E., M. S., Professor of Mechanical Engineering.
- HOWARD E. GOLDEN, Ph. D., Associate Professor of Marketing.
- ROBERT CABINESS GOODWIN, Ph. D., Professor of Chemistry and Chemical Engineering.
- JAMES MARCUS GORDON, M. A., LL. D., Professor of Education.
- MARTHA ELLEN GRAVES, M. S., Associate Professor of Home Economics Education.
- \*WILLARD FRANKLIN GRAY, M. S. in E. E., Associate Professor of Electrical Engineering.
- ALAN M. F. GUNN, Ph. D., Associate Professor of English.
- T. EARLE HAMILTON, Ph. D., Assistant Professor of English.
- GEORGE RANDOLPH HAMLITT, M. A., Assistant Professor of Foreign Languages.
- FRED GEORGE HARBAUGH, D. V. M., Professor of Animal Husbandry.
- JOHN E. HARDING, M. A., Assistant Professor of Economics and Management.
- LEVI MARTIN HARGRAVE, M. S., Associate Professor of Agricultural Education.
- LAURENCE G. HARMON, M. S., Associate Professor of Dairy Manufactures.
- MARSHALL BENTON HARRISON, M. S., Associate Professor of Agricultural Economics.
- ELIZABETH HAWLEY, M. A., Assistant Professor of Applied Arts.
- ELLIS RICHARD HEINEMAN, M. A., Associate Professor of Mathematics.
- WILLIAM CURRY HOLDEN, Ph. D., Professor of History and Anthropology.
- CECIL HORNE, B. A., Professor of Journalism.
- CHARLES ERNEST HOUSTON, M. A., Associate Professor of Electrical Engineering.

---

\* On Leave, 1946-47.

- DOYLE D. JACKSON, Ph. D., Professor of Education.  
J. W. JACKSON, M. A., Professor of Government.  
ADA VIVIAN JOHNSON, M. A., Professor of Home Economics Education.  
OSCAR ARVILLE KINCHEN, Ph. D., Professor of History.  
HAROLD LYMAN KIPP, M. S., Professor of Mechanical Engineering.  
FLORIAN ARTHUR KLEINSCHMIDT, M. in Arch., Diplome d'Architecture, Professor of Architecture.  
MINA MARIE WOLF LAMB, Ph. D., Associate Professor of Foods and Nutrition.  
MILTON FREDERIC LANDWER, Ph. D., Associate Professor of Zoology.  
JOHNNYE GILKERSON LANGFORD, M. A., Professor of Physical Education.  
ARTHUR HENRY LEIDIGH, M. S., Professor of Agronomy.  
SAM LEIFESTE, M. A., Assistant Professor of General Business.  
IVAN LEE LITTLE, M. A., Assistant Professor of Philosophy and Sociology.  
ROBERT IVAN LOCKARD, M. S. in Arch., Associate Professor of Architecture.  
ELMER LEON McBRIDE, M. S., Professor of Agricultural Economics, Farm Management and Rural Sociology.  
SETH SHEPARD McKAY, Ph. D., Professor of History.  
FITZHUGH LEE McREE, M. S. in C. E., Professor of Civil Engineering.  
ERNEST MADER, M. S., Assistant Professor of Agronomy.  
JAMES NEWTON MICHIE, M. A., Professor of Mathematics.  
F. L. MIZE, M. A., Associate Professor of Economics.  
\*JONNIE HEMPHILL McCRERY MICHIE, M. A., Professor of Foods and Nutrition.  
RUFUS ARTHUR MILLS, M. A., Professor of English.  
RAY CLIFFORD MOWERY, M. S., Professor of Animal Husbandry.  
JAMES HAROLD MURDOUGH, M. S. E., Professor of Civil Engineering.  
DONALD VAN DALE MURPHY, M. A., Associate Professor of English.  
AARON GUSTAF OBERG, Ph. D., Assistant Professor of Chemical Engineering.  
DEAN ROBERTS PARKER, Ph. D., Assistant Professor in Zoology.  
LEROY THOMPSON PATTON, Ph. D., Professor of Geology.  
ANNAH JO PENDLETON, M. A., Professor of Speech.  
JOHN MOORE PENICK, Ph. D., Associate Professor of Industrial Engineering and Engineering Drawing.  
MARTYE POINDEXTER, M. A., Professor of Applied Arts.  
CHARLES BLAISE QUALIA, Ph. D., Professor of Foreign Languages.  
KENNETH MILLER RENNER, M. S., Professor of Dairy Manufactures.

---

\* On leave, 1945-47.

- WILBUR IRVIN ROBINSON, Ph. D., Associate Professor of Geology.  
TRENT CAMPBELL ROOT, M. B. A., Professor of Accounting and Finance.  
REGINALD RUSHING, M. A., Associate Professor of Accounting.  
OSCAR T. RYAN, M. S., Assistant Professor of Agricultural Education and Teacher Trainer.  
CLARENCE CARL SCHMIDT, Ph. D., Professor of Physics.  
VALERIE SCHNEIDER, Sc. D., Associate Professor of Chemical Engineering.  
JESSIE Q. SEALEY, M. A., Assistant Professor of Biology.  
JAMES THOMAS SHAVER, M. A., Associate Professor of Education.  
RAYMOND GILBERT SIDWELL, Ph. D., Associate Professor of Geology.  
GEORGE SMALLWOOD, M. A., Professor of English.  
FRED WINCHELL SPARKS, Ph. D., Professor of Mathematics.  
WENZEL LOUIS STANGEL, M. S., Professor of Animal Husbandry.  
OSCAR ALLEN ST. CLAIR, B. S. in E. E., Professor of Industrial Engineering and Engineering Drawing.  
ALFRED BELL STREHLI, M. A., Assistant Professor of Spanish.  
ALAN LANG STROUT, Ph. D., Professor of English.  
RICHARD ARTHUR STUDHALTER, Ph. D., Professor of Botany.  
HASKELL GRANT TAYLOR, M. A., Assistant Professor of Accounting.  
GUSSIE LEE TEAGUE, M. A., Associate Professor of English.  
ETHEL KING TERRELL, M. A., Associate Professor of Secretarial Studies.  
EARL L. THOMPSON, Ph. D., Professor of Mathematics.  
AGNES ANN TRUE, Ph. D., Associate Professor of Education and Psychology.  
MAYME LUCINDA TWYFORD, M. A., Associate Professor of Foods and Nutrition.  
RALPH SYLVESTER UNDERWOOD, Ph. D., Professor of Mathematics.  
ERNEST WALLACE, Ph. D., Associate Professor of History.  
MARGARET WATSON WEEKS, M. A., Professor of Nutrition.  
THOMAS F. WIESEN, M. B. A., Professor of Economics and Management.  
GEORGE A. WHETSTONE, Ph. D., Assistant Professor of Civil Engineering.  
DEWEY O. WILEY, B. Mus., Professor of Music.  
WARREN WATSON YOCUM, Ph. D., Professor of Horticulture.  
ARTHUR W. YOUNG, Ph. D., Professor of Agronomy.

## DIVISION OF GRADUATE STUDIES

### WILLIAM C. HOLDEN, DEAN

In 1927, two years after the opening of the College, plans were perfected to promote advanced study and research in those departments of Texas Technological College which were qualified to give graduate work. A committee was appointed from the faculty of the Division of Arts and Sciences to supervise such graduate study within that division. Beginning in 1932, candidates were accepted for the Master of Science degree, and graduate work was placed under the supervision of an enlarged Graduate Committee appointed from the faculty of the College. In 1935, the Division of Graduate Studies was created, and in September, 1937, a Dean of the Division of Graduate Studies was appointed. Recognition in November, 1946, of the undergraduate work of the College by the Association of American Universities considerably augments the status of the Division of Graduate Studies.

The Division of Graduate Studies is administered by the Dean and the Graduate Committee under authority vested by the Board of Directors. All matters of policy are formulated by the Graduate Committee. The Dean of the Division, working with the Graduate Committee, coordinates the graduate activities throughout the College, provides regulations for admission to candidacy for graduate degrees, determines the requirements for the various graduate degrees, and recommends the conferring of such degrees. The Dean of the Division of Graduate Studies is responsible for the execution of all regulations pertaining to the graduate student, and all matters relating to the graduate work should be addressed to him. However, students should not hesitate to write directly to the head of a department if they have specific questions regarding the work of a department.

Graduate work in Texas Technological College is confined to that which leads to a Master's degree. The College library and laboratories of the various departments provide facilities for graduate work. New reference material is being added regularly to the library, and scientific equipment of the various laboratories of the College is being improved continually.

The following general requirements are applicable to the degrees of Master of Arts, Master of Science, Master of Education, and Master of Business Administration.

### GRADUATE ASSISTANTSHIPS AND FELLOWSHIPS

Positions as graduate assistants are provided in some departments. These place the graduate students in direct contact with the best trained men and women on the staff and give opportunity to receive teaching experience.

Graduate fellowships are available from time to time in the Departments of Foods and Nutrition, Child Development and Family Relations, Clothing and Textiles, Home Economics Education, Biology, Chemistry and Chemical Engineering, Economics, Accounting, Education, Geology, Government, Physics, Plant Industry, Animal Husbandry, and Agricultural Education. Applications for these positions should be made to the heads of the departments concerned.

### ADMISSION

Students are admitted to the Division of Graduate Studies by the Registrar upon the basis of a complete official transcript of undergraduate work.

### REGISTRATION

The following students come under the supervision of the Dean of the Division of Graduate Studies and should report to him for registration:

1. Candidates for the Master's degree.
2. Students who have received a Bachelor's degree from a recognized institution and are not now candidates for a second Bachelor's degree.
3. Students in residence who lack six semester hours or less of having completed the requirements for the Bachelor's degree may, with prior approval of the dean of the division concerned, enroll for courses carrying graduate credit while completing their undergraduate requirements. Although such students are not under his supervision, the Dean of the Division of Graduate Studies must approve all courses which the student intends to use for graduate credit. Furthermore, in such cases, if graduate credit is desired for any part of the work carried, the combined load of graduate and undergraduate courses must not exceed fifteen semester hours.

### CANDIDACY FOR THE MASTER'S DEGREE

A graduate student enrolled in the Division of Graduate Studies does not automatically become a candidate for a Master's degree. To become a candidate the student must complete the following requirements:

1. Acceptance as a candidate by the departments in which the major and minor work are to be performed.

To be accepted as a candidate by the department, the student shall present undergraduate work equivalent to a major in that department or shall have complete a minimum of twelve semester hours of advanced undergraduate work in the major department together with advanced undergraduate courses in closely allied fields. For a minor subject the student must have completed the equivalent of the minor required for the undergraduate degree in that department or must have completed a minimum of six semester hours in advanced undergraduate courses in such department. If the student cannot meet these requirements or if a period of five years has elapsed since the student received his Bachelor's degree, suitable leveling courses may be prescribed which must be completed without graduate credit before the student is accepted as a candidate for the Master's degree.

An undergraduate record above average is a prerequisite to candidacy. In cases where the grade of B or better has not been received on at least fifty per cent of his undergraduate work, the student may become a candidate for a Master's degree only by satisfactorily completing a preliminary examination over his major and minor fields, as well as over such other work in which he may be deemed deficient.



2. After twelve semester hours of graduate work have been satisfactorily completed, a formal application must be made for admission to candidacy. This application, approved by the heads of major and minor departments, must be submitted to the Dean of the Division of Graduate Studies not later than twelve weeks prior to the date on which the degree is to be conferred.

No member of the faculty or staff above the grade of instructor shall be eligible to receive a graduate degree from this college. No member of the faculty or staff shall be eligible to receive a Master's degree in less than three years of nine months, or the equivalent, and then only in case special arrangements are made.

### REQUIREMENTS FOR THE MASTER'S DEGREE

Having been accepted as a candidate for the Master's degree, the student must complete the following requirements:

1. Amount of Work: The minimum amount of work beyond the Bachelor's degree required for the Master's degree (except the degree of Master of Education) is twenty-seven hours and a thesis, although a department may increase the number of hours required of a particular candidate. Of the required work at least fifteen semester hours and a thesis must be completed in the major subject. At least six of the twenty-seven hours must be in a department other than the major department. Two minors may be chosen, but in no case will less than six hours be accepted towards a minor. The minor, or minors, must be in subject matter other than the major subject.

Courses open to graduate students for graduate credit are of two levels:

- a. Graduate Courses: These courses are open only to graduate students and cannot be used towards the fulfillment of a Bachelor's degree.
- b. Advanced Undergraduate Courses: These courses are regular junior and senior courses. If such courses, or their equivalents, have not been taken for undergraduate courses, they may be taken for graduate credit, provided such courses have been approved by the Committee on Graduate Work and provided that additional work over and above that required of undergraduate students is completed by the graduate student seeking graduate credit in these courses.

For the completion of requirements for the major at least nine semester hours must be completed in course of Class a, above.

Graduate students are limited to a load not exceeding fifteen semester hours for each semester and a load not exceeding six semester hours for each full summer term of six weeks if any portion of such work is to count toward graduate credit. Those who may be employed or otherwise partially engaged are subject to further restrictions as set forth below.

2. Residence Requirements: A minimum of 24 weeks in residence at Texas Technological College is required, and in addition, another six weeks of work must be accounted for in one of the following ways:

- a. As a resident student at Texas Technological College.
- b. As a resident student in some other college of equal rank.
- c. As a student in extension courses offered by Texas Technological College.

An applicant for the Master's degree must complete all requirements for the degree within three years from the date of his enrollment for graduate study, except that a student in summer school only may have the time extended to five years.

In case a student is employed by the College, or is employed otherwise, the length of residence for the completion of the work will be increased proportionately.

In case a student is enrolled for the completion of a thesis only, the number of weeks allowed toward the fulfillment of the residence requirement will in no case exceed one semester, regardless of the number of semesters or terms required for the completion of the thesis.

3. Non-Residence and Extension Credit: Either of the following methods, or a combination of the two, may be used to account for six hours of graduate credit:
  - a. A maximum of six semester hours of graduate work may be accepted from another institution of equal rank if the student was enrolled as a resident student of that institution.
  - b. A maximum of six semester hours of graduate work taken through the Division of Extension of Texas Technological College may be used, provided it is given by a qualified member of the faculty at an established extension center or on the campus.

An additional nine semester hours may be accepted when a department recommends that a student be sent to a particular college for the consummation of particular work. Such work must be outlined and approved by the head of the department and the Committee on Graduate Work before such work is undertaken.

4. Foreign Languages: A reading knowledge of a foreign language is required of all candidates for the Master of Arts degree. In certain departments no candidate may receive a Master of Science degree without meeting the specific requirement in foreign language.
5. Thesis: The completion of an acceptable thesis is a requirement of all masters' degrees, with the exception of certain options allowed for the Master of Education.

Research leading to the thesis is supervised by an advisory committee appointed at the candidate's request by the Dean of the Division of Graduate Studies at the time the student selects his thesis subject. Although the primary supervisory responsibility rests upon the major professor, who will be the chairman of the advisory committee, the candidate should consult freely with the members of the advisory committee from the initiation of his research until the acceptance of his thesis. Each member of the committee may call in the candidate for consultation at any time during the preparation of the thesis. The thesis must be acceptable to all members of the advisory committee, not just to the major professor.

A complete draft of the thesis shall be prepared in form and manner acceptable to the major professor and the committee as a whole. The candidate must submit his first draft to the committee in ample time for full consideration. Failure to do so shall be considered ground for non-acceptance of the thesis. This complete draft, with the signed approval of the members of the advisory committee, must be submitted to the Dean of the Division of Graduate Studies not later than thirty days prior to Commencement during the regular session, and not later than twenty days prior to Commencement during the summer session.

At least three copies of the final draft of the thesis must be prepared and final approval thereon indicated by the advisory committee and the Dean of the Division of Graduate Studies. These approved copies, together with the deposit for binding, must be submitted to the Librarian, who will issue a receipt for the deposit. This receipt must be given to the Dean of the Division of Graduate Studies not later than three days prior to the date set for graduation.

Six copies of an abstract of the thesis, suitable for publication and prepared in a form acceptable to the major professor, must be submitted to the Dean of the Division of Graduate Studies for approval not later than three days prior to the date set for graduation.

6. Oral Examination: In addition to the regular written examinations required for completion of courses conducted by the departments in which the subjects are taken, all candidates for master's degrees are subject to a general oral examination by a committee appointed for that purpose by the Dean of the Division of Graduate Studies. Such oral examination will be given at or near the close of all course work and may cover all or any part of the work of the graduate student, including all work done in extension courses or transferred from another institution. The oral examination may not be taken until the first draft of the thesis is approved. The time and place of the oral examination is fixed by the Dean of the Division of Graduate Studies at the request of the candidate.

7. Grades and Credit: No courses will be accepted for graduate credit unless registration for such courses has been approved by the Dean of the Division of Graduate Studies. This regulation also applies to students in extension courses. However, extension students will be allowed a period not exceeding two weeks from the first meeting of the class to satisfy these requirements.

A student must have a B average on all courses counted towards a Master's degree. With the grade point system this is equivalent to 2.00. No grade lower than C can be included. Regulations concerning the grade of "Inc." as set forth in the current catalogue apply to graduate as well as undergraduate students.

8. Government Requirement: The Forty-fifth Legislature, by statute, requires the study of state and federal government as a prerequisite to any degree granted by a state supported college. Each candidate for a Master's degree should consult with the Dean of the Division of Graduate Studies concerning this requirement.

## DEGREES

### MASTER OF ARTS

Prerequisite: a Bachelor of Arts degree or its equivalent. The Master of Arts degree is offered by the following departments: Biology, Chemistry, Education and Psychology, English, Foreign Languages (Spanish), Geology, Government, History and Anthropology, Mathematics, and Physics.

In addition to the departments mentioned above, minors may be taken in French, Journalism, Music, Philosophy and Sociology, Physical and Health Education, and Speech.

### MASTER OF SCIENCE

Prerequisite: a Bachelor of Science degree or its equivalent. In some departments additional prerequisites are required. The Master of Science degree is offered by the following departments: Accounting and Finance, Agricultural Economics, Agricultural Education, Animal Husbandry, Biology, Chemical Engineering, Chemistry, Clothing and Textiles, Dairy Manufactures, Economics and Management, Foods and Nutrition, Geology, Home Economics Education, Marketing and Salesmanship, Mathematics, Physics, and Plant Industry.

In addition to the departments listed above, minors may be taken in Applied Arts, Architecture and Allied Arts, Child Development and Family Relations, Civil Engineering, Electrical Engineering, Home Management, Industrial Engineering, and Mechanical Engineering.

### MASTER OF EDUCATION

The degree of Master of Education is designed primarily for teachers and administrators, or those who expect to fill such positions. It is predicated upon the degree of Bachelor of Science in Education or its equivalent which should include thirty semester hours in Education.

All candidates for this degree may select any one of the following plans:

1. Plan I, designated especially for Administrators. Required: twenty-seven hours of advanced and graduate courses and a thesis. The courses include nine hours of graduate level courses, three hours in statistics, and three hours in technique of research. The major in Education consists of fifteen hours and a thesis, and the minor of twelve hours in a subject-matter department, or six hours in each of two such departments.
2. Plan II, designed especially for High School teachers.
  - a. Option 1, with thesis. Required: twenty-seven hours of advanced and graduate courses and a thesis. The courses include three hours in the technique of research and at least nine hours at graduate level. As few as twelve hours and as many as twenty-four hours may be in the Department of Education. The remainder may be in a subject-matter field, or in two subject-matter fields. In either case the usual graduate requirements for a minor must be observed. With the consent of

the Graduate Committee upon the advice of the departments concerned, the candidate may write his thesis in the subject-matter department.

- b. Option 2, without thesis. Forty-two hours required, including thirty hours in advanced and graduate levels. At least nine hours must be at the graduate level. As few as twelve hours and as many as twenty-four may be taken in the Department of Education. The remainder of the thirty hours may be taken in a subject-matter, or minor, department, or in two such departments. Twelve of the forty-two hours may be selected from any department in the College, and may be of any level.
3. Plan III, without thesis, designed especially for elementary teachers. Forty-two hours required, including thirty hours in advanced and graduate level courses. At least nine hours must be at the graduate level. The candidate may elect to take as few as twelve hours or as many as twenty-four hours in the Department of Education. The remainder of the thirty hours may be taken in a minor department. Twelve of the forty-two hours may be taken in subject-matter courses of any level, directly applicable to the chief interests of the student.

#### MASTER OF BUSINESS ADMINISTRATION

Prerequisite: an undergraduate major in Business Administration. In the Master of Business Administration degree stress is placed upon professional training rather than advanced theory. A workable knowledge of business statistics and practical experience in some business are desirable prerequisites.

The candidates may choose a major field from the following: Accounting, Finance, or Economics. Certain courses in other departments which may, upon the recommendation of the major professors, be incorporated in the major field include History 535; Government 323, 337, 338, and 438; Agricultural Economics 421; Mechanical Engineering 434; and Clothing and Textiles 431. Other courses in the Division of Graduate Studies may be applied, if approved by the major department.

#### PROFESSIONAL DEGREES IN ENGINEERING

An engineering graduate of Texas Technological College may become a candidate for a professional degree of which the following are available: Chemical Engineer; Civil Engineer; Electrical Engineer; Geological Engineer; Industrial Engineer; Mechanical Engineer; Textile Engineer.

The requirements for any of these degrees include acceptable professional experience, a thesis, and an examination. Professional degrees in engineering will be conferred only on the recommendation of the Committee on Graduate Work and the faculty of the College.

A written application stating the degree desired must be submitted to the Committee on Graduate Work not later than January 1, next preceding the date when the degree is to be conferred. This application shall include (a) a report or outline of the professional work upon which the application is based together with whatever documentary evidence may be considered pertinent, and (b) an outline of the thesis.

The professional work must comprise at least four full years subsequent to graduation, two years of which must have been in positions of responsibility. In order to be accepted by the Committee on Graduate Work, the professional work must have been approved by the head of the department concerned and by the Dean of the Division of Engineering.

Before submission to the Committee on Graduate Work, the outline of the thesis must have been approved by the head of the department directly concerned. The thesis must constitute a distinct contribution to engineering, must be of analytical character, and may not be merely a descriptive discussion of an engineering project nor a digest of engineering literature.

Master's degrees in engineering will be accepted in lieu of two years of professional experience, but will not be considered as of responsible charge.

## DEPARTMENTS AND COURSES OF INSTRUCTION

The courses of instruction for which graduate credit may be received are listed under the various departments. Specific departmental requirements and programs of work are also included, when necessary, for the guidance of the student.

All 300 and 400 courses are advanced undergraduate courses. All 500 courses are of graduate level and may not be used in fulfilling requirements for undergraduate degrees. The credit hour value of each course is shown after the title. For course descriptions see the general catalogue.

### ACCOUNTING AND FINANCE

#### Majors and Minors

##### ACCOUNTING

- 336. Principles of Cost Accounting, 3. Staff
- 430. Income Tax Accounting, 3. Assistant Professor Taylor.
- 432. Governmental Accounting, 3. Associate Professor Rushing.
- 434-5. Advanced Accounting, 3. Assistant Professor Gibson.
- 436. Accounting Systems, 3. Assistant Professor Taylor.
- 437. Principles of Auditing, 3. Assistant Professor Taylor.
- 531. C.P.A. Problems, 3. Associate Professor Rushing.

##### FINANCE AND INSURANCE

- 332. Short-Term Finance, 3. Professor Root.
- 334. Credits and Collections, 3. Professor Root.
- 335. Insurance, 3. Professor Root.
- 431. The Federal Reserve System, 3. Professor Root.
- 434. Investments, 3. Professor Root.
- 531. Current Financing Problems, 3. Staff.

### AGRICULTURAL ECONOMICS, FARM MANAGEMENT, AND RURAL SOCIOLOGY

#### Majors and Minors

##### AGRICULTURAL ECONOMICS

- 322. Marketing Agricultural Products, 2. Associate Professor Harrison.
- 323. Advanced Agricultural Economics, 2. Associate Professor Harrison or Professor McBride.
- 331. Statistical Problems, 3. Associate Professor Harrison.
- 333. Cooperative in Agriculture, 3. Associate Professor Harrison or Professor McBride.
- 411-2. Agricultural Economics Seminar, 1. Staff.
- 421. Land Economics, 2. Associate Professor Harrison.

- 422. Agricultural Prices and Forecasting, 2. Associate Professor Harrison.
- 423. Farm Management, 2. Associate Professor Harrison.
- 431. Livestock Marketing, 3. Associate Professor Harrison.
- 432. Records, 3. Associate Professor Harrison.
- 434. Advanced Farm Management, 3. Associate Professor Harrison.
- 435. International Agricultural Economics, 3. Professor McBride.
- 511. Problems, 1. Staff.
- 531. Problems in Land Use, 3. Associate Professor Harrison.
- 533. Marketing Problems, 3. Staff.
- 534-5. Agricultural Economics Research, 3. Staff.

### RURAL SOCIOLOGY

- 431. Agricultural Research and Extension and Organization and Methods, 3. Professor McBride.
- 432. Rural Sociology, 3. Professor McBride.
- 532. Current Problems in Rural Sociology, 3. Professor McBride.

## AGRICULTURAL EDUCATION

### Majors and Minors

A student must be qualified to teach vocational agriculture under the Smith-Hughes Act, and have one year of experience teaching vocational agriculture before he can begin graduate work in Agricultural Education. Nine hours may be taken in a closely related field when such courses definitely supplement those studied for the major. When such courses are taken, they must be approved by the head of the department and the Dean of the Division of Graduate Studies.

### AGRICULTURAL EDUCATION

- 321. Organization and Administration of Vocational Education in Agriculture, 2. Associate Professor Hargrave.
- 423. Problems, 2. Associate Professor Hargrave.
- 441-2. Agricultural Education, 4. Professor Chappelle.
- 511. Problems, 1. Professor Chappelle.
- 522. Advanced Methods, I, 2. Professor Chappelle or Professor Garlin.
- 523. Advanced Methods, II, 2. Professor Chappelle or Associate Professor Cooper.
- 524. Advanced Methods, III, 2. Professor Chappelle or Associate Professor Hargrave.
- 531. Investigations in the Field of Agricultural Education, 3. Professor Chappelle or Assistant Professor Ryan.
- 537. Advanced Methods, IV, 3. Professor Chappelle.

## ANIMAL HUSBANDRY

### Majors and Minors

### ANIMAL HUSBANDRY

- 311. Animal Nutrition, 1. Professor Stangel.
- 322. Farm Meats, 2. Professor Harbaugh.
- 331. Animal Nutrition and Principles of Feeding, 3. Professor Stangel.



- 334. Wool and Mohair, 3. Professor Mowery.
- 411. Animal Husbandry Seminar, 1. Staff.
- 417. Livestock Production Practices I, 1. Professor Mowery or Professor Stangel.
- 418. Livestock Production Practices, II, 1. Professor Mowery or Professor Stangel.
- 4111. Dairy Husbandry Seminar, 1. Staff.
- 423. Showyard Judging and Practices, 2. Professor Mowery.
- 424. Beef Cattle Production, 2. Professor Stangel.
- 425. Horse and Mule Production, 2. Professor Harbaugh.
- 426. Sheep and Wool Production, 2. Professor Mowery.
- 427. Swine Production, 2. Professor Mowery.
- 428. Dairy Cattle Production, 2. Associate Professor Fine.
- 429. Advanced Dairy Cattle Production, 2. Associate Professor Fine.
- 438. Range Management, 3. Professor Mowery.
- 441. Livestock Production, 4. Associate Professor Fine.
- 531. Advanced Animal Husbandry, 3. Staff.
- 532. Advanced Animal Husbandry, 3. Staff.
- 533-4. Animal Husbandry Research, 3. Staff.

### POULTRY HUSBANDRY

- 331. Incubation and Brooding, 3. Assistant Professor Baumgardner.
- 421. Poultry and Turkey Production, 2. Assistant Professor Baumgardner.

## APPLIED ARTS

### Minors Only

- 332. Metal, 3. Assistant Professor Hawley.
- 333. Jewellery and Lapidary, 3. Staff.
- 431. Wood, 3. Assistant Professor Hawley.
- 432. Minor Crafts, 3. Professor Poindexter.

## ARCHITECTURE

### Minors Only

- 324. History of Sculpture, 2. Professor Kleinschmidt.
- 333-4. Building Construction, 3. Professor Bradshaw.
- 420. Professional Practice, 2. Professor Bradshaw.
- 423-4. Life Drawing II, 2. Associate Professor Lockard.
- 426-7. Oil Painting or Advanced Water Color, 2. Associate Professor Lockard.
- 433-4. Commercial Design, II, 3. Associate Professor Lockard.
- 436. City Planning, 3. Professor Bradshaw.
- 439-10. Methods of Teaching Art Integrated for the Elementary School and the High School, 3. Associate Professor Lockard.
- 4311-12. Ceramics, 3. Professor Kleinschmidt.

## BIOLOGY

### Majors and Minors

### BACTERIOLOGY

- 331-2. Principles of Bacteriology, 3. Staff.  
As minor only.

**BIOLOGY**

431. Advanced Heredity, 3. Assistant Professor Parker.  
432-3. Advanced Bio-ecology, 3. Assistant Professor Sealey.  
533. Plankton, 3. Staff.

**BOTANY**

331. Plant Physiology, 3. Professor Studhalter.  
As minor only.  
411. Botany Seminar, 1. Staff.  
431. Plant Microtechnique, 3. Professor Studhalter.  
433. Advanced Morphology, 3. Staff.  
434. Field Botany, 3. Staff.  
435. Advanced Taxonomy, 3. Staff.  
531. Problems, 3. Staff.  
534. Advanced Plant Anatomy, 3. Professor Studhalter.

**ZOOLOGY**

331. Animal Histology, 3. Associate Professor Landwer.  
As minor only.  
332. Comparative Vertebrate Embryology, Associate Professor Landwer.  
As minor only.  
411. Zoology Seminar, 1. Staff.  
431-2. Cytology, 3. Assistant Professor Parker.  
433. Advanced Physiology, 3. Staff.  
434. Field Zoology, 3. Staff.  
435. Cytology, 3. Assistant Professor Parker.  
531. Problems in Zoology, 3. Staff.

**CHEMISTRY AND CHEMICAL ENGINEERING****Majors and Minors**

- 331-2. Quantitative Analysis, 3. Professor Craig.  
As minor only.  
343-4. Organic Chemistry, 4. Professor Goodwin.  
As minor only.  
411-2. Chemistry Seminar, 1. Staff.  
434. Organic Preparations, 3. Staff.  
435. Senior Chemistry—Advanced Quantitative Analysis, 3. Assistant Professor Oberg.  
436. Senior Chemistry—Biological Chemistry, 3. Associate Professor Dennis.  
437. Senior Chemistry—Qualitative Microanalysis, 3. Staff.  
438. Senior Chemistry—Advanced Physical Chemistry, 3. Staff.  
441-2. Physical Chemistry, 4. Professor Craig.  
537-8. Advanced Work in Specific Fields, 3. Staff.  
537-8B. Advanced Chemical Engineering, 3. Associate Professor Schneider.  
537-8C. Advanced Organic Chemistry, 3. Professor Goodwin.  
537D. Spectrographic Analysis, 3. Professor Craig.  
538E. Colloid Chemistry, 3. Assistant Professor Oberg.

## CHILD DEVELOPMENT AND FAMILY RELATIONS

### Minors Only

- 432. Nursery School Education, 3. Professor Callan.
- 433. Family Relations, 3. Professor Callan.
- 435. Student Teaching in Nursery School, 3. Professor Callan.
- 436. Parent Education, 3. Professor Callan.

## CIVIL ENGINEERING

### Minors Only

- 411. Soil Mechanics and Foundations Laboratory, 1. Staff.
- 423. Economics of Highway Design, 2. Professor McRee.
- 424-5. Materials, 2. Staff.
- 426. Municipal Sanitation, 2. Associate Professor Decker.
- 431. Reinforced Concrete, 3. Professor Murdough.
- 432. Reinforced Concrete, 3. Professor Murdough.
- 433. Structures, 3. Professor Murdough.
- 434. Structures, 3. Professor Murdough.
- 435. Traffic Safety Education, 3. Professor McRee.
- 436. Traffic Safety Education, 3. Professor McRee.
- 437. Water Supply and Treatment, 3. Associate Professor Decker.
- 438. Sewage and Sewage Treatment, 3. Associate Professor Decker.
- 439. Law and Ethics in Engineering, 3. Professor McRee.
- 4312. Soil Mechanics and Foundations, 3. Staff.

## CLOTHING AND TEXTILES

### Majors and Minors

To be accepted as a candidate for a Master's degree in Clothing and Textiles, the applicant must present a Bachelor's degree from an accredited college with the following courses included: English, twelve hours; chemistry, six hours; physiology, six hours; economics and sociology, six hours; psychology, general education, and home economics education, fifteen hours; government and history, nine hours; French, six hours; varied phases of home economics, twenty-four hours; and clothing and textiles, at least twelve hours in advanced courses. Applicants who have majored in Vocational Home Economics Education will probably need French and one advanced clothing course. Applicants who have majored in Clothing and Textiles will need to take more home economics education and possibly advanced courses in other phases of home economics. Home Economics Education 432 may be counted on the major for the Master's degree.

- 331. Tailoring, 3. Assistant Professor Bibb.
- 332. Advanced Dressmaking, 3. Staff.
- 334. Family Clothing Problems, 3. Staff.
- 431. Textile Economics, 3. Associate Professor Buster.
- 432. Advanced Textiles, 3. Associate Professor Buster.
- 433. History of Costume, 3. Professor Erwin.
- 531. Advanced Garment Fitting, 3. Professor Erwin.
- 532-3. Special Problems in Clothing, 3. Professor Erwin.

## DAIRY MANUFACTURES

### Majors and Minors

- 331-2. Market Milk and Inspection, 3. Professor Renner or Associate Professor Harmon.
- 333. Domestic Dairying, 3. Professor Renner or Associate Professor Harmon.
- 334. Fundamentals of Dairy Science, 3. Professor Renner or Associate Professor Harmon.
- 335. Dairy Bacteriology, 3. Professor Renner or Associate Professor Harmon.
- 411. Dairy Seminar, 1. Staff.
- 412. Starters and Cultured Milk, 1. Professor Renner or Associate Professor Harmon.
- 420. Dairy Products Merchandising, 2. Professor Renner or Associate Professor Harmon.
- 421. Creamery Organization and Control, 2. Professor Renner or Associate Professor Harmon.
- 422. Dairy Technology, 2. Professor Renner or Associate Professor Harmon.
- 431. Cheese Making, 3. Professor Renner or Associate Professor Harmon.
- 433. Ice Cream Making, 3. Professor Renner or Associate Professor Harmon.
- 435. Dairy and Food Inspection, 3. Professor Renner or Associate Professor Harmon.
- 436. Food Beverages, 3. Professor Renner or Associate Professor Harmon.
- 437-8. Food Processing, 3. Professor Renner or Associate Professor Harmon.
- 441. Butter Making, 4. Professor Renner or Associate Professor Harmon.
- 512. Advanced Dairy Products Quality Control, 1. Professor Renner or Associate Professor Harmon.
- 533-4. Dairy Manufacturing Problems, 3. Professor Renner or Associate Professor Harmon.

## ECONOMICS AND MANAGEMENT

### Majors and Minors

#### ECONOMICS

- 332. Public Utility Economics, 3. Associate Professor Mize.
- 333. Public Expenditures, 3. Associate Professor Mize.
- 334. Taxation, 3. Associate Professor Mize.
- 335. Transportation Economics, 3. Associate Professor Anderson.
- 336. Labor Economics, 3. Associate Professor Anderson.
- 337. Economic Systems, 3. Associate Professor Mize.
- 338. Foreign Trade, 3. Professor Wiesen.
- 339. Latin America and the United States, 3. Professor Wiesen.

- 432. Foreign Market Surveys, 3. Professor Wiesen.
- 433. International Economic Relations, 3. Professor Wiesen.
- 434. Air Transportation, 3. Associate Professor Anderson.
- 436. Development of Economic Doctrines, 3. Professor Wiesen.
- 437. Current Economic Problems, 3. Professor Wiesen.
- 438. Research in Economics and Business, 3. Associate Professor Golden.
- 4310. Advanced Economic Principles, 3. Professor Wiesen.
- 531. Advanced Economic Research, 3. Staff.

### MANAGEMENT

- 331. Industrial Management, 3. Professor Wiesen.
- 432. Personnel Administration, 3. Associate Professor Mize.

## EDUCATION AND PSYCHOLOGY

### Majors and Minors

#### EDUCATION

- 314. Reading Clinic, 1. Associate Professor Dysart.
- 321. Principles of Education, 2. Professor Garlin.
- 322. Problems in Secondary Education, 2. Professor Garlin.
- 324. Basic Principles of Method, 2. Professor Jackson.
- 325. The Junior High School, 2. Associate Professor Shaver.
- 326. Education and Vocational Guidance, 2. Professor Gordon or Professor Barnett.
- 3210. Children's Literature, 2. Associate Professor Dysart.
- 3211. Remedial Reading in the Elementary School, 2. Associate Professor Dysart.
- 3214. Duties of School Principals, 2. Associate Professor Shaver.
- 331. Principles of Education, 3. Professor Garlin.
- 332. Problems in Secondary Education, 3. Professor Garlin.
- 333. Education of Exceptional Children, 3. Associate Professor True.
- 335. The Junior High School, 3. Associate Professor Shaver.
- 336. Educational and Vocational Guidance, 3. Professor Barnett or Professor Gordon.
- 338. Every Teacher's Problem, 3. Professor Jackson or Associate Professor Cooper.
- 3310. Children's Literature, 3. Associate Professor Dysart.
- 3314. Duties of School Principals, 3. Associate Professor Shaver.
- 3315. Visual-Audio Aids in Education, 3. Associate Professor Cooper.
- 420. Sociological Principles of Education, 2. Professor Jackson.
- 421. Education in the United States, 2. Professor Jackson.
- 422. Public School Administration, 2. Associate Professor Cooper.
- 423. Public School Relations, 2. Professor Garlin.
- 424. Supervision of Instruction, 2. Professor Garlin.
- 425. Co-Curricular Activities, 2. Associate Professor Cooper.
- 428. Education for Democracy and Defense, 2. Professor Jackson.
- 4212. Evaluation of Secondary Schools, 2. Professor Jackson.

4213. Evaluation of Elementary Schools, 2. Associate Professor Dysart.
4215. Remedial Reading in the Secondary School, 2. Staff.
430. Sociological Principles of Education, 3. Professor Jackson.
431. Education in the United States, 3. Professor Jackson.
432. Public School Administration, 3. Associate Professor Cooper.
433. Public School Relations, 3. Professor Garlin.
434. Supervision of Instruction, 3. Professor Garlin.
439. Unit Teaching, 3. Professor Jackson.
4311. Problems of the Elementary Curriculum, 3. Associate Professor Dysart or Associate Professor True.
4316. Workshop in Curriculum and Instruction, 3. Associate Professor Dysart or Professor Garlin.
4317. Workshop in Curriculum and Instruction, 3. Associate Professor Dysart or Professor Garlin.
- 511-2. Seminar, 1. Professor Barnett.
531. Educational Research, 3. Associate Professor Cooper.
532. Philosophy of Education, 3. Professor Jackson.
533. The Activity Program in the Elementary School, 3. Associate Professor True.
534. Modern Tendencies in Education, 3. Professor Garlin.
535. Business Administration of Schools, 3. Associate Professor Cooper.
536. Educational Statistics, 3. Professor Barnett, Professor Jackson, or Associate Professor Cooper.
537. Student Counseling, 3. Professor Barnett or Professor Gordon.
538. Adult Education, 3. Professor Garlin.

### PSYCHOLOGY

323. Measurements in Education, 2. Professor Barnett.
331. Child Psychology, 3. Associate Professor Dysart or Associate Professor True.
333. Measurements in Education, 3. Professor Barnett.
335. Psychology of Adolescence, 3. Associate Professor Cooper.
421. Mental Testing, 2. Professor Barnett.
423. Mental Hygiene, 2. Associate Professor True.
424. Social Psychology, 2. Associate Professor True.
431. Mental Testing, 3. Professor Barnett.
433. Mental Hygiene, 3. Associate Professor True.
434. Social Psychology, 3. Associate Professor True.

### ELECTRICAL ENGINEERING

#### Minors Only

322. Alternating Current Circuits Laboratory, 2. Associate Professor Gray.
323. Electronics Laboratory, 2. Professor Bullen.
324. Communication Circuits Laboratory, 2. Associate Professor Houston.
332. Alternating Current Circuits, 3. Associate Professor Gray.
333. Electronics, 3. Professor Bullen.
334. Communication Circuits, 3. Associate Professor Houston.
336. Illumination, 3. Associate Professor Gray.
410. Current Electrical Engineering, 1. Professor Bullen.

- 411-2. Engineering Seminar, 1. Staff.
- 428-9. Engineering Electronics, 2. Professor Bullen.
- 4210-11. Radio Engineering Laboratory, 2. Associate Professor Houston.
- 4212-13. Electrical Machinery Laboratory, 2. Associate Professor Gray.
- 4214. Advanced Circuit Theory, 2. Associate Professor Houston.
- 4215-16. Engineering Electronic Laboratory, 2. Professor Bullen.
- 433. Transmission, 3. Associate Professor Houston or Professor Bullen.
- 435. Advanced Illumination, 3. Associate Professor Gray.
- 4310-11. Radio Engineering, 3. Associate Professor Houston.
- 4312-13. Electrical Machinery, 3. Associate Professor Gray.

## ENGLISH

### Majors and Minors

- 330. Chaucer, 3. Associate Professor Gunn.
- 332. History of the English Language, 3. Associate Professor Gunn.
- 333. American Prose, 3. Professor Smallwood.
- 336. The Augustan Age, 3. Assistant Professor Camp.
- 338. American Poetry, 3. Professor Smallwood.
- 3312. Advanced Composition, 3. Associate Professor Gill.
- 3315. The Short Story, 3. Professor Cunningham.
- 3316. The American Novel, 3. Professor Mills.
- 3317. The English Novel from Lyly to Scott, 3. Professor Allen.
- 3318. English and Foreign Fiction from 1825 to 1910, 3. Associate Professor Murphy.
- 3320. American Drama, 3. Professor Smallwood.
- 3322. Modern British and American Poetry, 3. Associate Professor Gill.
- 431. Restoration and Eighteenth Century Drama, 3. Professor Mills.
- 432. Shakespeare, 3. Associate Professor Camp.
- 433. Shakespeare, 3. Associate Professor Camp.
- 434. Milton and His Age, 3. Professor Allen.
- 435. English Romanticism, 3. Professor Strout.
- 436. The Later Romantic Poets, 3. Professor Strout.
- 437. English Drama from the Beginnings to 1642, 3. Professor Mills.
- 438. Nineteenth Century English Prose, 3. Associate Professor Teague.
- 4310. The Major Victorian Poets, 3. Associate Professor Teague or Associate Professor Gill.
- 4313. Literary Biography, 3. Professor Mills.
- 4315. Spenser and His Age, 3. Associate Professor Gunn or Associate Professor Gill.
- 4316. The Structure of the Novel, 3. Professor Cunningham.
- 4317. Modern European Drama, 3. Associate Professor Murphy.
- 4319. Studies in Shakespeare, 3. Associate Professor Camp.
- 533. Elizabethan Drama, 3. Associate Professor Camp.
- 534. Old English, 3. Associate Professor Gunn.
- 536. Outline of American Literary History: 1608 to the Present, 3. Professor Smallwood.
- 537. Spenser, 3. Associate Professor Gunn.

538. Studies in the English Romantic Poets, 3. Professor Strout.  
539. American Critical Theories, 3. Professor Mills.  
5311. Literary Criticism, 3. Professor Cunningham.

## FOODS AND NUTRITION

### Majors and Minors

#### FOODS AND COOKERY

331. Food Demonstration, 3. Associate Professor Twyford.  
333. Experimental Cookery, 3. Associate Professor Lamb.  
335. Food Preservation, 3. Staff.  
433. Advanced Food Preparation and Serving, 3. Associate Professor Twyford.

#### NUTRITION AND DIETETICS

431. Nutrition in Disease, 3. Professor Michie.  
432. Nutrition, 3. Associate Professor Lamb.  
433. Nutrition of Children, 3. Professor Michie.  
531-2. Investigations in Food and Nutrition, 3. Associate Professor Lamb.  
533. Readings in Nutrition, 3. Staff.  
534. Techniques of Research, 3. Professor Michie.

## FOREIGN LANGUAGES

### SPANISH

#### Majors and Minors

- 431-2. The Modern Novel, 3. Professor Qualia.  
433-4. The Modern Drama, 3. Professor Qualia.  
435. Teachers' Course in Methods of Teaching Spanish, 3. Professor Qualia.  
436-7. Advanced Grammar, Composition, and Style, 3. Professor Qualia.  
438. The Drama before Lope de Vega, 3. Staff.  
4310-11. Spanish Civilization, 3. Assistant Professor Hamilton.  
4312-13. The Prose of the Golden Age, 3. Assistant Professor Hamilton.  
4314-15. The Drama of the Golden Age, 3. Assistant Professor Hamilton.  
4316-17. A Survey of Spanish Literature, 3. Assistant Professor Strehli.  
4318. Contemporary Drama, 3. Professor Qualia.  
4320. Contemporary Spanish Novel, 3. Professor Qualia.  
4324. Readings in Latin-American Literature, 3. Staff.  
4325. Readings in Latin-American Literature, 3. Staff.  
5312-13. Studies in Spanish and Spanish-American Literature, 3. Staff.



**FRENCH****Minors Only**

- 431-2. The Modern Drama, 3. Professor Qualia.  
433-4. The Literature of the Nineteenth Century, 3. Professor Qualia.  
435-6. Readings in French Literature, 3. Staff.

**GEOLOGY****Majors and Minors**

- 333-4. Petrography and Petrology, 3. Professor Patton.  
335-6. General Paleontology, 3. Professor Stainbrook.  
337. Determinative Mineralogy, 3. Associate Professor Robinson.  
363. Field Geology, 6. Professor Patton.  
411-2. Geology of Texas, 1. Staff.  
413-4. Seminar, 1. Staff.  
431-2. Advanced General Geology, 3. Associate Professor Glock.  
433. Structural Geology, 3. Associate Professor Robinson.  
434. Petroleum Geology, 3. Associate Professor Robinson.  
435. Index Fossils, 3. Professor Stainbrook.  
436. Micropaleontology, 3. Professor Stainbrook.  
437-8. Sedimentation, 3. Associate Professor Sidwell.  
4310-11. Vertebrate Paleontology, 3. Staff.  
511-2. Research Methods, 1. Staff.  
531-2. Advanced Sedimentation, 3. Associate Professor Sidwell.  
533-4. Structure of Oil and Gas Reservoirs, 3. Associate Professor Robinson.  
535-6. Advanced Work in Specific Fields, 3. Staff.  
5313-14. Stratigraphy of the United States, 3. Professor Stainbrook.  
5315. Principles of Paleocology, 3. Associate Professor Glock.  
5316. Research in Paleocology, Paleoclimatology, or Tree Rings, 3. Associate Professor Glock.

**PETROLEUM GEOLOGY**

331. Drilling and Development, 3. Staff.  
333. Production Engineering, 3. Staff.  
411. Seminar, 1. Staff.  
421. Oil Field Testing Methods, 2. Staff.  
432. Advanced Production Engineering, 3. Staff.  
433. Special Problems in Petroleum Production, 3. Staff.  
434. Natural Gas Engineering, 3. Staff.

**GOVERNMENT****Majors and Minors**

- 315-6. Contemporary Problems, 1. Staff.  
325-6. Contemporary Problems, 2. Staff.  
330. Advanced American State Government, 3. Professor Jackson.  
332. Local Administration, 3. Professor Jackson.  
333. American Political Parties, Party Development, 3. Staff.  
334. American Political Parties, Party Analysis, 3. Staff.

- 335. American Foreign Relations, 3. Staff.
- 336. American Diplomacy, 3. Staff.
- 337. Public Administration, Organization, 3. Staff.
- 338. Public Administration, Procedure, 3. Staff.
- 3311. Political Institutions, 3. Staff.
- 431-2. American Constitutional Law, 3. Professor Davis.
- 433-4. American Political Ideas, 3. Professor Davis.
- 435-6. International Law, 3. Staff.
- 437. Political Geography, 3. Staff.
- 438. World Politics, 3. Staff.
- 531-2. Reading and Research, 3. Staff.

## HISTORY AND ANTHROPOLOGY

### Majors and Minors

#### HISTORY

- 331-2. History of Europe Through the Renaissance, 3. Professor Eaves.
- 333-4. Modern Europe, 1492-1870, 3. Professor Eaves.
- 336-7. Tudor and Stuart England, 3. Professor Kinchen.
- 338-9. Eighteenth and Nineteenth Century England, 3. Professor Kinchen.
- 3311. The Canadian Dominion, 3. Professor Kinchen.
- 3313-14. Contemporary Europe, 1870-1936, 3. Professor Eaves.
- 3315. Japan and China, 3. Professor Eaves.
- 3316. British Empire, 3. Professor Kinchen.
- 3317. The Contemporary European War, 3. Professor Eaves.
- 3319. Twentieth Century Britain, 3. Professor Kinchen.
- 430. English Colonial America, 3. Professor Kinchen.
- 431-2. History of Latin America, 3. Associate Professor Wallace.
- 433-4. The American Revolution and Early Constitutional Development, 3. Professor McKay.
- 435. Anglo-American Diplomacy, 3. Professor McKay.
- 436-7. History of the United States, 1789-1837, 3. Professor McKay.
- 438-9. History of Texas, 3. Associate Professor Wallace.
- 4310. Expansion of the United States, 3. Professor McKay.
- 4311-12. The Civil War and Reconstruction, 3. Professor McKay.
- 4313-14. The United States Since the Civil War, 3. Professor McKay. or Associate Professor Wallace.
- 4315. Constitutional Development in Texas, 3. Professor McKay.
- 4316-17. The United States Since the World War, 3. Professor McKay or Associate Professor Wallace.
- 4319. Latin-American Diplomacy, 3. Associate Professor Wallace.
- 4320. Social History of Texas, 1821-1860, 3. Professor Holden.
- 4321. Recent History of Texas, 3. Professor McKay.
- 530. Seminar in History, 3. Professor Holden.
- 535. The Technique of Research, 3. Professor Holden.

#### ANTHROPOLOGY

- 334-5. The American Indian, 3. Professor Holden.
- 336-7. Mexican Archaeology, 3. Professor Holden.
- 431-2. Field and Museum Technique, 3. Professor Holden.

- 433-4. Southwestern Archaeology, 3. Professor Holden.  
531-2. Seminar in Anthropology, 3. Professor Holden.

## HOME ECONOMICS EDUCATION

### Majors and Minors

Prerequisite to candidacy for a Master of Science in Home Economics Education is a Bachelor's degree which includes the following courses: English, twelve semester hours; chemistry, ten hours; physiology, six hours; bacteriology, three hours; clothing and textiles, fifteen hours (three hours textiles, twelve hours construction and selection); nutrition, three hours; foods, twelve hours; home management, three hours; child development (with nursery school observation), three hours; art, related to the home, nine hours; economics and sociology, six hours; psychology, six hours; secondary education, six hours; government, six hours; home economics education, six hours.

Courses applicable to the Master of Science degree in Home Economics Education should include subject-matter courses in home economics, six to nine hours; home economics education, nine to twelve hours; general education, three to six hours; a minor subject, six hours; and a thesis—making a total of twenty-seven semester hours and a thesis.

432. Problems in Teaching Clothing, 3. Professor Erwin.  
434. Methods of Teaching Art in the Homemaking Curriculum, 3. Professor Poindexter.  
435. Methods for Adult Leadership, 3. Associate Professor Clewell.  
441. Student Teaching in Home Economics, 4. Staff.  
532. The Development of the Homemaking Program, 3. Professor Johnson.  
534. Techniques of Research, 3. Professor Johnson.  
536. Problems, 3. Staff.  
537. Problems, 3. Staff.

## HOME MANAGEMENT

### Minors Only

433. Housing and Household Equipment, 3. Staff.  
434. Consumer Problems, 3. Staff.

## INDUSTRIAL ENGINEERING

### Minors Only

333. Manufacturing Methods, 3. Professor St. Clair.  
336. Tool Design, 3. Staff.  
421-2. Chemical Plant Design, 2. Professor St. Clair.  
432-3. Industrial Plant Design, 3. Professor St. Clair.  
331. Time and Motion Study, 3. Professor St. Clair or Associate Professor Penick.  
435. Industrial Safety Engineering, 3. Professor St. Clair or Associate Professor Penick.

## JOURNALISM

### Minors Only

- 331. Special Feature Articles, 3. Professor Horne.
- 332. Magazine Article Writing, 3. Staff.
- 430. Principles of Journalism, 3. Professor Horne.
- 432. High School Publications, 3. Professor Horne.
- 434. Editorial Writing, 3. Staff.
- 435-6. Advertising, 3. Professor Horne.

## MARKETING

### Minors Only

- 332. Principles of Marketing, 3. Associate Professor Golden.
- 333. Marketing Problems, 3. Associate Professor Golden.
- 346. Statistics, 4. Associate Professor Golden.
- 431. Commodity Marketing, 3. Associate Professor Golden.
- 433. Salesmanship, 3. Assistant Professor Leifeste.
- 435. Business Cycles and Forecasts, 3. Associate Professor Golden.
- 437. Advanced Business Statistics, 3. Associate Professor Golden.
- 531. Research in Marketing, 3. Associate Professor Golden.

## SECRETARIAL ADMINISTRATION

- 432. Methods of Teaching Commercial Subjects in High School, 3. Associate Professor Terrell.

## MATHEMATICS

### Majors and Minors

- 432. Differential Equations, 3. Professor Michie.
- 433. Theory of Equations, 3. Professor Michie.
- 434-5. Advanced Calculus, 3. Professor Sparks.
- 437. Higher Geometry, 3. Professor Thompson.
- 438. Solid Analytic Geometry, 3. Professor Thompson.
- 439. Vector Analysis, 3. Professor Michie.
- 534. Synthetic Projective Geometry, 3. Professor Thompson.
- 535. Analytic Projective Geometry, 3. Professor Thompson.
- 538. Theory of Numbers, 3. Professor Underwood.
- 5312-13. Functions of a Complex Variable, 3. Professor Underwood.

## MECHANICAL ENGINEERING

### Minors Only

- 322. Dynamics of Machinery, 2. Staff.
- 330-1. Thermodynamics, 3. Staff.
- 423-4. Internal Combustion Engines, 2. Staff.
- 432. Power Plant Design, 3. Staff.
- 438-9. Heating, Ventilation and Air Conditioning, 3. Staff.
- 4310-11. Aerodynamics, 3. Staff.
- 411-2. Engineering Seminar, 1. Staff.

## MUSIC

### Minors Only

#### THEORY

- 335-6. History and Appreciation, 3. Professor Blitz.
- 337. Music Education, 3. Professor Blitz.
- 431-2. Minor Instruments, 3. Professor Blitz.
- 438. Junior and Senior Methods (Methodology), 3. Professor Blitz.

#### APPLIED MUSIC

Only six semester hours of Applied Music may counted for graduate credit.

#### Violin

- 325-6. Kreutzer Etudes; beginning of Fiorillo Bowing Studies; De Beriot Concerto No. VII: selected repertoire, 2. Professor Blitz or Professor Wiley.
- 425-6. Kreutzer and Fiorillo, continued; Rhode caprices; concertos of De Beriot, Bruch; Bach sonatas; selected repertoire, classic and modern, for recital, 2. Professor Blitz or Professor Wiley.
- 4215-16. Additional senior work, 2. Professor Blitz or Professor Wiley.

#### Cello

- 325-6. Dotzauer Thumb Position, Repertoire, Carl Schoder, 2. Professor Blitz.
- 425-6. Studies by Duport, Romberg Concertos, modern concert repertoire, 2. Professor Blitz.
- 4215-16. Additional senior work, 2. Professor Blitz.

#### Band

- 325-6. Band, 2. Professor Wiley.
- 421-2. Band Conducting and Methods, 2. Professor Wiley.
- 425-6. Band, 2. Professor Wiley.
- 521. Band Conducting for Graduate Students, 2. Professor Wiley.
- 522. Applied Band, 2. Professor Wiley.
- 523. Symphonies, 2. Professor Wiley.
- 524. Symphonies and Symphonic Poems, 2. Professor Wiley.

## PHILOSOPHY AND SOCIOLOGY

### Minors Only

#### PHILOSOPHY

- 431. Aesthetics, 3. Assistant Professor Little.
- 436. Philosophy of Religion, 3. Assistant Professor Little.
- 438. Seminar in Philosophical Problems, 3. Assistant Professor Little.

**SOCIOLOGY**

438. Seminar in Social Problems, 3. Assistant Professor Little.

**PHYSICAL AND HEALTH EDUCATION****Minors Only**

434. Principles of Physical Education, 3. Professor Langford.  
435. Modern Trends in Physical Education, 3. Professor Langford.  
436. Physical Examination in Physical Education, 3. Professor Langford.  
437. Tests and Measurements in Physical Education, 3. Professor Langford.  
438. Problems in Curriculum Construction in Physical Education, 3. Professor Langford.

**PHYSICS****Majors and Minors**

- 312-3. Modern Physics Laboratory, 1. Staff.  
As minor only.  
331. Light, 3. Professor Schmidt.  
332. Heat, 3. Professor Schmidt.  
333-4. Electricity and Magnetism, 3. Assistant Professor Day.  
337-8. Introduction to Modern Physics, 3. Staff.  
411-2. Physics Seminar, 1. Professor Schmidt.  
413-4. Physics Seminar, 1. Professor Schmidt.  
415-6. Special Projects, 1. Staff.  
423-4. Electrical Measurements, 2. Professor Schmidt.  
431. Advanced Light, 3. Staff.  
437-8. Introduction to Theoretical Physics, 3. Assistant Professor Cross.  
531-2. Theoretical Physics, 3. Staff.  
533-4. Mathematical Theory of Light, 3. Staff.  
535-6. Theoretical Mechanics, 3. Professor Schmidt.  
537-8. Introduction to Atomic Spectra, 3. Staff.

**PLANT INDUSTRY****Majors and Minors****PLANT INDUSTRY**

431. Advanced Plant Breeding and Improvement, 3. Professor Leidigh.  
432. Plant Industry Problems, 3. Staff.  
441. Plant Production, 4. Assistant Professor Ayres.  
512-3-4. Seminar, 1, 2, or 3. Staff.  
531-2-3. Plant Industry Problems, 3, 6, or 9. Staff.  
535. Research Methods, 3. Professor Young.

**AGRONOMY**

- 333. Range Plants, 3. Assistant Professor Mader.
- 421. Cotton and Other Fiber Crops, 2. Assistant Professor Ayres.
- 422. Soil Management, 2. Professor Leidigh.
- 423. Soil Management, 2. Professor Young.
- 434. Soil Conservation and Land Use Planning, 3. Professor Young.
- 435. Soil Morphology and Genesis, 3. Professor Young.
- 436. Soil Chemistry, 3. Professor Young.
- 437. Range Management, 3. Assistant Professor Mader.
- 439. Soil Microbiology, 3. Professor Young.
- 441. Plant Production, 4. Assistant Professor Ayres.
- 511-2-3. Grain Judging, 1. Staff.

**HORTICULTURE**

- 431-2. Advanced Pomology, 3. Professor Yocum.
- 433. Systematic Pomology, 3. Professor Yocum.

**AGRICULTURAL ENGINEERING**

- 411. Soil Management Laboratory, 1. Staff.
- 412. Soil Management Laboratory, 1. Staff.
- 432. Land Mapping and Measurement, 3. Staff.
- 433. Advanced Farm Shop, 3. Staff.
- 434. Advanced Farm Machinery, 3. Staff.

**SPEECH****Minors Only**

- 421. The Teaching of Speech, 2. Professor Pendleton.
- 423. Advanced Stage Directing, 2. Staff.
- 432-3. Speech Correction, 3. Staff.
- 434. Speech Seminar, 3. Staff.
- 435. Technique of Interpretation, 3. Professor Pendleton.