

BULLETIN
OF THE
TEXAS TECHNOLOGICAL
COLLEGE

PUBLISHED MONTHLY

Vol. XII

April, 1936

No. 4



DIVISION OF GRADUATE STUDY

SUMMER 1936

and

LONG SESSION 1936-37

LUBBOCK, TEXAS

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

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PRINTED AND BOUND
By
TEXAS TECH PRESS

SUMMER SESSION CALENDAR

1936

- June 9, Tuesday. Entrance examinations (for students who cannot present 15 fully accredited units).
- June 9, Tuesday. Registration.
- June 10, Wednesday. Classes begin 7:00 A. M. Late registration regulations in full force.
- July 4, Saturday, Holiday. Annual Texas Tech-Carlsbad Caverns Day; other trips arranged for those who are interested.
- July 17, 18. Friday, Saturday. Examinations for first term.
- July 18, Saturday. First term closes.
- July 20, Monday. Registration for second term.
- July 21, Tuesday. Classes begin at 7:00 A. M. Late registration regulations in full force.
- August 21, 22, Friday and Saturday. Examinations for seniors who graduate at close of summer session.
- August 25, Tuesday. Summer School Commencement and Graduation Exercises, 8:15 P. M.
- August 25, 26, Tuesday, Wednesday. Final examinations for second term.
- August 26, Wednesday. Summer school closes.

COLLEGE CALENDAR, TWELFTH ANNUAL SESSION

1936

- September 14, Monday. Entrance examinations for students not meeting the regular admission requirements.
- September 15-16, Tuesday-Wednesday. Registration of all students.
- September 17, Thursday. Classes begin 8:00 A. M. Late registration regulations in full force.
- September 17, Thursday. Open house for all students by the churches of Lubbock, 8:00-10:00 P. M.
- September 20, Sunday. Special sermon for students in all Lubbock churches.
- September 22, Tuesday. Opening Convocation for all students and faculty. Annual address of President, 11:00 A. M.
- September 25, Friday. Annual reception to all students by President and Mrs. Knapp and the College Administrative Council, 8:00 P. M.
- November 11, Wednesday, Holiday.
- November 14, Saturday. Mid-semester reports due in Registrar's Office, 5:00 P. M.
- November 25, Wednesday. Thanksgiving Holidays begin, 5:00 P. M.
- November 30, Monday. Classes resumed, 8:00 A. M.
- December 22, Tuesday. Christmas Holidays begin, 6:00 P. M.

1937

- January 4, Monday. Classes resumed, 8:00 A. M.
- January 23-29, Saturday-Friday, inclusive. Final examinations for the first semester.
- February 1, Monday. Registration for all students for the second semester. Entrance examinations for students not meeting the regular admission requirements.
- February 2, Tuesday. Second semester classes begin 8:00 A. M. Late registration regulations in full force.
- March 24, Wednesday. Annual presentation, "Seven Last Words" by Du-boise, presented by Professor Blitz, Orchestra, and Chorus.
- March 26, Friday. Mid-semester reports due in the Registrar's Office, 5:00 P. M.
- March 26, Friday. Easter Recess begins, 6:00 P. M.
- March 30, Tuesday. Classes resumed. 8:00 A. M.
- May 27-June 3. Final examinations for the second semester.
- May 30, Sunday. Baccalaureate Sermon.
- May 31, Monday. Commencement Day.

SUMMER SESSION 1937

- June 4-5, Friday, Saturday. Entrance examinations for students who cannot meet the regular admission requirements.
- June 7, Monday. Registration for first term summer school.

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THE GRADUATE DIVISION

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Chairman of Graduate Committee.

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ROBERT C. GOODWIN, B. A., M. A., Ph. D.

JAMES HAROLD MURDOUGH, S. B. in C. E., M. S. E.

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OTTO VINCENT ADAMS, B. S. in C. & I. E., M. S. E., Dean of the Division of Engineering.

JAMES MARCUS GORDON, B. A., M. A., LL. D., Dean of the Division of Arts and Sciences.

ARTHUR HENRY LEIDIGH, B. S., M. S., Dean of the Division of Agriculture.

MARGARET WATSON WEEKS, B. S., M. S., Dean of the Division of Home Economics.

GRADUATE FACULTY

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B. A. Virginia; Ph. D., Chicago.

OTTO VINCENT ADAMS, Dean of Engineering and Professor of Civil Engineering.
B. S. in C. & I. E., Colorado Agricultural College; M. S. E., Michigan.

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B. S. in E. E., Texas; M. S. in E. E., Massachusetts Institute of Technology.

SANNIE CALLAN, Instructor in Home Management.
B. S., University of Pittsburgh; M. S., Columbia.

TRUMAN CAMP, Instructor in English.
B. A., M. A., Ph. D., Yale.

ALLAN LORAIN CARTER, Professor and Head Department of English.
B. A., Clark; M. A., Northwestern; Ph. D., Pennsylvania.

- RAY L. CHAPPELLE, Professor and Head Department of Agricultural Education.
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B. A., Muskingum; B. D., Drew University; M. A., Ph. D., New York.
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B. S. in M. E., Texas.
- BONNIE K. DYSART, Associate Professor of Education and Psychology.
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B. A., Texas; M. A., Chicago.
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B. S., Utah State Agricultural College; M. S., Ph. D., Cornell.
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B. S., Purdue; M. A., Columbia.
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B. A., Oxford College; M. A., Ph. D., Texas.
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B. S., M. E., M. S., Illinois.
- ROBERT CABANISS GOODWIN, Professor and Head Department of Chemistry and Chemical Engineering.
B. A., Howard Payne; M. A., Texas; Ph. D., Harvard.
- FRED G. HARBAUGH, Associate Professor of Animal Husbandry.
B. S., D. V. M., Iowa State College.
- JOHN COYNE HARDGRAVE, Assistant Professor of Mechanical Engineering.

- ELLIS RICHARD HEINEMAN, Assistant Professor of Mathematics.
B. A., M. A., Wisconsin.
- WILLIAM FRANK HELWIG, Professor of Electrical Engineering.
B. S. in E. E., Minnesota; M. A., Texas; E. E., Minnesota.
- HARRY HILL, Associate Professor of Physics.
B. A., M. A., West Virginia; Ph. D., Chicago.
- WILLIAM CURRY HOLDEN, Professor of History and Anthropology and
Director of Archaeological Research.
B. A., M. A., Ph. D., Texas.
- FLOY F. HOOPER, Instructor in Architecture and Allied Arts.
B. A., Chicago Art Institute.
- CECIL HORNE, Assistant Professor of English and Journalism.
B. A., Baylor; B. A., Yale.
- O. B. HOWELL, Associate Professor of Horticulture.
B. S., M. S., Michigan.
- DOYLE D. JACKSON, Associate Professor of Education.
B. A., M. A., Texas; Ph. D., Arizona.
- J. W. JACKSON, Assistant Professor of Government.
B. A., M. A., Texas Technological College.
- WILLIAM A. JACKSON, Professor and Head Department of Government.
B. A. Baylor; M. A., Chicago; Ph. D., Iowa.
- ADA VIVIAN JOHNSON, Associate Professor of Foods and Home Economics Education.
B. S., Southwest Texas State Teachers College; M. A., Columbia.
- FLORIAN ARTHUR KLEINSCHMIDT, Professor and Head Department of
Architecture and Allied Arts.
B. S. in Arch., Minnesota; M. in Arch., Harvard; Diplome d'Architecture, Ecole des Beaux Arts Americaine, Fontainebleau, France.
- LONNIE LANGSTON, Assistant Professor of Mathematics.
B. A., Furman; M. A., South Carolina.
- ARTHUR HENRY LEIDIGH, Dean of Agriculture and Professor of Agronomy.
B. S., Kansas State Agricultural College; M. S., Agricultural and Mechanical College of Texas.
- ROBERT IVAN LOCKARD, Assistant Professor of Architecture and Allied Arts.
B. S. in Arch., M. S. in Arch., Kansas State College of Agriculture and Applied Sciences.
- CLARENCE SIMPSON MAST, Professor of Physics.
B. S., M. A., Ohio Wesleyan University.
- JAMES NEWTON MICHIE, Professor and Head Department of Mathematics.
B. S. in Engineering, Virginia; M. A., Michigan.
- RUFUS ARTHUR MILLS, Professor of English.
B. A., M. A., Texas.
- RAY C. MOWERY, Professor of Animal Husbandry.
B. S., Agricultural and Mechanical College of Texas; M. S., Iowa College.
- JAMES HAROLD MURDOUGH, Professor and Head Department of Civil Engineering.
B. S. in C. E., Massachusetts Institute of Technology; M. S. E., Michigan.

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B. A., Tulsa; M. A., Columbia.

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B. A., Southwest Texas State Teachers College; B. S., M. A., Oklahoma A. & M.

JONNIE HEMPHILL McCRERY, Professor and Head Department of Foods and Nutrition.

B. S., M. A., Columbia.

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B. A., M. A., Texas; Ph. D., Pennsylvania.

FITZHUGH LEE McREE, Associate Professor of Civil Engineering.

B. S. in C. E., M. S. in C. E., Texas.

MONTELL ERNEST OGDON, Associate Professor of Government.

B. A., Illinois; M. A., Columbia.

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B. A. Muskingum College; B. S., Chicago; M. S., Ph. D., Iowa.

MART G. PEDERSON, Assistant Professor of Dairy Manufactures.

B. S., Texas Technological College.

HARDISON C. PENDER, Associate Professor of Government.

B. A., North Texas State Teachers College; M. A., Baylor.

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CHARLES BLAISE QUALIA, Professor of Spanish and Head Department of Foreign Languages.

B. A., M. A., Ph. D., Texas.

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B. A., Beloit; Ph. D., Yale.

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B. A. Cornell; M. A., Ph. D., Illinois.

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CECILIA SCHUCK, Professor of Foods and Nutrition.

B. A., Indiana State Teachers College; M. S., Minnesota; Ph. D., Chicago.

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EDGAR GREER SHELTON, Associate Professor of Architectural Engineering.

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B. A., M. A., Ph. D., Iowa.

GEORGE SMALLWOOD, Professor of English.

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FRED WINCHELL SPARKS, Professor of Mathematics.

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B. A., M. S., Ph. D., Iowa.

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B. S., Agricultural and Mechanical College of Texas; M. S., Missouri.

OSCAR A. ST. CLAIR, Professor and Head Department of Industrial Engineering, Engineering Drawing, and Industrial Education.

B. S. in E. E., Armour Institute of Technology.

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B. S. in E. E., M. A., Texas Technological College.

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B. A., B. S., M. A., Ohio.

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B. A. Dartmouth; M. A., Chicago; M. A., Wisconsin; Ph. D., Yale.

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B. A., M. A., Texas.

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B. S., M. S., Ph. D., Iowa State College.

ADMISSION

All correspondence on the subject of admission to the Graduate Division should be addressed to the Registrar of the college.

GENERAL REQUIREMENTS

All general requirements relating to students, as set forth in the general catalog, not inconsistent with the regulations in this bulletin, are applicable to graduate students.

EXPLANATION OF COURSE NUMBERS AND ABBREVIATIONS IN COURSE DESCRIPTIONS

The numbers used for designating courses are uniform. Reading from left to right, the first digit indicates the college year in which the course is normally taken; the second digit shows the semester hour value of the course; the last digit or digits completes the course number. A course which extends over two semesters carries a hyphenated number, e. g., government 431-2.

The semester in which a course is taught is indicated by the Roman numerals "I" or "II". The letter "S" indicates that the course is offered in the summer session.

GRADUATE STUDY

All graduate work in Texas Technological College is confined to work toward the degrees of Master of Science and Master of Arts and toward professional degrees in certain branches of Engineering as are hereinafter noted, and is likewise confined to those departments whose staffs and facilities are adequate and qualified to give graduate work.

Graduate work requires that the candidate shall have obtained a bachelor's degree either at this institution or at some institution of equal rank and standing. To receive the master's degree such candidate shall complete not less than thirty-three semester hours of graduate work beyond the bachelor's degree, including a thesis, which shall be founded on a definite project of original research to be approved by the head of the major department and the Graduate Committee. With the approval of the Graduate Committee, undergraduates lacking not more than six semester hours for the completion of the requirements for the bachelor's degree may be permitted to proceed with graduate study.

The object and aim of graduate study is to develop the powers of independent work and to promote and develop the creative spirit of research in the graduate student.

Facilities. 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 the scientific equipment of the various laboratories of the College is being improved continually. Positions as graduate assistants are provided in some departments. These place the graduate students in direct contact with the best trained men on the staff and give opportunity for the development of graduate work.

Admission. To become a candidate for the master's degree a student must have received the bachelor's degree from Texas Technological College or a bachelor's degree from another college or university of equivalent standing. The institution from which the candidate comes must have held membership in a recognized association of senior colleges at the time the student was graduated. At the discretion of the graduate Committee a candidate may be required to pass an examination as a prerequisite to admission as a candidate for the master's degree. In certain departments this examination is a routine requirement.

Candidacy for Master's Degree. A written application on a blank furnished by the Registrar must be made by the graduate student and approved by the Graduate Committee and the dean of the division concerned, before the student will be accepted as a candidate for a degree. This blank, when properly filled out, shows the entire course of study to be followed, the nature of the research to be pursued as a basis for the thesis, and the subject of the thesis. This application must be filed with the Graduate Committee some time before the close of the semester or session prior to the one in which the degree is to be conferred.

Foreign Languages. In certain departments no candidate may receive a master's degree without meeting requirements in foreign languages.

Residence Requirements. An applicant for the master's degree must be a student in residence at this institution for at least thirty weeks, and in addition, he must account for at least six more weeks of work in one of the following ways:

1. As a resident student at Texas Technological College.
2. As a resident student in some other college of equal rank.
3. As a student in extension courses offered by Texas Technological College in which a maximum of six semester hours may be made.

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 to complete the work may be increased proportionately. 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. No person holding a graduate assistantship of fellowship will be permitted to complete the work for a graduate degree in less than two long sessions of nine months each, or the equivalent.

Amount of Work. The minimum amount of work beyond the bachelor's degree required for the master's degree is thirty-three semester hours and one year in residence. A maximum of six semester hours of graduate work or the equivalent may be accepted from another institution of equal rank provided that 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 is to be outlined and approved by the head of the department, the dean of the division concerned, and by the Graduate Committee before any such work is undertaken. A maximum of seventeen semester hours of work may be carried in any one semester.

Major and Minor Subject. A candidate for the master's degree should complete a minimum of twenty-one hours in the major subject including the thesis. The remainder of the thirty-three semester hours of credit may be offered in one or two minor subjects, provided not less than six hours is offered in one subject. At least one of the minors must be closely related to the major subject. Minor subjects must be approved by the department in which the major is taken. One minor subject is required.

Thesis. A thesis subject must be chosen as a part of the major subject, and a full outline of the research work to be undertaken as a basis for the thesis must be set forth and be approved by the Graduate Committee. Final copy of the thesis, unbound, with the signed approval of the thesis committee, head of the department, and dean of the division concerned must be presented for examination and approval of the Committee not later than fifteen days prior to graduation, and the final corrected copy with the cost of bind-

ing, not later than five days prior to graduation. Credit for the thesis will regularly carry a maximum of six semester hours. By vote of the Graduate Committee, this amount may be increased to nine semester hours, depending upon the extent and quality of the work to be done.

Courses. The courses which may be taken for credit toward the master's degree are of three kinds:

1. **Graduate Courses.** These courses are given only for graduate credit and cannot be taken for credit toward the bachelor's degree.

2. **Combined Courses.** These courses are regular graduate courses which are intended primarily for graduate students, but to which by special arrangement a few well qualified seniors are admitted for undergraduate work.

3. **Advanced Undergraduate Courses.** These courses are regular senior courses—or, in some cases, junior or senior courses—intended primarily for undergraduate students, but to which by special approval of the Graduate Committee, graduate students may be admitted for credit. Only such courses as not have been taken by the candidate during his undergraduate work will be considered for approval by the committee.

Grades. No courses will be credited toward the master's degree if the grade is lower than B.

Credit. No course will be accepted for Graduate Credit unless registration for such course has been approved by the Chairman of the Graduate Division.

Extension Credit. The above regulation 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.

Oral Examination. In addition to the regular written examinations, of which the department in which the subject is taken is in charge, all candidates for the masters' degree, on completion of their class work and laboratory work, are subject to a general oral examination by the Graduate Committee and such members of the staff as may be appointed for that purpose by the Graduate Committee. Such oral examinations may cover all or any part of the work of the graduate student. The time of the oral examination is fixed by the Graduate Committee.

Professional Degrees. 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, 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 Graduate Committee and the faculty of the College.

A written application stating the degree desired must be submitted to the Graduate Committee 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 responsible charge. In order to be accepted by the Graduate Committee the professional work must have been approved by the head of that department concerned and by the Dean of the Engineering Division.

Before submission to the Graduate Committee, the outline of the thesis must have been approved by the head of the department directly concerned. This thesis must constitute a distinct contribution to engineering, must be of an 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.

COURSES OF INSTRUCTION

DIVISION OF AGRICULTURE

DEPARTMENT OF AGRICULTURAL ECONOMICS, FARM MANAGEMENT, AND RURAL SOCIOLOGY

JOHN ORVAL ELLSWORTH, B. S., M. S., Ph. D.

Professor and Head Department of Agricultural Economics and Farm Management.

BRADFORD KNAPP, B. S., L. L. B., D. Agr.

President of College, Professor of Agricultural Economics.

E. L. McBRIDE, B. A., B. S., M. A.

Assistant Professor of Agricultural Economics.

Graduate work in the department is largely confined to supporting minors and to cases where applicants may arrange to take considerable work at other institutions. In all cases students will be expected to follow a definitely predetermined program of work and write a thesis.

Candidates for a Master's degree in Agricultural Economics will be expected to present evidence of having completed undergraduate work substantially equivalent to the curriculum required for an undergraduate major in the department.

COURSES

3112-2. Current Economics. Cr. 1, I and II. A discussion and study of current economic problems as affecting agriculture. Students will present reports on assigned readings and papers which involve individual initiative. This course supplements 411-2. Given alternate years, including 1936-37.

321. Cooperation in Agriculture. Cr. 2. I Development, importance, and fundamental principles underlying cooperative purchasing, and cooperative production. Pooling systems, membership contracts, and laws affecting cooperative action of rural people. Several field trips to study existing West Texas cooperatives. Each student is required to submit a term paper involving individual research and initiative.

322. Marketing Agricultural Products. Cr. 2. II. S. Problems and practices involved in the marketing of specific commodities as cotton, wheat, beef, hogs, dairy products, poultry, as especially adapted to the conditions of West Texas. Each student devotes most of his time in the course studying the marketing of a commodity of his choice and is required to submit a term paper involving a reasonable amount of statistical analysis and research on his chosen subject. Given in 1936-37 and alternate years.

325. Farm Records And Accounts. Cr. 2. I and II. Application of principles and theory of accounting to farm and ranch business. Formulation and interpretation of farm records, including single enterprise cost accounts, and farm inventories. Analysis and adaption of various methods of farm book-keeping and accounting. Each student will be expected to take an inventory of some selected farm and produce farm plans, budgets, and a set of records.

326. Field Problems In Farm Management. Cr. 2. S. A field trip of two weeks covering about two thousand miles, studying various type farms and markets in Texas. Carefully planned itinerary providing stops for study at

typical farms and ranches in the regions of the Edwards Plateau, Rio Grande Valley, Coast Prairie, Black Prairie, and the High Plains. Markets in the large cities, also the experiment stations and colleges enroute, visited. Expenses: about forty to fifty dollars including registration, transportation, meals, and lodging. Students will be expected to take notes enroute and write up their observations on their return. Not given in 1936.

331. Statistical Problems. Cr. 3. I and II. S. A survey of the important sources of agricultural statistics. Principles involved in the collection, analysis, presentation, and interpretation of agricultural data. Practice in statistical methods, including samplings, tabulations, averages, dispersion, probability, error, index numbers, trends, cycles, correlation. The student will evidence a degree of skill in handling advanced problems assigned in statistics by the instructor.

361. Field Problems In Agricultural Economics. Cr. 6. S. A field trip of six weeks covering four to seven thousand miles, studying improved agricultural practices and visiting points of interest in leading agricultural states. A detailed itinerary will include stops in each state enroute where studies will be made with the assistance of the respective state agricultural colleges and of the United States Department of Agriculture. Expenses: about \$175, including registration, transportation, meals, and lodging. Students will take notes enroute and write up their observations after they return.

411-2. Agricultural Economics Seminar. Cr. 1. I and II. S. A discussion and study of advanced current problems in the economics of agriculture. Professional journals, bulletins, and new books in the field covered by the department will be studied and reported by the students. Given alternate years, excluding 1936-37.

421. Land Economics. Cr. 2. I. Land as a factor of production; classification and utilization of land; land income, tenure, calculation, property rights, deeds, credit, taxation. Each student will prepare a term paper suitable for a civil service thesis on some phase of land economics.

422. Agricultural Prices And Forecasting. Cr. 2. II. The application of statistical methods to the refinement and practical use of agricultural prices and forecasting. Original research applies to one agricultural commodity of the student's choice. A term paper will evidence the student's ability to conduct individual research and to master the price movements of one commodity. Given alternate years excluding 1936-37.

423. Farm Management. Cr. 2. I and II. S. The organization and management of the individual farm; types and systems of farming; capital requirements; farm machinery and equipment; labor supply and distribution. Factors affecting farm profits; practice in taking farm inventories and in making plans for reorganization. Field trips to nearby farms. A high quality term paper on the subject "A Long Time Reorganization Plan For My Farm" will be expected of the student.

418, or 428, or 438. Problems in Agricultural Economics. Cr. 1, or 2, or 3, I and II. Investigation of a specific problem of personal interest to the student usually supplementing work in previous courses in the department. Results will be presented in written form.

Rural Sociology

421. Methods of Research and Extension. Cr. 2, I. Methods used in agriculture and home economics research and extension. Problems confronting research workers, county agents, and home demonstration agents. Use and development of rural leadership and institutions in the improvement of rural life. The student will prepare a detailed paper and analysis of census and other data regarding a county of his choice. Taught by President Knapp.

422. Rural Sociology. Cr. 2. II. Rural institutions and how they may be utilized to improve standards of living of rural people. The interrelation of rural and urban interests. Community and personal relationships and attitudes. Progressive and disorganizing tendencies as influenced by the economic situation. Methods of dealing with the problems involved. Each student will be required to submit a written report, compiled from accessible literature or personal field survey on some selected subject.

DEPARTMENT OF AGRICULTURAL EDUCATION

RAY L. CHAPPELLE, B. S.

Professor and Head Department of Agricultural Education.

COURSES

441-2. Agricultural Education. Cr. 4. I, II. S. Prerequisite: Ed. 234x, Psy. 231. Analyzing the vocational agriculture teacher's job. The project method of teaching. The long time program and annual teaching plan, equipment, reports, daily lesson planning, exhibits and displays. Opportunity for participation work in observation and direct teaching of evening, part-time and all-day classes. Much of the work is done in the field.

421. Future Farmer Activities. Cr. 2. S. Prerequisite: Ag. Ed. 441-2 or the equivalent. Methods of conducting and promoting group activities of immediate importance to future farmers.

Each year, as the need arises, a course will be given concerning school problems in vocational agriculture.

DEPARTMENT OF ANIMAL HUSBANDRY

***WENZEL LOUIS STANGEL, B. S., M. S.**

Professor and Head Department of Animal Husbandry.

RAY C. MOWERY, B. S., M. S.

Professor of Animal Husbandry, Acting Head of Department.

FRED G. HARBAUGH, B. S., D. V. M.

Associate Professor of Animal Husbandry.

The Department of Animal Husbandry offers major work for the degree of Master of Science in animal production, and minor work to students taking major work in other departments. The department certifies for the professional degree of Master of Agriculture. The amount of major work will include courses listed in other departments when such courses are appropriate to the student's previous training, major interests, and thesis problem.

Prerequisite to major graduate work is the completion of an undergraduate curriculum in Animal Husbandry, or some other closely allied field of agriculture, substantially equivalent to one of those required of undergraduate students at this institution, and should include prerequisite undergraduate courses necessary for the particular line chosen.

Animal Husbandry

322. Farm Meats. Cr. 2. Prerequisite: A. H. 121, 122. Form, quality, and condition as affecting dressing percentage and quality of carcass. Slaughtering, dressing, cutting, and curing. Uses and market demands.

331 Animal Nutrition and Principles of Feeding. Cr. 3. I. S. Prerequisite: A. H. 121, 122. Chem. 341. Chemical composition of plants and animals. Digestion and metabolism. Digestibility, energy, and manurial value of

*Leave of Absence, 1935-36.

feeds. Feeding standards and feeds. Feed requirements and calculation of rations for maintenance, growth, fattening, milk and wool production, and work. Practical feeding of laboratory animals.

411. Animal Husbandry Seminar. Cr. 1. II. Prerequisite: Senior or graduate standing in Animal Husbandry. Assigned subjects. Review of recent investigations. Reports and discussions.

422. Animal Breeding. Cr. 2. I. Prerequisite: Hort. 341. Genetics applied to the improvement of farm animals. Fertility and sterility. Systems of breeding.

431. Beef Production. Cr. 3. I. Prerequisite: A. H. 331. The beef cattle industry. Breeding, feeding, and marketing. Purebred herd and range management. Cattle ranching. Fitting for show and showing. Disease control. Laboratory practice with farm animals and equipment done as assigned problems.

433. Sheep and Wool Production. Cr. 3. II. S. Prerequisite: A. H. 331. The sheep industry. Adaption of breeds. Breeding, feeding, shearing, and marketing. Farm flock and range management. Fitting for show and showing. Parasites, diseases, and sanitation. Laboratory practice with farm animals and equipment as assigned problems.

434. Swine Production. Cr. 3. II. Prerequisite: A. H. 331. The swine industry. Breeding, feeding, housing, marketing. Fitting for show and showing. Parasites, diseases, and sanitation. Laboratory practice with farm animals and equipment as assigned problems.

435. Dairy Cattle Production. Cr. 3. I. Prerequisite: A. H. 331. The dairy industry. Feeding for growth, maintenance, and milk production. Handling and marketing milk and animals. Dairy barn construction and sanitation. Advanced registry and herd records. Laboratory practice with farm animals and equipment as assigned problems.

531. Research in Animal Husbandry. Cr. 3. I. S. Prerequisite: Consent of the head of the department. Research in the field of animal production and nutrition. Preparation of a thesis.

532. Research in Animal Husbandry. Cr. 3. II. Prerequisite: Consent of the head of the department. Research in the field of animal production and nutrition. Preparation of a thesis.

Poultry Husbandry

431. Poultry Husbandry. Cr. 3. II. S. Prerequisite: P. H. 131. The poultry industry. Breeding, hatching, brooding, feeding for egg production and market, marketing and housing. Grades and classes. Disease control, parasites and sanitation. Laboratory practice with farm animals and equipment as assigned problems.

DEPARTMENT OF DAIRY MANUFACTURES

KENNETH MILLER RENNER, B. S., M. S.

Professor and Head Department of Dairy Manufactures.

MART G. PEDERSON, B. S.

Assistant Professor of Dairy Manufactures.

The Department of Dairy Manufactures is in a position to offer graduate study for the degree M. S. in Agriculture. Sufficient scientific equipment will be available by the fall of 1936 for the student who desires to do research work in milk, cream, ice cream, butter and cream.

Certain courses in Chemistry, Economics, Animal Husbandry, and Business Administration may be taken to apply as Major work in Dairy Manufactures with the consent of the Heads of the Departments.

The equivalent of fifteen (15) semester hours of advanced Dairy Manufactures credits including Dairy Bacteriology must be presented before the student will have full graduate standing in the department.

321-2. Market Milk and Inspection. Cr. 3. I and II. Prerequisite: D. M. 131, Bact. 231. The fluid milk industry. Milk and public health. City, State and Federal regulations and ordinances. Production, transportation, handling, retailing, wholesaling of milk, cost studies. Processing. Required field trip in second semester. Both courses must be taken in order to secure graduate credit. A special term paper dealing with some phase of the subject matter must be presented in order to secure graduate credit.

323. Market Grades and Classification of Dairy Products. Cr. 2. I and II. Commercial grades and classifications of dairy products. Practice in judging milk, butter, cheese, and ice cream. Student contests. A special term paper dealing with some phase of the subject matter must be presented in order to secure graduate credit.

335. Dairy Bacteriology. Cr. 3. II. Prerequisite: D. M. 131, Bact. 231. Types of bacteria present in milk and milk products. Methods of control. A special term paper dealing with some phase of the subject matter must be presented in order to secure graduate credit.

411. Dairy Manufactures Seminar. Cr. 1. II. Prerequisite: Senior standing in Dairy Manufactures. A review of scientific literature. Papers and reports. A special paper dealing with some phase of the subject matter must be presented in order to secure graduate credit.

420. Dairy Products Merchandising. Cr. 2. I. Special practices, ethics, organization, and methods of merchandising dairy products. A special term paper dealing with some phase of the subject matter must be presented in order to secure graduate credit.

421. Creamery Organization and Control. Cr. 2. II. The organization and control of the dairy plant from a business standpoint. Labor control. Duties of the plant manager and relationship of the manager to the business. Required field trip. A special term paper must be presented if graduate credit is to be secured.

422. Dairy Technology. Cr. 2. II. Prerequisite: D. M. 131, Bact. 231, Chem. 341. The manufacture of condensed milk and milk powder, milk casein, commercial butter milk and whey. Supplemented by field trips. A special term paper dealing with some phase of the subject matter must be presented in order to secure graduate credit.

431. Cheesemaking. Cr. 3. I. Prerequisite: D. M. 131, Bact. 231, Chem. 341. Classification of foreign and domestic varieties of plain and fancy cheese. Manufacture of soft cheese and the more common varieties of semi-hard and hard cheese. Special term paper must be presented for graduate credit.

432. Dairy Manufacturing Problems. Special phases of the dairy manufacturing industry. A special term paper dealing with some phase of the subject matter must be presented in order to secure graduate credit.

433. Ice Cream Making. Cr. 3. II. Prerequisite: D. M. 131, Bact. 231, Chem. 341. History of the development of the ice cream industry. Ice cream ingredients; standardization and calculation of mixes. Processing. Cost studies. Supplemented by field trips. A special term paper dealing with some phase of the subject matter must be presented in order to secure graduate credit.

441. Butter Making. Cr. 4. I. Prerequisite: D. M. 131, Bact. 231, and Chem. 341. History of the butter industry. Manufacture of sweet and sour cream butter; neutralization; cream ripening; butter defects. Actual plant practice in the manufacture of butter. A special term paper dealing with some phase of the subject matter must be presented in order to secure graduate credit.

531-2. Thesis. I and II. Prerequisite: Consent of Head of the Department. Scientific research in one of the following fields in the dairy industry; market milk, butter, cheese, cream ripening, ice cream, dairy bacteriology, condensed milk or milk powder.

DEPARTMENT OF PLANT INDUSTRY

CLIVE EARNEST RUSSELL, B. S., M. S.

Professor of Horticulture and Head Department of Plant Industry.

ARTHUR HENRY LEIDIGH, B. S., M. S.

Dean of Agriculture and Professor of Agronomy.

O. B. HOWELL, B. S., M. S.

Associate Professor of Horticulture.

ARTHUR W. YOUNG, B. S., M. S., Ph. D.

Associate Professor of Agronomy.

HENRY P. CLAY, B. S.

Assistant Professor of Agricultural Engineering.

The Department of Plant Industry offers graduate work toward the degree of Master of Science in Agriculture with a major in Plant Industry, Agronomy or Horticulture.

Graduate work requires that the candidate shall have obtained a bachelor's degree with a major in agriculture or its equivalent at this institution or at some other institution of equal rank.

Graduate students carrying advanced undergraduate courses as either major or minor work shall be required to exceed the amount of work done by the undergraduate student. The nature of the additional work shall be the preparation of a paper, research work, or the study of a special problem.

Plant Industry

411. Plant Industry Seminar. Cr. 1. II. Assigned readings. Current advances and thought. Informal discussion, oral reports, papers. Agronomic or horticultural subjects.

431. Advanced Plant Breeding and Improvement. Cr. 3. II. Prerequisite: Hort. 341 or its equivalent. Application of plant genetics in the breeding and improvement of plants. Research methods. The seed or the plant propagation farm. Preparation of a paper, research work, or the study of a special problem.

432. Plant Industry Problems. Cr. 3. I, II. An investigation of a problem in the field of special interest to the individual student concerned. Research. Preparation of a paper.

531. Plant Industry Thesis. Cr. 3. I, II. An investigation of some problem selected from the major field. A survey of literature, outlining procedure, assembling and interpretation of data. Preparation of a thesis.

Horticulture

421. Citriculture. Cr. 2. I. Commercial production of citrus fruits, adaption, soil requirements, temperature, orchard heating, and irrigation. Preparation of a paper, research work, or the study of a special problem. Given in alternate years; not given in 1936-37.

431-2. Advanced Pomology. Cr. 3. I and II. The principles underlying fruit production. Temperature, moisture, irrigation, nutrition, fruit setting of pomological fruits. The first half year's work is not a prerequisite for the second half. Preparation of a paper, research work, or the study of a special problem. Given in alternate years; given in 1936-37.

443. Systematic Pomology. Cr. 3. I. Nomenclature, variety description, classification, climatic and regional adaption. Practice in describing and identifying varieties of fruits. Preparation of a paper, research work, or the study of a special problem. Given in alternate years; given in 1936-37.

434. Horticultural Problems. Cr. 3. I, II. An investigation of a problem in the horticultural field of special interest to the individual student concerned. Preparation of a paper.

Agronomy

331. Forage and Pasture Crops. Cr. 3. I. S. The production, harvesting, storage, and uses of forage crops, green manure, and cover crops, hay and pasture crops. Identification of seeds and plants. Classification, life history, and economic value of pasture plants. Injurious plants and their control. Pasture conservation, revegetation, and management. A special study of some phase of special interest to the student.

421. Cotton and Other Fiber Crops. Cr. 2. II. Culture and classification of cotton. Improvement of varieties. Diseases and insect pests of cotton. World cotton production. Preparation of a paper, research work, or the study of a special problem.

422. Soil Management. Cr. 2. I. S. Prerequisite: Registration in Ag. Engr. 411. Soil moisture conservation, run-off prevention, control of soil erosion, terracing, and supplemental water supply. Permanent farming under conditions of light or wide seasonal variations of rainfall. Preparation of a paper, research work, or the study of a special problem.

423. Soil Management. Cr. 2. I. Prerequisite: Registration in Ag. Engr. 412. Advanced soil conditions and plant growth. The nature and sources of plant nutrients, their liberation and conservation. Use of supplements and fertilizers. Irrigation. Preparation of a paper, research work, or the study of a special problem.

Agricultural Engineering

321-2. Farm Shop. Cr. 2. I and II. 322 in S. Care, fitting, and use of tools. Woodwork as it affects farm problems. Construction of structures. Minor repair work for farm machinery and engines. Farm sheet metal, forging, pipe fitting, concrete, electric wiring, painting and rope work. Either course may be taken independently of the other. Investigation of a problem in the field of special interest to the student.

323. Farm Machinery. Cr. 2. II. Construction, care, operation, and repair of the different types of farm machinery. Investigation of a problem in the field of special interest to the student.

331-2. Farm Power. Cr. 3. I and II. The fundamental principles of operation of the gasoline engine, its operation, care, and repair as a source of farm stationary power. Use of wind power and care and repair of wind en-

gines. Operation, care and repair of modern farm tractor. Use of electricity for stationary power, care of electric motors, methods of generating electricity for domestic use.

Prerequisite for second half of course: Two semesters of physics or first half of course. The first half may be taken independently of the second. Preparation of a paper, research work, or the study of a special problem.

411. Soil Management Laboratory. Cr. 1. I. S. Prerequisite: Registration in Agron. 422. Terrace location, design, and construction for soil erosion control and moisture conservation. Design and construction of structures for terrace outlet and gulley control.

412. Soil Management Laboratory. Cr. 1. II. Prerequisite: Registration in Agron. 423. Design and lay-out of irrigation and drainage ditches and systems and tile drain system. Use of explosives. Measurement water. Methods of supplying water to land. Irrigation equipment and power requirements.

DIVISION OF ENGINEERING

DEPARTMENT OF ARCHITECTURE AND ALLIED ARTS

FLORIAN ARTHUR KLEINSCHMIDT, B. S. in Arch., M. in Arch., Diplome d'Architecture.

Professor and Head Department of Architecture and Allied Arts.

EDGAR GREER SHELTON, B. S. in Arch.

Associate Professor of Architectural Engineering.

ROBERT IVAN LOCKARD, B. S. in Arch., M. S. in Arch.

Assistant Professor of Architecture and Allied Arts.

FLOY F. HOOPER, B. A.

Instructor in Architecture and Allied Arts.

The Department of Architecture and Allied Arts, because of the limited staff, room and equipment, is not prepared at the present time to offer a Masters' Degree in Architecture, Arch. Engineering, or in Commercial Art. However, several course are available for graduate credit for students not majoring in this department.

COURSES

320. **History of Ornament and Furniture.** Cr. 2. I. Prerequisite: Arch. 233-4. The study of the development of Ornament and Furniture by means of slides and photographs. Collateral reading and library research required.

321. **History of Early Civilizations and Arts.** Cr. 2. I. Prerequisite: Arch. 233-4. Illustrated lectures dealing with the origins of art and architecture in early civilizations. The purpose is to develop observation and to relate important forms and monuments to their contemporary civilizations. Library research in anthropology and archaeology, etc., as related to the origins of various art forms.

324. **History of Sculpture.** Cr. 2. II. Prerequisite: Arch. 233-4. This course will consist of lectures, illustrated with the lantern, supplemented by reading and the study of large photographs as are found in the Carnegie Collection. The study of the development of sculpture from the Egyptian to the present day.

325. **Building Sanitation.** Cr. 2. II. A critical study of the location and orientation of buildings, lighting, ventilation, water supply, plumbing, sewage and refuse disposal.

333. **Methods of Teaching Art in the Elementary School.** Cr. 3. S. Prerequisite: Arch. 121 or 123-4; 235-6; or equivalent. Fundamental principles of composition as applied to problems of drawing, painting, and the crafts of the elementary school. Emphasis on the method of presentation and adapting art work to children of different age levels. For students who plan to teach public school art in the first seven grades.

334. **Methods of Teaching Art in the High School.** Cr. 3. S. Prerequisite: Arch. 121-2 or 123-4; 235-6; or equivalent. Fundamental principles of composition as applied to problems in drawing, painting, and crafts of the high school. Problems on the methods of presenting the study of art to high school students.

- 420. Professional Practice.** Cr. 2. II. An intensive study course in problems of office organization, ethics, and professional relations in the various aspects of office procedure.
- 421. Estimating and Specification Writing.** Cr. 2. II. Principles of quantity survey; cost analysis. The writing of specifications.
- 422. Building Materials and Construction.** Cr. 2. Prerequisite: Arch. 3212-13. A study of the materials of building construction; methods of assembling and application. A discussion of the use of brick, terra-cotta, tile, limestone, marble, granite, slate, glass, stucco, and plaster, woods, flooring materials, wall finishes, etc. Visits to buildings under construction. Lectures, reference reading, and sketching. Specifications for the various materials are discussed.
- 423-4. Life Drawing.** Cr. 2. I, II. Prerequisite: Arch. 327. Drawing from the living model in various media. Instruction by personal criticism. Admission to courses in life drawing limited to those students who have satisfactorily completed the preceding courses in freehand drawing or their equivalent.
- 425. History of American And Modern Architecture.** Cr. 2. I. Prerequisite: Arch. 233-4. History of American Architecture from the colonial times to the present day. Modern movements in architecture in Europe. Study of course consists of illustrated lectures, collateral reading and library research.
- 426-7. Oil Painting or Advanced Water Color.** Cr. 2. I, II. Prerequisite: Evidence of ability. This course embraces the principles of design to various types of composition, in conjunction with direct study from the human model, still life, or landscape. The work is terminated in a mural decorated as a final creative project.
- 428-9. History of Painting.** Cr. 2. I and II. Prerequisite: Arch. 233-4. A survey of the development of painting from the time of Giotto to the present modern day movements. The course consists of illustrated lectures, intensive study of photographers of Carnegie Collection, collateral reading and library research.
- 4210-11. Decorative Figure Drawing.** Cr. 2. I and II. Prerequisite: Arch. 327. The drawing and painting of the draped or costumed figure against backgrounds and with accessories planned to emphasize beauty and interest in color.
- 431-2. Interior Architectural Design.** Cr. 3. I and II. Prerequisite: Arch. 361-2. Long and short problems, under individual criticism, dealing with designs of interiors of various types and styles of architecture.
- 433-4. Commercial Design II.** Cr. 3. I and II. Prerequisite: Arch 331-2. Specialized industrial design in a variety of materials; textiles, fixtures, furniture, and utensils with the execution and supervision of the finished product.
- 435-6. Advanced Architectural Construction.** Cr. 3. I and II. Prerequisite: Arch 3212-13 and 231. A course in which are prepared details and working drawings of parts of a structural frame building of steel or concrete of office building type. Special attention is devoted to buildings, materials of construction, and protection, materials against fire and other destructive agencies.

DEPARTMENT OF CIVIL ENGINEERING

JAMES HAROLD MURDOUGH, B. S. in C. E., M. S. E.
Professor and Head Department of Civil Engineering.

OTTO VINCENT ADAMS, B. S. in C. & I. E., M. S. E.
Dean of Engineering and Professor of Civil Engineering.

FITZHUGH LEE McREE, B. S. in C. E., M. S. in C. E.
Associate Professor of Civil Engineering.

GORDON WRIGHT PARKHILL, B. S. in C. E.
Assistant Professor of Civil Engineering.

Listed below are courses offered by the Department of Civil Engineering as part of the work required for the various bachelor of science degrees in the Division of Engineering. These courses may be used as minors by a candidate for the masters degree in any department so desiring provided the prerequisites are substantially met and provided that the course to be chosen has not been used as part of the course work for the bachelor's degree attained.

COURSES

331. **Applied Mechanics-Statics.** Cr. 3. I, II. S. Prerequisites: Math 251 or registration in Math. 336. Resultants of coplanar and non-coplanar force systems; equilibrium of force systems, friction, centroids, moments of inertia.
332. **Applied Mechanics-Kinematics and Kinetics.** Cr. 3. I. S. Prerequisite: C. E. 331. Motion of the particle and rigid bodies; kinetics of translation, rotation, and plane motion; work, energy.
333. **Applied Mechanics-Strength of Materials.** Cr. 3. II. S. Prerequisite: C. E. 331. Stresses and strains in elastic bodies subjected to tension, compression, and shear; bending and torsion; deflection of homogenous beams; resilience; column theory; combined stresses.
410. **Hydraulics Laboratory.** Cr. 1. II. Prerequisite: C. E. 420. Laboratory study of principles taught in C. E. 420.
420. **Hydraulics.** Cr. 2. I. S. Prerequisite: C. E. 331. Mechanics of water at rest and in motion.
421. **Engineering Administration.** Cr. 2. II. S. Prerequisite: approval of instructor. Contracts, specifications, and engineering relations.
422. **Highway Administration and Finance.** Cr. 2. I. Prerequisite: C. E. 321. History and development of systems of highway administration; principles of highway finance.
423. **Highway Design.** Cr. 2. II. Prerequisite: C. E. 321. Design and estimate applied to various highway projects and problems.
- 424-5. **Materials.** Cr. 2. I and II. Prerequisite: C. E. 333. Class and laboratory. The properties of the materials of engineering.
426. **Water Supply and Sewage Disposal.** Cr. 2. I. Prerequisite: Bact. 321. A brief survey course of waterworks, sewerage design, and construction.
431. **Reinforced Concrete.** Cr. 3. I. Prerequisite: C. E. 333. Study and application of the theory of reinforced concrete design.
432. **Reinforced Concrete.** Cr. 3. II. Prerequisite: C. E. 431. Continuation from C. E. 431.

433. Structures. Cr. 3. I. Prerequisite: C. E. 330, 333. Design and Detail of steel structures.

434. Structures. Cr. 3. II. Prerequisite: 330, 333. Brief presentation of the theory of statically indeterminate structures.

DEPARTMENT OF ELECTRICAL ENGINEERING

CHARLES V. BULLEN, B. S. in E. E., M. S. in E. E.

Professor and Head Department of Electrical Engineering.

WILLIAM FRANK HELWIG, B. S. in E. E., M. A., E. E.

Professor of Electrical Engineering.

The department of Electrical Engineering does not at present offer sufficient advanced work to grant the degree of Master of Science with Electrical Engineering as a major.

COURSES

330. Principles of Electrical Engineering. Cr. 3. II. S. Prerequisite: Phys. 231, Math 251. Recitations and problems on the fundamental principles of the electric, magnetic, and dielectric circuits. Not open to majors in Electrical Engineering. Open only to graduate students.

321-2. Electrical Engineering Laboratory. Cr. 2. I, II. Prerequisite: Registration in E. E. 331.

331-2. Principles of Electrical Engineering. Prerequisite: E. E. 230. Recitations and problems dealing with the fundamental theory, operating characteristics, and applications of direct current apparatus and machinery. Alternating current circuits studied in 332.

410. Current Electrical Engineering. Cr. 1. I. Class discussion of current developments in the field of electrical engineering.

411. Electrical Engineering Seminar. Cr. 1. I. The study, by the use of available engineering literature, of an assigned engineering problem. Preparation and presentation of seminar paper covering problem studied. Offered when demand or nature of problem justifies.

421-2. Electrical Engineering Laboratory. Cr. 2. I, II. Prerequisite: Registration in E. E. 431.

423-4. Electrical Applications. Cr. 2. I, II. Prerequisite: Registration in E. E. 431. Problems and considerations involved in the utilization of electrical energy.

425. Thesis. Cr. 2. II. Prerequisite: E. E. 411, or equivalent preparation to make investigation of a problem of special interest to the student. Preparation of thesis. Open only to students having satisfactory scholastic records. Offered when demand or nature of problem justifies.

431-2. Alternating Current Machinery. Cr. 3. I, II. Prerequisite: E. E. 332. Recitations and problems on the construction, theory of operation, and characteristics of the principal types of alternating current machinery.

433. Transmission. Cr. 3. I. Prerequisite: Registration in E. E. 431. Theory and problems involved in the transmission of electrical energy.

434. Communication. Cr. 3. II. Prerequisite: E. E. 433. Fundamental principles of modern methods of communication.

DEPARTMENT OF INDUSTRIAL ENGINEERING,
ENGINEERING DRAWING, AND
INDUSTRIAL EDUCATION

OSCAR A. ST. CLAIR, B. S. in E. E.

Professor and Head Department of Industrial Engineering, Engineering Drawing, and Industrial Education.

WILLIAM EZRA STREET, B. S. in E. E., M. A.

Assistant Professor of Engineering Drawing and Industrial Education.

COURSES

Industrial Engineering

421-2. Chemical Plant Design. Cr. 2. I, II. In the first semester of this course we devote most of our time to a study of the various types of machinery which are used in chemical plants, such as different types of crushers, conveyors, elevators, screening equipment, drying equipment, etc. Also, a study of the various types of pipe and fittings.

The students are required to submit several drawing plates which include lettering, advanced problems in machine design as well as problems in transmission, pipe and fittings and simple cam design.

The second semester which covers 422 is devoted to the layout of machinery in an industrial plant of a chemical nature, such as a hydrated lime plant, gypsum plant, portland cement plant, etc. This semester's work is entirely devoted to layout of a plant which gives the student an opportunity to apply the information which he received in the first semester regarding transmission equipment, elevating, conveying, piping, etc.

Engineering Drawing

321. Mechanical Drawing for Teachers. Cr. 2. I. S. Conceptions and survey of the field of mechanical drawing; aims and objects in teaching drawing; general methods of teaching drawing; correlation in drawing, that is, its application to every-day life; various methods of grading; steps in and contents of a course in drawing; lastly, a study of selection of the proper text book to be used in giving a course in mechanical drawing.

This course includes three clock hours per week of laboratory which is spent largely by the student in making drawings, the aim of which is to improve their line work, lettering, and practice which will develop speed and accuracy.

Industrial Education

423. Industrial Arts Course—Making and Planning. Cr. 2. S This course covers a general study of the courses included in an Industrial Arts curriculum, also the objectives of each of these courses.

The students are required to submit outlines for basic subjects of a curriculum in Industrial Arts, also work out typical layouts and projects for these courses. Term papers on Industrial Arts problems are also required.

DEPARTMENT OF MECHANICAL ENGINEERING

HARRY FREDERICK GODEKE, B. S., M. E., M. S.

Professor and Head Department of Mechanical Engineering.

VENTON LEVY DOUGHTIE, B. S. in M. E.

Professor of Mechanical Engineering.

JOHN COYNE HARDGRAVE,

Assistant Professor of Mechanical Engineering.

Although this department does not offer any advanced degrees in engineering, there are several subjects in Mechanical Engineering that may be used toward an advanced degree, with a major in some other department.

COURSES

322. Dynamics of Machinery. Cr. 2. II. Prerequisite: M. E. 241x, C. E. 332x. Forces acting in various types of machines such as fly-wheels, governors, turbine rotors, revolving discs; also balancing of machines. Applied kinetics.

331. Thermodynamics. Cr. 3. II. Prerequisite: Phys. 134x, Math 251x, M. E. 221x. Thermodynamic principles governing the action of steam engines and turbines, internal combustion engines, air compressors, and refrigeration machines. Properties of air, steam, ammonia, gaseous mixtures, and other heat media. Problems. For Mechanical Engineering students.

421-2. Advanced Laboratory Work. Cr. 2. I, II. S. Advanced problems in machine shop, foundry, pattern making, welding, heat-treating, power laboratory, heating and ventilation, internal combustion engines, refrigeration, and machine design. Given only when sufficient demand exists and only upon the approval of the instructor in charge of the desired work.

432. Power Plant Design. Cr. 3. II. Prerequisite: M. E. 341x, or 335x. The design of a modern power plant to meet a given situation. Load curves. Selection for location. Choice of equipment for most economical service. Layout of plant for best operating conditions. Power costs.

433. Heating and Ventilation. Cr. 3. I. Prerequisite: M. E. 331 or 335x. Heat loss calculations. Different systems of heating and ventilation of offices, hotels, and industrial plants.

439. Air Conditioning. Cr. 3. II. Prerequisite: M. E. 433 or 435x. Fundamental principles underlying air conditioning and practical application of air conditioning to homes, restaurants, theaters, office buildings, factories, passenger cars, and manufacturing processes such as are used in the textile and food industries.

DIVISION OF HOME ECONOMICS

The Division of Home Economics offers at the present time the degree of Master of Science in foods and nutrition and Master of Science in home economics education. Majors are offered in the departments of foods and nutrition and home economics education and minors in the departments of clothing and textiles, foods and nutrition, and home economics education.

Prerequisite to graduate work is the degree, Bachelor of Science in home economics from Texas Technological College, or a bachelor's degree in home economics from another recognized institution. If, however, a student holds a bachelor degree not in home economics, she may be admitted to graduate work when the undergraduate technical requirements are made up. It is recommended that the student have a general background in home economics although students well trained in the fundamental sciences may qualify. Scholastically the applicant must have been in the upper 50% of the class in which she was graduated.

DEPARTMENT OF CLOTHING AND TEXTILES

MABEL DEANE ERWIN, B. S., M. A.

Professor and Head Department of Clothing and Textiles.

COURSES

431. Textile Economics. Cr. 3. I. Prerequisite: Cloth. 231 or 232; Eco. 231. Development of a consumer's code through the coordination of principles of economics, science, hygiene, aesthetics, social psychology, practical values and cost for the wiser consumption of textiles.

432. Advanced Textiles. Cr. 3. II. Prerequisite: Cloth. 131. Reading, reports, conferences, and individual laboratory work in a survey of research already accomplished or still needed in the solution of consumer's problems in textiles.

DEPARTMENT OF HOME ECONOMICS EDUCATION

MARGARET WATSON WEEKS, B. S., M. S.

Dean of Home Economics and Professor of Home Economics Education.

MABEL DEANE ERWIN, B. S., M. A.

Professor and Head Department of Clothing and Textiles, and Professor of Home Economics Education.

ADA VIVIAN JOHNSON, B. S., M. A.

Associate Professor of Foods and Home Economics Education.

A student wishing to major in home economics education must have graduated from a technical and professional curriculum substantially equivalent to that required of undergraduate students at Texas Technological College with the home economics education major. It is also recommended that a student have recent successful teaching experience.

Minors may be selected from the various subject matter fields of home economics provided not less than six hours is taken in any one field and provided that the courses selected give graduate credit. If desired, six hours may be taken in the Department of Education and Psychology.

COURSES

421. Demonstration Methods in Clothing. Cr. 2. II. Prerequisite: H. E. Ed. 431; Cloth. 231, 232, 321, 431. Methods used in teaching clothing. Demonstrations and projects. Preparation of illustrative material, scales, exhibits. An additional semester hour of credit may be earned by the successful completion of an extra problem.

431. Methods of Teaching Home Economics. Cr. 3. I, II. S. Prerequisite: Ed. 234. Problems involved in teaching home economics in the public schools. Study of Texas state course of study in home economics; lesson planning; collection and organization of teaching material; home projects; methods of testing instruction; teaching aids; equipment, business management

441. Student teaching in Home Economics. Cr. 4. I, II. Prerequisite: H. E. Ed 431; at least 102 grade points exclusive of physical education. Supervised observation in the Lubbock and Slaton High Schools.

531. Improvement of Techniques in Home Economics Teaching. Cr. 3. S. Prerequisite: Graduate standing and recent experience in teaching home economics in high school. Special instruction in the problem method; methods of teaching home economics to adult women, boys, and students below the eighth grade; with an opportunity to work out specific problems of the individual teacher.

532. The Development of the Homemaking Program. Cr. 3. S. II. Philosophy and development of the home economics movement; the curriculum; major trends in the field; evaluation and use of home economics literature; administrative problems involved in developing the program.

533. Methods for Adult Homemaking Courses. Cr. 3. II. Prerequisite: Graduate standing and recent experience in teaching home economics in high school. Methods of conducting adult classes in various phases of home economics with observation and participation in actual situations.

534-5. Thesis. I, II. Prerequisite: Graduate standing and consent of the Head of the department. Registration in this course enables the graduate student to carry on such research as will qualify for a required master's thesis. The number of semester hours determined by the amount, nature, and character of work done.

DEPARTMENT OF FOODS AND NUTRITION

JONNIE HEMPHILL McCRERY, B. S., M. A.

Professor and Head Department of Foods and Nutrition.

CECILIA SCHUCK, B. A., M. S., Ph. D.

Professor of Foods and Nutrition.

MARGARET WATSON WEEKS, B. S., M. S.

Dean of Home Economics and Professor of Nutrition.

A student wishing to major in foods and nutrition must satisfy the undergraduate requirements in science and in foods and nutrition as outlined in the catalogue of Texas Technological College for the Bachelor of Science degree with a major in foods and nutrition before beginning graduate work.

Minors may be selected from the following departments: economics, chemistry, biology, education, clothing and textiles, home economics education, provided not less than six hours is taken in any one field.

COURSES

321. Food Preservation. Cr. 2. S. Adaptation of new methods of food preservation to modern science. Intensive practice in canning, preserving and pickling meats, fruits, vegetables. Especially for home demonstration agents.

333. Introduction to Research in Cookery. Cr. 3. II. Prerequisite: Foods 232. Experimental work in the field of cookery. Factors influencing food preparation. Comparison of commercially prepared with home prepared foods.

421. Nutrition in Disease. Cr. 2. II. Prerequisite: Foods 432. Adaptation of diet to disorders of nutrition. Specific diseases, the prevention and care of which are largely influenced by diet. An additional semester hour of credit may be earned by the successful completion of an extra problem.

432. Advanced Nutrition. Cr. 3. I. S. Prerequisite: Foods 231, chemistry 341. Nutritive requirements from infancy to old age. Emphasis upon the functions of the dietary essentials, and the relation of the chemistry and physiology of digestion to these essentials. Survey of current literature.

433. Nutrition Work With Children. Cr. 3. I. Prerequisite: Foods 432. A study of the principles of child nutrition; the methods of judging nutrition; the causes and effects of malnutrition; the responsibility of the home, the school, and the community for the improvement of the nutritional status of children. Field work dealing with problems of child nutrition is required. Given in alternate years; not given in 1936-37.

435-6. Institutional Management and Large Quantity Cookery. Cr. 3. I, II. Prerequisite: Senior standing in foods and nutrition. Problems of organization, administration, and equipment confronting the dietitian or manager of school lunchrooms, dormitories, cafeterias, and hospitals. Actual experience in the planning of menus, purchasing of food materials, supervision of employees, and the economical and attractive preparation of foods in large quantities.

531-2. Investigations in Foods and Nutrition. Cr. 3. I, II. Prerequisite: Foods 333, 432 and graduate standing. Training in laboratory methods of investigation in foods and nutrition. Special problems in the field of experimental cookery; energy metabolism studies, involving the use of the respiration apparatus; animal feeding experiments; dietary studies.

533. Readings in Nutrition. Cr. 3. I, II. Prerequisite: Foods 432 and graduate standing. A critical study of the recent literature in the field of nutrition. Preparation and presentation of reports on selected topics. The purpose of the course is to acquaint students with recent researches in nutrition.

534-5. Thesis Course. I, II. Prerequisite: Graduate standing and consent of the Head of the department. Registration in this course enables the graduate student to carry on such research as will qualify for a required master's thesis. The number of semester hours determined by the amount, nature, and character of work done.

DIVISION OF ARTS AND SCIENCE

DEPARTMENT OF BIOLOGY

RICHARD ARTHUR STUDHALTER, B. A., M. A., Ph. D.
Professor and Head Department of Biology.

Graduate work in biology is limited to a minor in botany.

COURSES

Biology

411-2. Biology Seminar. Cr. 1. I and II. Prerequisite: Senior standing in botany or zoology, or the consent of the Head of the Department. Reports on assigned topics, based chiefly on current biological literature and research. May be repeated for full credit.

Botany

431. Botanical Technique. Cr. 3. I. Prerequisite: Eighteen semester hours in botany. Freehand and microtome sections; staining; making of permanent slides.

432. Advanced Plant Anatomy. Cr. 3. II. Prerequisite: Eighteen semester hours in Botany. Advanced studies on the tissue systems of the vascular plants, with emphasis on those of economic importance.

531-2. Problems in the Morphology of Bryophytes. Cr. 3. I and II. Prerequisite or parallel: Botany 431-2. A series of problems on the morphology and anatomy of the liverworts and mosses. Laboratory work, readings, and conferences.

DEPARTMENT OF CHEMISTRY AND CHEMICAL ENGINEERING

ROBERT CABANISS GOODWIN, B. A., M. A., Ph. D.
Professor and Head Department of Chemistry and Chemical Engineering.

WILLIAM MOORE CRAIG, B. A., M. A., M. A., Ph. D.
Professor of Chemistry.

VALERIE SCHNEIDER, B. R., M. S. in Ch. E., D. Sc.
Associate Professor of Chemical Engineering.

The Department of Chemistry and Chemical Engineering grants two advanced degrees: Master of Science and Master of Science in Chemical Engineering. Graduates of Texas Technological College who have received either the Bachelor of Arts or the Bachelor of Science while majoring in Chemistry or those students who have received equivalent training in a recognized college elsewhere may become candidates for the Master of Science Degree. Graduates of Texas Technological College with the degree of Bachelor of Science in Chemical Engineering or those who have received equivalent training elsewhere may become candidates for the degree of Master of Science in Chemical Engineering.

In other respects the requirements for the two degrees are quite similar. A reading knowledge of German is required as a prerequisite for both de-

grees. The satisfactory completion of two years of German at this institution will satisfy this requirement. Otherwise, an examination must be passed by the student. Both degrees require 12 semester hours of minor work in other departments. Candidates for the engineering degree will probably minor in other departments of the Division of Engineering, in Physics, or in Mathematics. Candidates for the Master of Science may take their minor work in any department of the Division of Arts and Sciences.

Satisfactory theses are required from all candidates. The thesis must embody the results of original research and experimentation and can not be solely a summary of library investigation. Supervision of research work and of theses is conducted at the present by Professors Craig and Goodwin and by Associate Professor Schneider. The majority of all graduate work is supervised by these instructors though at times individual courses may be given by other instructors of the department.

COURSES

411-2. Chemistry Seminar. A review of current chemical literature and verbal reports thereon. Designed to encourage the student to keep abreast of current developments in the science and to enable him to make scientific reports.

422. Colloid Chemistry. A short excursion into the field of colloid chemistry. Principles and applications.

423. Qualitative Analysis. A laboratory course. The qualitative determination of the rarer acidic and basic ions. The work is varied to suit the needs of the individual student.

430. Technical Analysis. S. A laboratory course. The analysis of water, foodstuffs, milk and dairy products, rocks, minerals, ores, and alloys. The materials analyzed vary with the interests of the student.

434. Organic Preparations. S. A laboratory course. The preparation of typical organic compounds. Chosen so as to illustrate characteristic organic procedure. Emphasis is placed upon laboratory technique, yields, and the handling of larger quantities of materials.

441-2. Physical Chemistry. S. Lecture and laboratory. Though this is a first course in physical chemistry, the prerequisites are such that the course is thorough and fundamental. The mathematical and physical presentation justifies the consideration of this course as being of a graduate nature when taken by graduates who have not had a course in physical chemistry or only one of an elementary nature.

534. Advanced Organic Chemistry. A lecture course. The theories of organic chemistry. Based upon the supposition that the student has already completed a thorough, fundamental course in organic chemistry. Open to graduate students only.

535-6. Advanced Chemical Engineering. A second course in chemical engineering. Emphasis placed upon cost calculations in design and operation of basic processes such as distillation, filtration, heat transfer, etc. Open to graduate students only.

531-2. Thesis course. Research work in analytical, engineering, organic, and physical chemistry. Results of research must be summarized in a thesis acceptable to the Department and the Graduate Committee. Open to Graduate students only.

Graduate students are admitted to the above courses only after securing permission of the head of the department and of the instructor concerned. In

doubtful cases a preliminary examination covering the prerequisites to the particular course must be passed by the student before permission to enroll in that course may be secured.

DEPARTMENT OF ECONOMICS AND BUSINESS ADMINISTRATION

BENJAMIN FRANKLIN CONDRAV, JR., B. A., M. A.

Professor and Head Department of Economics and Business Administration.

ELLSWORTH HARVEY PLANK, B. S., M. A., Ph. D.

Professor of Economics and Business Administration.

TRENT CAMPBELL ROOT, B. A., M. B. A.

Assistant Professor of Economics and Business Administration.

A minimum of eighteen semester hours or the equivalent for those wishing to major, or twelve semester hours or the equivalent for those wishing to minor, of undergraduate work in the field of economics and business administration is required for admission to graduate work.

COURSES

Economics

331. Money and Banking. Cr. 3. I. Prerequisite: Eco. 231-2. History and principles of money and banking. Existing monetary and banking systems. Problems of the standard. Foreign exchange. Federal Reserve System, state banks. Recent emergency monetary and banking legislation.

332. Public Utility Economics. Cr. 3. I. Prerequisite: Eco. 231-2. Principles and problems of public utilities. Financing, ownership, and public relations. The holding company and municipal competition. Valuations, rates, and regulations.

333. Public Finance. Cr. 3. II. Prerequisite: Eco. 231-2. Municipal, state and federal finance. Principles and practices of taxation. Budgetary control and governmental expenditures. Public borrowing and administration.

431. Transportation. Cr. 3. I. Prerequisite: Eco. 231-2. The development of the transportation system: rivers, canals, toll-roads, railroads, highways, air. Governmental regulation of transportation agencies. Competitive practices, rate making, valuations, financing, consolidations. Present tendencies.

432. Labor and Labor Problems. Cr. 3. I. Prerequisite: Eco. 231-2. The main forces which have created modern labor legislation. Wages, hours of work, working conditions, unemployment, pension plans. Arbitration and social and industrial insurance.

433. International Economic Problems and Foreign Trade. Cr. 3. II. S. Prerequisite: Eco. 231-2. Comparison on domestic and international economic relations. Political obstacles to international trade. The tariff and commercial treaties. International monetary problems. Financing foreign trade. Foreign loans. Offered Summer 1936.

434. Price and Distribution Theory. Cr. 3. I. Prerequisite: Eco. 231-2. The economic theories underlying value and distribution. The present distribution of wealth. The orthodox theory of distribution.

435. **Economic Cycles and Forecasts.** Cr. 3. II. Prerequisite: Eco. 231-2. Economic theories of cycles. Their causes and proposed remedies. An examination of forecasting services available and technique employed by them. Problems in specific commodities and securities.

436. **Economic Theory: Development and Present Status.** Cr. 3. II. S. Prerequisite: Eco. 231-2. The evolution of economic thought. The leading schools of economic thought. The problems of unregulated competition and monopolies as they influence social welfare. Offered summer 1936.

437. **Current Economic Problems.** Cr. 3. I. Prerequisite: Eco. 231-2. Fundamental problems of economic life today and proposed solutions. A critical examination of the present economic policies of government and industry. Individual research encouraged.

Business Administration

334-5. **Business Law.** Cr. 3. I and II. S. Prerequisite: Eco. 231-2. The ordinary rules of business law. The development of our legal system. The law of persons, torts, contract, agency, private property, sales, negotiable instruments, insurance, labor, partnerships, and corporations.

336. **Industrial Management.** Cr. 3. I. Prerequisite: Eco. 231-2. Production management from the managerial or executive standpoint. Plant location, purchasing, budgetary control.

337-8. **Advanced Accounting.** Cr. 3. I and II. Prerequisite: B. A. 234-5. Advanced principles of accounting. Problems peculiar to partnership and corporation. Accounting for insolvent concerns. Joint ventures, depreciation. Consolidated statements.

431. **Office Management.** Cr. 3. II. Prerequisite: Eco. 231-2. Standards of office practice, wage payment plans, equipment and its selection. For those interested in secretarial practice and in field of management.

432. **Advertising.** Cr. 3. I. Prerequisite: Eco. 231-2. Advertising elements such as copy, layout, media, typography. Problems applied to the principles of advertising.

433. **Personnel Administration.** Cr. 3. II. Prerequisite: Eco. 231-2. The training of employees, wage systems, workmen's compensation laws, collective bargaining, trade agreements.

434. **Investments.** Cr. 3. I. Prerequisite: Eco. 231-2. Principles of the true investment. Forms and types of investment. Relation to speculation. Influence of taxation. Analysis of actual investment securities. Classes of investors and diversification.

435. **Business Policy.** Cr. 3. II. Prerequisite: Eco. 231-2. Business problems that have confronted leaders in trade and industry, and facts and circumstances on which they have based their decisions. Application to actual problems of principles of industrial activity, marketing, economics, statistics and finance. A coordination course of the specialized courses to suggest solution of problems affecting the general policy of an operating company. Problems are presented by business men and various members of the faculty.

436. **Cost Accounting.** Cr. 3. I. Prerequisite: B. A. 234-5. Records and reports for the cost department. Methods of allocation of overhead costs. Records and principles handling material, labor, and indirect costs.

437. **Auditing.** Cr. 3. II. Prerequisite: B. A. 234-5. Auditing procedure, classification of audits and investigations. Methods of verification of financial statements. Advanced auditing and accounting problems and principles.

DEPARTMENT OF EDUCATION AND PSYCHOLOGY

ARTHUR WILSON EVANS, B. A., M. A., Ph. D.

Professor and Head Department of Education and Psychology.

ALBERT BARNETT, B. S., M. A., Ph. D.

Professor of Education.

RAYMOND ERNEST GARLIN, B. A., M. A., Ph. D.

Professor of Education.

BONNIE K. DYSART, B. A., M. A.

Associate Professor of Education and Psychology.

DOYLE D. JACKSON, B. A., M. A., Ph. D.

Associate Professor of Education and Psychology.

JOHN THOMAS SHAVER, B. S., M. A.

Associate Professor of Education.

AGNES ANN TRUE, B. A., M. A.

Associate Professor of Education and Psychology.

The Department of Education and Psychology furnishes the professional training in Education necessary for the training of teachers. No person can be a good teacher without a thorough knowledge of the subject matter which he intends to teach. All students who are preparing to be teachers, therefore, should take full courses in subject matter as a part of their preparation to be teachers and school administrators.

The function of this department is primarily to furnish professional training in methods, preparation of materials, classroom management, the fundamentals of administration and supervision, and other professional courses necessary for the adequate preparation of teachers.

Each course in Education and Psychology counts as an independent course and may be taken by students majoring in other divisions or departments who desire to prepare themselves as teachers or to satisfy degree requirements.

Courses taken in Texas Technological College may be used to satisfy requirements for teachers' certificates valid in Texas and in other states. Students desiring to teach in other states should consult the Head of the Department concerning certificate requirements in these states. Teachers' certificates are secured by compliance with the State school laws. Persons desiring to secure certificates must meet all legal requirements.

COURSES

Education

*320. **The Principal and His School.** Cr. 2. S. The organization and operation of a school building unit, dealing with the varied duties of the principal in administering a school. Offered in Summer Session only.

*331. **Principles of Education.** Cr. 3. S. Educational theory stressing the more important principles involved in the processes of education. Special attention to the biological, psychological, and sociological bases and processes of development and adjustment.

*Indicated courses are given in the summer, and carry a credit of two semester hours.

- *331. The Primary Curriculum.** Cr. 3. S. Prerequisite: Ed. 236x and 237x or their equivalent. Specific aims, objectives, activities, and methods incorporated in the curriculum for the first three grades. Working out of principles of selection and organization, examination of present-day courses of study, and planning of activity programs.
- 3312. The Integration of the Activity Program.** Cr. 2. The basis of integrated activity; nature of integration; the child and child experience as the basis of integration; integration vs. correlation in activity programs; necessity for knowledge of methods; activity procedures.
- *332. High School Problems.** Cr. 3. S. The organization of the high school; curriculum reconstruction; the high school pupil; the selective character of secondary education; selected topics.
- *334. Basic Principles of Method.** Cr. 3. S. A critical examination of the principles underlying method in teaching. A study of method types such as the case method, the laboratory method, and the lecture method, etc. An analysis of the different elements of method and a synthesis of their relationships.
- *335. The Junior High School.** Cr. 3. S. The function of the junior high school; curricula and programs of study; discipline and social activities; homogenous grouping; articulation with the elementary school and the senior high school.
- *337. Methods in Classroom Tests.** Cr. 3. S. Advanced methods in new-type tests, their advantages and disadvantages; practice in making and giving teachers' classroom tests; scoring and tabulating results; using tests for diagnosis and the improvement of teaching; test making as a teaching method.
- 338. Every Teachers' Problems.** Cr. 3. An enumeration and discussion of the problems that confront the teachers in the school room, and guiding principles for their solution. Individual and social as well as professional problems common to present-day teachers.
- *339. Character Education.** Cr. 3. S. An analysis of present-day theory and practice in character building, pointing out the defects and derelictions of the past and showing how the school and the home may provide more training for improving the morals of pupils and for rendering the pupils more competent to discharge their social obligations.
- 3313. Economic and Social Background of the Rural High School.** Cr. 3. Types of rural communities as related to educational facilities; centralizing influences in American industry and effect on the rural high school; relation of rural high school support to certain economic farm factors; relation of rural high school to other rural social institutions; forces modifying rural individualism and probable effects on rural education; a new type of high school as a socially constructive force in the rural community.
- *425. Extra-Curricular Activities.** Cr. 2. S. Objectives and values of extra-curricular activities. Classification of activities and participation of pupils; faculty sponsors and school control. Offered in Summer Session only.
- 430. Sociological Principles of Education.** Cr. 3. A comparison of the fields of psychology and sociology in relation to the principles and processes of education. Given in alternate years; given in 1936-37.
- *431. Education in the United States.** Cr. 3. S. Prerequisite: Ed. 232x. Educational history, theory, and practice in the United States; the origin and development of public elementary and secondary education.

*Indicated courses are given in the summer, and carry a credit of two semester hours.

***432. Public School Administration.** Cr. 3. S. Problems that confront the superintendent or principal, such as classification and grading, arranging courses of study, selection and improvement of the teaching staff, relations with teachers, school board and general public.

***433. School Publicity.** Cr. 3. S. The aims and underlying principles of school publicity policy, organization of publicity, media of approach to the public, and appraisal of publicity work.

***434. The Supervision of Instruction.** Cr. 3. S. Designed to give prospective principals, superintendents, supervisors, and teachers an understanding of the organization and technique of supervision. Less intensive treatment is given to topics covered in the summer session.

***436. The Curriculum.** Cr. 3. S. Curriculum reconstruction in the light of recent investigations; the fundamental bases of the curriculum; the relation of curricular and extra-curricular activities.

***439. The Technique of Curriculum Production.** Cr. 3. S. Prerequisite: Ed. 436. A production course in curriculum reconstruction with special reference to the Texas revision movement. Thorough treatment is given to the following topics: basic philosophy underlying curriculum revision; major purposes and guiding principles in the curriculum revision program; chief approaches to curriculum construction; plan for developing an activity unit; major fields of production; fundamental questions for consideration in making a community survey; and the available courses of study in line with the revision movement.

***526. Guidance Problems.** Cr. 2. S. Prerequisite: Graduate standing in Education. An extension of Ed. 326x with an opportunity to work out specific problems in guidance. Offered in Summer Session only.

527. Advanced Methods in Classroom Testing. Cr. 2. The theory of testing as related to teaching method. The method of unifying subject matter and teaching procedure in the classroom by means of tests. Testing as a method of teaching. Full use made of actual test making in typical school subjects.

***530. Research.** Cr. 3. S. Prerequisite: Graduate standing in Education. Investigation of special problems in education selected in conference with the instructor. Offered in Summer Session only.

Psychology

***325. The Psychology of Adolescence.** Cr. 2. S. Prerequisite: Three hours in Psychology. The interpretation of adolescent behavior on the basis of the development changes of the period. The important physical, mental, and moral changes natural to adolescence. Of special interest to all who deal with boys and girls of high school age. Offered in Summer Session only.

***331. Child Psychology.** Cr. 3. II. S. Prerequisite: Three hours in Psychology. The psychology of childhood from infancy to early adolescence. The general nature, growth, and development of the child, emotionally, mentally, and socially.

***333. Measurements in Education.** Cr. 3. S. The instruments and technique of measuring the results of instruction. Tests, tabulation and established treatments of scores, interpretation, description, and uses of results for improving instruction.

337. General Psychology. Cr. 3. Prerequisite: Psy. 230x or its equivalent. Continuation of Psychology 230x. Problems, principles, and methods of psychology. Facts and theories current in general psychological discussion.

*Indicated courses are given in the summer, and carry a credit of two semester hours.

333. Business Psychology. Cr. 3. Prerequisite: Three hours of Psychology. Psychology applied to advertising, salesmanship, employment, and industry.

***431. Mental Tests.** Cr. 3. S. Prerequisite: Psy. 333x. The principles, application and technique of the various types of mental tests. Emphasis given to the theory of mental tests and to the application of such tests to the fields of education, business and the professions.

432. Contemporary Psychologies. Cr. 3. Prerequisite: Six hours of Psychology. The outstanding schools of psychology at the present time, their similarities and differences. Lectures supplemented by readings, reports, and discussions. Given in alternate years; not given in 1936-37.

***433. Mental Hygiene.** Cr. 3. S. Prerequisite: Psy. 230. The genesis of adequate personality. Discussions, lectures, readings. Topics: normal interests; constructive emotional attitudes and control; conflicts; rational analysis of every-day problems. Purpose: aid in attaining individual perspective and adjustment.

DEPARTMENT OF ENGLISH AND JOURNALISM

ALLAN LORAIN CARTER, B. A., M. A., Ph. D.

Professor and Head Department of English.

WILLIAM BRYAN GATES, B. A., M. A., Ph. D.

Professor of English and Assistant Dean of Arts and Sciences.

RUFUS ARTHUR MILLS, B. A., M. A.

Professor of English.

GEORGE SMALLWOOD, B. A., M. A.

Professor of English.

ALBERT BENJAMIN CUNNINGHAM, B. A., B. D., M. A., Ph. D.

Associate Professor of English.

RUPERT WINTHROP FOWLER, B. A., M. A.

Associate Professor of English.

DONALD VAN DALE MURPHY, B. A., M. A.

Associate Professor of English.

ALAN LANG STROUT, B. A., M. A., Ph. D.

Associate Professor of English.

JAMES G. ALLEN, B. A., M. A.

Assistant Professor of English.

CECIL HORNE, B. A., B. A.

Assistant Professor of English and Journalism.

TRUMAN CAMP, B. A., M. A., Ph. D.

Instructor in English.

Students who look toward the M. A. in English will be expected to have had adequate undergraduate preparation in the chief fields of English and American literature. This preparation is taken to be that represented by an undergraduate major in English, that is, twenty-four semester hours of work above sophomore rank, or the equivalent. The department requires that every candidate possess some familiarity with at least one foreign language, either ancient or modern. The requirement may be satisfied by evidence of at least two years of college work in the language, or by an examination covering elementary sight reading.

All graduate students are required to have one or two minor fields of concentration. English students may choose their minor or minors from foreign language and literature, history, philosophy, or education, or, in exceptional cases, from some other departments. The minor subjects must be approved by the head of the English department. Likewise required of all graduate students is a thesis covering some phase of the major subject. The thesis usually counts for three semester hours credit.

The final examination for the master's degree (in addition to the course examinations) is oral, but, at the discretion of the department, it may be supplemented by a three-hour written examination.

COURSES

The following courses are prescribed as fundamental in a program of graduate English: Old English (English 534); Chaucer (English 331); Shakespeare: Later Plays and Criticism (English 433); Romanticism (English 436); and the Outline of American Literary History (English 536).

330. Chaucer. Cr. 3. S. The prologue, tales, and lyrics, with some consideration of Chaucer's age, art, and sources.

331. Chaucer. Cr. 3. The Longer Poems. The theme, sources, and language of Chaucer's *Troilus*.

332. History of the English Language. Cr. 3. S. The development of the English language from the beginnings, with special reference to the use of English in America.

334. American Drama: From the Beginning to 1865. Cr. 3. Amateur performances of the frontier, professional companies, geographical expansion of the theater, native playwrights and plays, with emphasis on American scene and theme.

335. American Drama: 1865 to the Present. Cr. 3. S. Dominance of theatrical centers, rise of the star system, stage movements, community organizations, individual playwrights, and specific tendencies in dramatic composition.

336. The Augustan Age. Cr. 3. Dryden and Pope. The poetry of Gay, Swift, DeFoe, Ambrose Phillips, Rowe, Parnell, Prior, Tickell, and others.

337. Grammar for Speech. Cr. 3. S. Inflectional forms, sentence structure, and principles of English grammar that may be useful in other languages.

338. American Poetry: Bradstreet to Whitman. Cr. 3. Interpretation of the most representative poems, classification as to type and theme, distinguishing quality and style of the individual writer, and drill in form, metrics and figures.

430. Elizabethan Drama. Cr. 3. The plays of Dekker, Heywood, Chapman, Jonson, Middleton, Marston, Beaumont and Fletcher, Webster, Massinger, Ford, and Shirley in relation to the literary fashions of the period.

431. Restoration and Eighteenth Century Drama. Cr. 3. Representative plays of Otway, Dryden, Congreve, Farquhar, Goldsmith, and Sheridan. Sentimental comedy, bourgeois tragedy, comedy of manners, ballad opera, and other dramatic types.

432. Shakespeare: The Early Plays and Background. Cr. 3. A close reading of several representative plays written before 1600: Richard III, Romeo and Juliet, Much Ado About Nothing, and Twelfth Night.

433. Shakespeare: Later Plays and Criticism. Cr. 3. S. A review of the most substantial contributions in Shakespearean criticism from Jonson to Chambers, together with the reading of *Julius Caesar*, *Measure for Measure*, *Hamlet*, *Othello*, and *Cymbeline*.

434. Milton. Cr. 3. Milton's prose and poetry; the sources, structure, and metrical characteristics of *Paradise Lost*, and its place in English poetry.

435. English Romanticism. Cr. 3. Pre-Romantic literature; the poetry and poetic principles of Wordsworth and Coleridge.

436. English Romanticism. Cr. 3. S. The poetry of Scott, Byron, Shelley, and Keats. Biography and background.

437. Pre-Shakespearean Drama. Cr. 3. The development of comedy, tragedy, and chronicle history from early types of drama in England. The plays of Lyly, Peele, Greene, Kyd, and Marlowe.

439. Contemporary Drama. Cr. 3. S. The dramatic works of Ibsen, Strindberg, Tolstoy, Chekhov, Hauptmann, Wedekind, Becque, Hervieu, Maeterlinck, Galsworthy, Barrie and Shaw.

4310. English Poets of the Nineteenth Century. Cr. 3. Extensive reading in the poetry of Tennyson, Browning, E. B. Browning, and Arnold.

4311. English Poets of the Nineteenth Century. Cr. 3. Continuation of English 4310. English 4310 is not a prerequisite. Selected reading from the poetry of D. G. Rosetti, William Morris, Swinburne, Meredith, and a large group of minor poets down to Thomas Hardy.

4312. The Age of Johnson: Johnson and His Circle. Cr. 3. English literature from 1740 to 1798, exclusive of the novel. An introduction to Dr. Johnson. Boswell, Goldsmith, Burke, and their circle.

4313. Literary Biography. Cr. 3. The biographical works of Cellini, Pepys, Boswell, Franklin, Strachey, and Bradford, as they reflect the social and political conditions, the art, the science, and the literature of their times.

530. The Contemporary Short Story. Cr. 3. S. Short stories by Cobb, Conrad, Dreiser, Galsworthy, Mansfield, Steele, Dobie, Walpole, Wells, Tarkington, and others. The short story from a structural point of view, with special attention to students who desire practice in writing the form.

531. The American Novel. Cr. 3. S. American fiction to Dreiser. Historical background. Selected works of Howells, James, Garland, Wharton, Lewis, Bromfield, Cather, Rolvaag, and Peterkin.

532. The English Novel. Cr. 3. Lyly to Scott. Lectures on the development of the English novel; reading of such works as *Moll Flanders*, *Pamela*, *Joseph Andrews*, *Humphrey Clinker*, *The Castle of Otranto*, *Pride and Prejudice*, and *Guy Mannering*.

533. Types of English and Foreign Fiction: 1825 to 1910. Cr. 3. The novels of Dickens, Thackeray, Emily Bronte, and Thomas Hardy. Significant examples from foreign fiction.

534. Old English. Cr. 3. The phonology and morphology of Old English.

535. Beowulf. Cr. 3. A close reading of the Wyatt and Chambers edition of the *Beowulf*.

536. Outline of American Literary History: 1608 to the Present. Cr. 3. Orientation. Chronology. Literary types. Sectional movements and foreign influences. Primarily for graduate students and for undergraduates with an English major, especially those who intend to teach English in high school.

537. **Spenser.** Cr. 3. The shorter poems, and selected cantos of *The Faerie Queene*; incidental interpretation of the allegory in the poem.

5310. **The Structure of the Novel.** Cr. 3. The elements of the novel. The principles of cratsmanship which make for effective fiction.

Journalism

430. **Principles of Journalism.** Cr. 3. II. The freedom of the press, the ethics of magazine and newspaper publication, the relation of the press to society, and the law of libel. Texts: Crawford, *The Ethics of Journalism*; Arthur and Crosman, *the Law of Newspapers*. Given in alternate years, not given in 1936-37.

431. **Critical Writing.** Cr. 3. I. Journalistic criticism, including painting, music, plays and motion pictures, literature, and other forms of art. For students seeking general culture as well as for those preparing for newspaper departmental work. Given in alternate years; given in 1936-37.

432. **High School Publications.** Cr. 3. S. The problems confronting a publications supervisor in organizing and maintaining high school newspapers and yearbooks, functions of high school publications, organization and training of the staff, and editorial and business problems. Text: Greenawalt, *School Press Management*.

530. (English) **The Short Story.** (May be counted as a course in journalism.) For description see Department of English.

DEPARTMENT OF FOREIGN LANGUAGES

CHARLES BLAISE QUALIA, B. A., M. A., Ph. D.

Professor of Spanish and Head Department of Foreign Languages.

FRANCES WHATLEY, B. A., M. A.

Associate Professor of Spanish.

EUNICE JOINER GATES, B. A., M. A., M. A., Ph. D.

Assistant Professor of Spanish.

ALFRED BELL STREHLI, B. A., B. S., M. A.

Assistant Professor of Foreign Languages.

COURSES

431-2. **The Modern Novel.** Cr. 3. I and II. Prerequisite: Spanish 331-2 or its equivalent. Certain nineteenth century novels representing the various tendencies and regions. Lectures. Written reports. Conducted chiefly in Spanish. Given in alternate years; given in 1936-37.

433-4. **The Modern Drama.** Cr. 3. I and II. Prerequisite: Spanish 331-2 or its equivalent. The drama from the Romantic movement to the present. Conducted chiefly in Spanish. Given in alternate years; not given in 1936-37.

435. **Teachers' Course in Methods of Teaching Spanish.** Cr. 3. S. Prerequisite: Spanish 331-2 and one year of Education. Preparation for teaching Spanish in high school. Scientific and practical methods with as much practice work as possible.

436-7. **Advanced Grammar, Composition, and Style.** Cr. 3. S. Prerequisite: Spanish 331-2, or its equivalent. Recommended for those who intend to teach Spanish.

438. The Drama Before Lope De Vega. Cr. 3. Prerequisite: Spanish 331-2 or the equivalent. The development of drama in Spain from medieval times to Lope; emphasis on the immediate predecessors of Lope. Given at intervals.

439. Curriculum Production in Spanish. Cr. 3. S. A critical study of the outcomes sought in the study of foreign languages and of Spanish in particular. Discussion of the new approach to the study of foreign languages resulting from the emphasis on "outcomes" as against "aims." Construction of units of study. This course may be counted either as Spanish or Education. Given in the summer.

4310-11. Spanish Civilization. Cr. 3. Prerequisite: Spanish 331-2 or the equivalent. An outline study of the various phases of Hispanic civilization: history, arts, language, literature. Given at intervals.

(This course will be offered in the summer of 1937 under the title of **Spanish Language, Literature, and Civilization in Mexico**. The group taking this course will spend the entire six weeks in Mexico.)

531-2. The Prose of the Golden Age. Cr. 3. I and II. Prerequisite: Spanish 331-2. The important prose writers from 1499 to 1650. Reading of representative works; lectures; collateral reading; and reports. Conducted chiefly in Spanish. Given in alternate years; given in 1936-37.

533-4. The Drama of the Golden Age. Cr. 3. I and II. Prerequisite: Spanish 331-2 or its equivalent. The drama of the seventeenth century. Reading of representative plays; lectures; discussion; collateral reading and reports. Conducted chiefly in Spanish. Given in alternate years; not given in 1936-37.

535-6. A Survey of Spanish Literature. Cr. 3. I and II. S. Prerequisite: Spanish 331-2. The history of Spanish literature from the twelfth to the nineteenth century. Emphasis upon the principal movements and the works of the outstanding writers. Readings, lectures, and written reports. Conducted chiefly in Spanish. Especially recommended for students who expect to teach Spanish.

537. Contemporary Drama. Cr. 3. Prerequisite: Spanish 331-2 or the equivalent. Intensive study of some representative dramas of living authors and rapid reading of others. Written reports. Given at intervals.

538. Introduction to the Study of the Epic Literature of Spain. Cr. 3. Prerequisite: Spanish 331-2 or the equivalent. A study of the epic and the ballad. Given at intervals.

539. Contemporary Spanish Novel. Cr. 3. Prerequisite: Spanish 331-2 or the equivalent. Intensive study of some representative novels of living authors and rapid reading of others. Written reports. Given at intervals.

5310-11. Reading in Spanish Literature. Cr. 3. Prerequisite: The consent of the head of the department. The nature and content of this course will vary to meet the needs of the individual student. Credit will be determined by the amount and character of work done.

Registration may be made at any time with the consent of the department head.

631-2. Thesis Course. Credit: three to six hours, depending upon the character of work done.

633-34. The Poetry of the Nineteenth Century. Cr. 3. Prerequisite: Spanish 331-2 or the equivalent. An intensive study of the major poets of the romantic period together with Becquer, Campoamor, and Nunez de Arce. Given at intervals.

635. Cervantes. Cr. 3. Prerequisite: Spanish 331-2 or the equivalent. A study of the life and major works of Cervantes with emphasis on *Don Quixote*.

DEPARTMENT OF GEOLOGY AND GEOLOGICAL ENGINEERING

LEROY THOMPSON PATTON, B. A., B. S., M. S., Ph. D.

Professor and Head Department of Geology and Geological Engineering

MERRILL A. STAINBROOK, B. A., M. S., Ph. D.

Associate Professor of Geology.

WILBER IRVING ROBINSON, B. A., M. S., Ph. D.

Associate Professor of Geology.

RAYMOND GILBERT SIDWELL, B. A., M. A., Ph. D.

Assistant Professor of Geology.

A minimum of eighteen semester hours for those wishing to major, or twelve semester for those wishing to minor, of undergraduate work in geology is required for admission to do graduate work in this department.

333. Petrology: Optical Mineralogy. Cr. 3. I. Prerequisite: Geology 131x-2x and 231x-2x. Principles and methods of study and identification of rock forming minerals by means of the petrographic microscope.

334. Petrology: Descriptive. Cr. 3. II. Prerequisite: Geol. 333x. Application of the principles of optical mineralogy to the study and identification of igneous rocks; principles of rock classification and practice in both macroscopic and microscopic classifications.

335-6. General Paleontology. Cr. 3. I and II. Prerequisite: Geol. 131-2. The detailed structure, basis of classification, and geologic history of the various groups of invertebrates. The vertebrates and plants studied similarly, but less comprehensively.

363. Field Geology. Cr. 6. S. Prerequisite: Geol. 131x-2x. Principles of stratigraphy, structural geology and methods of geological surveys. Given in the field. For further details see the head of the department.

411-2. Geology of Texas. Cr. 1. I, II. Prerequisite: Twelve semester hours in Geology. Physical and historical geology of Texas.

413-4. Seminar. Cr. 1. I, II. Assigned readings, reports, and discussions of current geological problems.

431-2. Advanced General Geology. Cr. 3. I, II. Prerequisite: Geol. 131x-2x, 231x-2x, and 235x-6x. The outstanding problems of physical and historical geology. Readings in the original literature of each subject.

433. Structural Geology. Cr. 3. I. Prerequisite: Geol. 333x-4x and 335x-6x. Deformation and structures of rocks with special emphasis on the relation of these to economics problems.

434. Petroleum Geology. Cr. 3. II. Prerequisite: Geol. 433x. Problems of the origin and accumulation of oil deposits; assembling and interpretation of data bearing on problems peculiar to certain fields. For students expecting to engage in the exploration and development of oil fields.

435. Index Fossils. Cr. 3. I. Prerequisite: Geol. 335x-6x. The stratigraphy and different horizon makers of the different systems with practice in making and identifying field collections.

436. Micropaleontology. Cr. 3. II. Prerequisite: Geol. 335x-6x. Foraminifera and other microfossils of the oil-bearing strata of Texas; methods of collection and preparation.

427. Geophysics. Cr. 2. II. Theory and practice in methods of geophysical exploration including practical geophysical surveys. A cooperative course given by the Departments of Physics and Geology for properly qualified students of either department. Registration only on permission of the Heads of both Departments.

511-2. Sedimentary Petrology. Cr. 1. I and II. Prerequisite: Twenty-four hours in Geology, including Geol. 333x-4x. To accompany Geol. 531x-2x. Application of the principles of petrology to the study of the mineral grains of sedimentary rocks and their identification under the petrographic microscope. Micro-chemical tests and use of index of refraction liquids.

523-4. Sedimentation. Cr. 2. I, II. Prerequisite: Twenty-four semester hours in Geology, including Geol. 333x-4x, and preceded or accompanied by Geol. 511-2. Advanced investigation. The processes and results of sedimentation; analytic laboratory work in sediments. Special attention to subsurface methods.

535-6. Advanced work in Specific Fields. Credit varies. I, II. S. Prerequisite: Twenty-four hours in Geology, and senior or graduate standing. Course and credit to depend upon the preparation and needs of the student, and the work done. Registration only with the approval of the Head of the Department.

During the year 1934-35 the following courses were given under this heading:

Petroleum Production. A resume of the occurrence of petroleum, exploration methods, and acquisition of title to oil lands: detailed study of drilling equipment and methods, casing methods, fishing tools and methods, exclusion of water from the well, and finishing the well and controlling the output. Suggestions as to the recording of the above operations and the important laboratory tests such as those on porosity, grain size, permeability, mineral and fossil content of well samples, electrical coring, analysis of ground waters, and crooked hole surveys.

Advanced Micropaleontology. Foraminifera of different horizons with special emphasis on genetic differences and determinations. Foraminifera from selected horizons. Study and correlation of well samples by means of foraminifera.

Special Methods in the Technique of Making Thin Sections. For advanced students in Botany who are preparing to do research in Paleobotany. The technique of making thin sections of silicified wood for microscopic study of cells. Special methods of imbedding and sectionizing lignite and similar materials.

During the year 1935-36 the following courses were given under this heading:

Advanced Sedimentation. Readings in the original literature and field study of Canadian River deposits.

Advanced Micropaleontology. Laboratory study of the microfauna of the Pennsylvanian, Permian, and Cretaceous Periods. Preparation of study materials, selection of specimens, mounting on slides, and identification with the use of the literature.

Special Methods in Making Thin Sections of Friable Material. Special methods of saturating and embedding in bakelite friable materials such as loosely cemented sandstones and other friable sedimentary rocks, weathered igneous and metamorphic rocks, and making thin sections thereof.

635-6. Thesis Research Course. Credit varies. S. Research work to serve as the basis of Master's thesis.

DEPARTMENT OF GOVERNMENT

WILLIAM A. JACKSON, B. A., M. A., Ph. D.

Professor and Head Department of Government.

HARDISON C. PENDER, B. A., M. A.

Associate Professor of Government.

MONTELL ERNEST OGDON, B. A., M. A.

Associate Professor of Government.

J. W. JACKSON, B. A., M. A.

Assistant Professor of Government.

A minimum of eighteen semester hours of undergraduate preparation is required of candidates for Master's Degrees with Government as their major. A minimum of twelve semester hours of undergraduate preparation is required of those taking Government as a minor. The undergraduate preparation must, in either event, consist of courses in American and European Government.

COURSES

325-6. Contemporary Problems, Cr. 2. I, II. Prerequisite: One course in American government. A lecture course which deals with political conditions, problems, leaders, trends, and policies of America of today. Subjects such as the following are treated: The New Deal, party strategy and forthcoming elections, current legislation, state and local government reforms.

331. Local Government, Cr. 3. I. S. Prerequisite: American Government. The machinery of city and county government; and forms—both new and old—of municipal government; inter-departmental relations and the relations of local governments to the state. Not given in 1936-37.

332. Local Administration, Cr. 3. II. Prerequisite: American Government. The chief problems of present day local administration: special stress placed upon administration of Texas cities and counties. Not given in 1936-37.

333. American Political Parties, Party Development, Cr. 3. II. S. Prerequisite: American Government. The origin and development of political parties in the United States. Given in alternate years; not given in 1936-37.

334. American Political Parties, Party Analysis, Cr. 3. II. S. Prerequisite: American Government. Party functions, organization, finance, campaign methods, and elections. Given in alternate years; not given in 1936-37.

335. American Foreign Relations, Cr. 3. I. The control and conduct of the relations of the United States with the outside world. Given in alternate years; given in 1936-37.

336. American Diplomacy, Cr. 3. II. Prerequisite: American Government. Foreign policies of the United States. Topical treatment. Given in alternate years; given in 1936-37.

337. Public Administration, Organization and Problems, Cr. 3. I. Prerequisite: American Government. A general survey field of public administration, including organization, relation to other branches of the government, methods of administrative control, financial management, purchase and supply, personnel-selection, promotion and demotion, removal and retirement. Given in alternate years; given in 1936-37.

338. Public Administration, Functions, Cr. 3. II. Prerequisite: American Government. Functions performed by national and state governments, including conservation of natural resources, public works, protection of life and property, and public welfare. Given in alternate years; given in 1936-37.

431-2. American Constitutional Law. Cr. 3. I, II. S. Prerequisite: American Government or American History. Interpretation of the Constitution of the United States based principally upon Supreme Court decisions. The leading cases in American constitutional law analyzed. Given in alternate years; not given in 1936-37.

433-4. American Political Ideas. Cr. 3. I, II. Prerequisite: American Government or American History. The lives and ideas of leading political thinkers of the United States from the colonial period to the present. Given in alternate years; given in 1936-37.

435-6. International Law. Cr. 3. I, II. Prerequisite: American Government or 6 consecutive semester hours of History. The fundamental principles of international law with special emphasis upon American interpretations and contributions. Given in alternate years; given in 1936-37.

437. Political Geography. Cr. 3. I. S. Geographic factors in political problems and in the development of political institutions; the main problems of politics in their relation to world geography. Given in alternate years; not given in 1936-37.

438. World Politics. Cr. 3. II. S. Prerequisite: American Government or 6 consecutive hours in History. Problems and issues which have arisen in the family of nations; organizations and efforts to cope with these problems; the principles of international conduct. Given in alternate years; not given in 1936-37.

531-2. Readings and Research. I, II. S. Registration may be made at any time upon approval of the Head of the Department. For individual student needs. The number of semester hours determined by the amount, nature, and character of work done.

DEPARTMENT OF HISTORY AND ANTHROPOLOGY

GUS LEE FORD, B. A., M. A.

Professor and Head Department of History.

CHARLES DUDLEY EAVES, B. A., M. A.

Professor of History.

WILLIAM CURRY HOLDEN, B. A., M. A., Ph. D.

Professor of History and Anthropology.

SETH SHEPARD McKAY, B. A., M. A., Ph. D.

Professor of History.

PHILIP L. RALPH, B. A., M. A., Ph. D.

Assistant Professor of History.

Students should have completed two years of college work in a foreign language, or satisfied the Foreign Language Department that they have a reading knowledge of a foreign language.

Before beginning graduate work on a major or minor in History or Anthropology, six hours of advanced work with the required prerequisites must have been completed.

Aside from classroom reading assignments the student is expected to acquire a knowledge of twenty-five books selected from a list of fifty furnished by the department.

Before taking the oral examination required by the graduate committee the student must prove by written examinations that he has a general knowledge of the following fields of history: Ancient History; Medieval History; Modern European History; English History; American History prior to 1850; American History since 1850.

History 535 (The Technique of Research) must be completed before the student begins work upon his graduate essay.

The thesis must be written under the direction and with the counsel of some member of the department. Selection of the director of the thesis is in the hands of the student. The student is required to meet the desires of the director regarding the scope, plan, and content of the essay.

The graduate essay must be typed by someone approved by the department.

331-2. History of Europe Through the Renaissance. Cr. 3. I and II. Greek civilization, Roman civilization, and the Renaissance; the background of modern European civilization. Given in alternate years; not given in 1936-37.

333-4. Modern Europe, 1492-1870. Cr. 3. I and II. The Reformation; the development of nationalism and enlightened despotism; the French Revolution and Napoleon; the Metternich system and the Revolutionary years of 1830 and 1848; the unification of Italy and the unification of Germany; the Franco-Prussian war. Given in alternate years. Given in 1936-37.

335. Contemporary Europe, From 1870 to the Present. Cr. 3. S. The external, diplomatic, nationalistic, and imperialistic aspects of contemporary European history culminating in the World War; the World War, its aftermath, and present day Europe. Given in alternate summers; given in summer of 1936.

336-7. Tudor and Stuart England. Cr. 3. I and II. The establishment of a strong monarchy; the break with the Roman church; the rise of English sea power; the contest between king and parliament; civil war; the Commonwealth and the Restoration; supremacy of Parliament and England's early colonial policies. Given in alternate years; given in 1936-37.

338-9. Eighteenth and Nineteenth Century England. Cr. 3. I and II. The rise of the cabinet; the fight for colonial supremacy; Whig versus Tory; the industrial revolution; the Napoleonic contest; the reforms in agriculture; the Irish question; the development of the British Commonwealth of Nations; the World War and subsequent problems. Given in alternate years. Not given in 1936-37.

3310. England Before 1485. Cr. 3. S. Early Britain; Anglo-Saxon England; the Norman conquest; English feudalism and early legal institutions; the Great Charter; the rise of Parliament; the Hundred Years War, and the War of Roses. Given in alternate summers; given in summer of 1936-37.

430. English Colonial America. Cr. 3. S. English explorations and early efforts at settlement; colonial beginnings in the South and in New England; the development of American institutions and culture; the rise of economic problems and the distinct colonial institutions. Given in alternate summers; not given in summer 1936-37.

431-2. History of Latin America. Cr. 3. I and II. Exploration, colonization, revolution, political development, social and economic problems, and Pan-American relations. Given in alternate years; given in 1936-37.

433-4. The American Revolution and Early Constitutional Development. Cr. 3. I and II. The causes and progress of the American Revolution; French aid; the Loyalists; English sentiment; finances; the Peace Treaty of 1783; the Confederation; formation and adoption of the Constitution; governmental organization; adoption of the early amendments. Given in alternate years; not given in 1936-37.

435. History of American Diplomacy. Cr. 3. S. The diplomacy of the revolutionary, federalist and republican periods; the Monroe Doctrine; the Mexi-

can problems; Civil War diplomacy; the Caribbean policies; the World War. Given in alternate summers; not given in summer of 1936.

436-7. History of the United States, 1789-1841. Cr. 3. I and II. The federalist and republican periods; second war with Great Britain; the rise of nationalism and the Jacksonian era. Given in alternate years; not given in 1936-37.

438-9. History of Texas. Cr. 3. I and II. Exploration, colonization, revolution, the republic, statehood, expansion of the frontier across West Texas, and modern social and economic problems. Given in alternate years; not given in 1936-37.

4310. Expansion of the United States. Cr. 3. S. A detailed study of the Peace Treaty of 1873; the purchase of Louisiana; acquisition of Florida; annexation of Texas; the Oregon controversy; the Mexican session; the Gadsden Treaty; the purchase of Alaska; the acquisition of our insular possessions. Given in alternate summers; not given in summer of 1936.

4311-12. The Civil War and Reconstruction. Cr. 3. I and II. Economic, political, and social history of slavery in the United States; the old South, secession; the economic problems of the Civil War; the South after the war; reconstruction policies; radical rule and its overthrow; the disputed presidential election of 1876-77. Given in alternate years; given in 1936-37.

4313-14. The United States Since the Civil War. Cr. 3. I and II. Economic and social adjustments after the Civil War; the increase in manufacturing and creation of new industries; big business; tariff; Spanish-American War; Progressivism; the World War. Given in alternate years; given in 1936-37.

4315. Constitutional Development in Texas. Cr. 3. S. Constitution of the Republic of Texas; early statehood; the Civil War decade; formation and adoption of the Constitution of 1876; amendments and present tendencies. Given in alternate summers; not given in summer of 1936.

4316-17. The United States Since the World War. Cr. 3. I and II. A study of post-war agricultural problems; recent tariff legislation and world trade; war-debts and present day diplomacy; the New Deal and current economic-political conditions and theories.

535. The Technique of Research. Cr. 3. I. S. Bibliography, sources, methods of gathering material, evaluation, elimination, assimilation, organization, and composition. Lectures, projects, and readings. Open to senior History majors and required of all graduate students majoring in History.

Anthropology

331-2. Anthropology. Cr. 3. I and II. Prerequisite: Hist. 131-2. Development of man from his origin; races; special reference to pre-historic races of North and Central America.

334. The American Indian. Cr. 3. II. Prerequisite: Hist. 131-2. Customs, institutions, and contributions of the native races of America; their relations with the Anglo-Americans historically traced.

336-7. Mexican Archaeology. Cr. 3. S. Prerequisite: Permission of the instructor. A field course in old Mexico. Lectures, reading, research, excavation, and visits to archaeological ruins in the vicinity of Mexico City. Given in alternate summers; given in summer of 1936.

431-2. Field and Museum Technique. Cr. 3. S. I and II. Prerequisite: Permission of the instructor.

433-4. Southwestern Archaeology. Cr. 3. S. Prerequisite: Permission of the instructor. A field course. Lectures, research, excavation. Given in alternate summers; not given in summer of 1936.

438-9. North American Archaeology. Cr. 3. S. Prerequisite: Permission of instructor. A field course. Lectures, research, and excavation. Given in alternate summers; not given in summer of 1936.

DEPARTMENT OF MATHEMATICS

JAMES NEWTON MICHIE, B. S., M. A.

Professor and Head Department of Mathematics.

FRED WINCHELL SPARKS, B. A., M. A., M. S., Ph. D.

Professor of Mathematics.

RALPH SYLVESTER UNDERWOOD, B. A., M. A., Ph. D.

Professor of Mathematics.

EARL L. THOMPSON, B. A., M. A., Ph. D.

Associate Professor of Mathematics.

ELLIS RICHARD HEINEMAN, B. A., M. A.

Assistant Professor of Mathematics.

LONNIE LANGSTON, B. A., M. A.

Assistant Professor of Mathematics.

For entrance upon graduate work in mathematics, it is essential that the student should have had College Algebra (130, 333, 334), Plane Trigonometry (1310), Analytical Geometry (235-236), a full year's course in the Differential and Integral Calculus (335, 336), and two additional full year courses in such subjects as Theory of Equations, Advanced Calculus, Ordinary and Partial Differential Equations, and Solid Analytical Geometry.

It is further recommended that, in order to broaden his viewpoint, the student's undergraduate preparation should enable him to pursue graduate work in other subjects, such as physics, chemistry, astronomy, and philosophy.

A reading knowledge of French or German is required of all candidates.

Courses number above 400 can be counted as work toward the Master's Degree. It is important that a candidate for the degree plan his courses at the beginning of his graduate work. His advisors will aid him in selecting courses and a thesis subject. Courses numbered from 400 to 500 are advanced undergraduate courses. Those numbered from 500 to 532, inclusive, are combined courses; those numbered 533 and above are graduate courses.

COURSES

430. Finite Differences. Cr. 3. S. Prerequisite: Math 251. The elementary theory presented in detail; the development of the more important methods of interpolation and summation; differential equations.

431. Advanced Calculus. Cr. 3. I. Prerequisite: Math. 336. This course completes and rounds out the subject as given in Math. 335-6. Stress upon rigor in demonstration. Designed to meet the particular needs of the class. Thorough knowledge of the Calculus is the aim of the course. Power series, partial differentiation, implicit functions, Jacobians, infinite series; general convergence theories; improper integrals; Fourier's series and integrals. Offered in 1936-37.

432. Differential Equations. Cr. 3. II. Prerequisite: Math. 336. This is a course for students intending to specialize in mathematics, chemistry, physics, and for students in advanced engineering, civil, electrical, and chemical. Linear equations and equations of the second order, with geometrical and physical applications. Partial differential equations. Offered in 1936-37.

- 443. Theory of Equations.** Cr. 3. II. Prerequisite: Math. 335. Recommended for students intending to study the higher branches of pure mathematics. Complex numbers, polynomial functions, solutions of numerical equations, symmetric functions, determinants, systems of linear equations. Offered in 1936-37.
- 447. Introduction to Higher Geometry.** Cr. 3. S. Prerequisite: The consent of the instructor. Directed segments and angles, similitude, inversion, geometry of the triangle, quadrilateral, coaxial circles. Exercises. Recommended for teachers of geometry in high schools.
- 448. Solid Analytic Geometry.** Cr. 3. II. Prerequisite: Math. 332. The equations of space curves, planes, lines and quadratic surfaces. Offered in 1936-37.
- 450. Vector Analysis.** Cr. 3. II. Prerequisite: Math. 336. Scalar and vector products, divergence, gradient, curl, applications. Not offered 1936-37.
- 451. Mathematical Theory of Statistics.** Cr. 3. II. Prerequisites: Math. 335 and 337. Development of the theory of probability and its application to statistics, derivation of statistical formulas, curve fitting, least squares, use of moments, frequency curves, probable error, sampling, correlation surfaces. Not offered 1936-37.
- 532. Actuarial Theory and Practice.** Cr. 3. I. Prerequisite: Math. 237, 531. Mathematical theory of life contingencies, presentation of life and monetary tables, valuation of policies, theory of risks, workmen's compensation, pension systems, joint life tables and policies, actuarial principles of accident insurance, other forms of insurance. Not offered in 1936-37.
- 533. Life Theory of Differential Equations.** Cr. 3. II. Prerequisite: Math. 432. A study of differential equations from the point of view of continuous groups. Not offered in 1936-37.
- 534. Synthetic Projective Geometry.** Cr. 3. S. Prerequisite: Consent of the instructor. Fundamental theorems of projective geometry treated synthetically. Exercises with applications.
- 535. Analytic Projective Geometry.** Cr. 3. I. S. Prerequisite: Consent of the instructor. Analytic treatment of the projective properties of the straight line and the conic sections.
- 536. Modern Higher Algebra.** Cr. 3. I. Prerequisite: Math. 433. Polynomials and their fundamental properties, determinants, theory of linear dependence, linear equations, matrices, invariants, bilinear and quadratic forms. Not offered in 1936-37.
- 537. Theory of Functions of a Complex Variable.** Cr. 3. I. Prerequisite: Math. 431. Algebra of complex numbers and their geometric representations, conformal mapping, power series and properties of analytic functions. Riemann surfaces.
- 538. Theory of Numbers.** Cr. 3. II. Prerequisite: Consent of instructor. Congruences, quadratic residues and reciprocity law, quadratic forms, Diofantind analysis.
- 539. Introduction to the Theory of Finite Groups.** Cr. 3. I. Prerequisite: Math. 433. Substitution groups, Lagrange theorem, Galois theory, group of an equation, gamma groups, series of compositions. Not offered in 1936-37.
- 540. Thesis Course.** Prerequisite: Graduate standing and thirty semester hours in mathematics. For candidates for the degree of Master of Arts.

DEPARTMENT OF PHYSICS

ENOCH FRANKLIN GEORGE, B. S., B. A., M. A., Ph. D.

Professor and Head Department of Physics.

WILLIAM HENRY ABBITT, B. A., Ph. D.

Professor of Physics.

CLARENCE SIMPSON MAST, B. S., M. A.

Professor of Physics.

HARRY HILL, B. A., M. A., Ph. D.

Associate Professor of Physics.

CLARENCE CARL SCHMIDT, B. A., M. A., Ph. D.

Associate Professor of Physics.

The Department of Physics offers major graduate work leading to the Master's Degree. On the theoretical side there are courses in mechanics, heat, light, electricity and magnetism, high-frequency oscillations and radio, and, in conjunction with the Geology Department, applied geophysics. On the experimental side there is an electrical measurements laboratory, a light laboratory, and a laboratory for measurements in terrestrial magnetism and atmospheric electricity. These laboratories are equipped for advanced work as well as for research work for Master's Theses, etc.

COURSES

331. Light. Cr. 3. I. Prerequisite: One year college physics, differential and integral calculus. Fundamentals of geometrical and physical optics. Laboratory experiments in photometry, refraction, lenses, interferometry, diffraction and polarization. In the study of photometry measurements are made of the candle powers of light sources and distribution curves are plotted for various kinds of electric lamps. Spectroscopes and refractometers are used in experiments on refraction. Lens experiments include the study of cardinal points, focal distances, etc., of lenses and lens systems. Work in diffraction includes the study of diffraction gratings and the diffraction patterns due to slits. The Fresnel prisms and mirrors, and the Michelson interferometer are used in the study of interference. The study of polarization includes the use of Nicol prisms, and a variety of experiments with a simple polariscope. The theories involved in the experiments are considered in detail during class hours.

332. Heat. Cr. 3. II. Prerequisite: One year college physics and calculus. Thermometry; expansion; calorimetry; transference of heat; heat of chemical actions; change of state; heat properties of gases and vapors; first and second law of thermodynamics; adiabatic and isothermic transformation and entropy.

333-4. Electricity and Magnetism. Cr. 3. I and II. Prerequisite: One year of College Physics and integral calculus. A mathematical treatment of the theory and applications of electricity and magnetism. An introduction to electron theory, power transmission, communication, conduction of electricity through gases, radioactivity, thermionics, photoelectricity, and x-rays.

423-4. Electrical Measurements. Cr. 2. I and II. S. Prerequisite: One year of college physics and integral calculus. Methods, instruments and principles relating to measuring resistance, capacitance, inductance, and magnetism by direct and alternating current. Vacuum tubes and photo electricity. Calibration of electrical meters. Important for those engaging in research work.

435-6. Introduction to Modern Physics. Cr. 3. I and II. S. Prerequisite: Physics 231-2 and calculus. The method of presentation of the subject mat-

ter of this course is, as far as is feasible, descriptive rather than mathematical. The elements of alternating current theory; electromagnetism; properties of the electron; kinetic theory of gases; thermionics; photoelectricity; x-rays; theory of atomic structure; spectroscopy; radio-activity; seismology; astrophysics; relativity theory.

511-2. Physics Seminar. Cr. 1. I and II. Prerequisite: Consent of the instructor. Weekly reports by students and members of the staff on recent contributions in the field of physics appearing in various scientific periodicals. Time is reserved for a discussions of the reports after the presentation. Given in alternate years; not given in 1936-37.

513-4. Physics Seminar. Cr. 1. I and II. Prerequisite: Consent of the instructor. Similar to Physics 511-2. Offered as an inducement to students to keep abreast of current advances in the field of physics during at least two years of their residence. Given in alternate years; given in 1936-37.

531-2. Theoretical Physics. Cr. 3. I and II. S. Prerequisite: Consent of instructor.

I. Dynamics: of a particle of rigid bodies, of deformable bodies; generalized coordinates.

II. Hydromatics: of perfect fluids and of viscous fluids.

III. Thermodynamics: classical thermodynamics, statistical mechanics, kinetic theory of gases.

IV. Electromagnetism: Electrostatics and magnetostatics, electric currents, electromagnetic theory. The vector notation introduced and used throughout. For the year 1936-37, Page's "Theoretical Physics" will be used.

533-4. Mathematical Theory of Light. Cr. 3. I and II. S. Prerequisite: Physics 331 and integral calculus, or consent of instructor. Geometrical and physical optics. A review of classical and modern theory, with a study of experiments that show the nature of light. This course treats in general the same subject matter as that treated in Physics 331, but treatments of theory are much more complete. The following are some of the topics considered: Study of the principles of optical instruments, their resolving powers, effects of apertures, images and image defects, aberrations, and dispersion; velocity of light; electromagnetic theory of light; modern radiation theories; optical properties of crystals; light sources; origin of spectra. Given in alternate years; not given in 1936-37.

535-6. Theoretical Mechanics. Cr. 3. I and II. Prerequisite: Consent of the instructor.

I. Kinematics of a point, work and energy, principles of least action, generalized equations of motions.

II. System of vectors, distribution of mass, instantaneous motion, rotating bodies, precession and nutation, moving axes, rotating axes.

III. Theory of Potential: Newtonian potential function, harmonics, in spherical coordinates, energy function of isotropic bodies. Wave motion; plane, spherical and tidal.

537-8. Line Spectra and Atomic Structure. Prerequisite: Consent of instructor. Review of experiments and interpretation of experiments that led to the formulation of the old quantum theory. Review of the Bohr and Sommerfeld theories of atomic structure. Introduction to the new quantum mechanics. The study of energy level diagrams for atoms, the periodic table of elements, the scheme of the building up of elements, Zeeman effect, and the theory of nuclear structure. To be offered in 1936-37.

GRADUATE STUDENTS

SUMMER, 1935

Adams, Mrs. J. W.	Meadow	Cook, Oriene C.	Dublin
Adams, J. W.	Meadow	Cooper, Margaret	Lubbock
Adams, Mary Elizabeth	Lubbock	Copeland, Alva Beach	Lubbock
Allen, Mrs. R. K.	Sanatorium	Copeland, Harmon T.	Post
Anthony, S. G.	Lipan	Copeland, Hubert	Lubbock
Armstrong, Charles L.	Nan	Cowan, Coleman	Lubbock
Arthur, T. L.	Kingsville	Cox, Seth E.	Stamford
Ashby, Letha	McLean	Cravens, Viola	Lubbock
Ashmore, Florence	San Antonio	Creswell, H. S.	Cleburne
Ayres, Lillian	Coleman	Croslin, Lottie	Lubbock
Bahr, Luna B.	Lubbock	Crumley, Floyd Burney	Chicota
Bailey, Carl	Estelline	Crump, Katie Bell	Shallowater
Baker, Elva	Ablene	Crump, Mamie	Shallowater
Ball, John S.	Lubbock	Crye, Helen	El Paso
Ballenger, H. P.	Stratford	Damron, Rutherford	Blanket
Bardwell, James H.	Goree	Davis, Dewey	Seminole
Barkley, Mrs. Emma E.	Austin	Davis, Ouida	Lubbock
Barksdale, L. T.	Chico	Davidson, R. L.	Ft. Sumner, N. M.
Barnett, E. M.	Melvin	Day, Lela	Lubbock
Baskin, Margaret	Lubbock	De Fee, T. J. Jr.	Lubbock
Beard, Pearl	Rule	Dodson, Ione	Whitney
Bearden, Mrs. Victor C.	Lubbock	Donaldson, Mrs. Anna B.	Lubbock
Bearden, Victor C.	Lubbock	Donnell, Ruth	Elizaville
Bearden, Wendell	Lubbock	Donnell, Elizabeth	Elizaville
Beck, Mrs. Pearl	Weatherford	Dowell, G. S.	Lorenzo
Bentley, Connie B.	Vernon	Duff, W. Bryan	Cleburne
Berry, Mrs. Velma W.	Lubbock	Dunn, Harvey	Ralls
Betts, Marion	Lubbock	Eaton, Flora Lena	Arlington
Beasley, Lida Mae	Lubbock	Echols, Maude Eldson	Stanton
Betts, Wilson Tarry	Iowa Park	Edelman, Wilburn	Plainview
Biggers, W. D.	Sudan	Edwards, D. A.	Crosbyton
Bills, Laura Virginia	Littlefield	Ellis, J. Alvis	Anton
Birdwell, Doll	Seminole	Ethridge, Marion B.	Cleburne
Blackburn, B. L.	Aspermont	Evans, John S.	Amarillo
Blackmon, Mrs. Glenn	Shallowater	Evans, Ruth	Tahoka
Blackmon, Minnie D.	El Paso	Faubion, Alvin L.	Wilson
Blackmon, Truett	Lovington, N. Mex.	Fisher, C. M.	Anna
Bair, Robert E.	Brownwood	Fisher, Mrs. Lillian M.	Anna
Blankinship, Opal Irene	Stephenville	Ford, Francis	Lubbock
Bludworth, Lucille	Tahoka	Franklin, Homer	Meadow
Bobbitt, William	Lockney	Gale, Mary Frances	Lubbock
Bobo, Estelle	Canton	Gammil, J. Rankin	Lubbock
Bolar, T. A.	Bethany, Missouri	Garrett, Leeta Mae	Lubbock
Bolding, Fanny	Floydada	Gilbreath, Elvis	O'Donnell
Boles, Josephine	Gordon	Glover, J. Verner	Colorado
Bolin, J. B.	Lamesa	Goodwin, Floy Bernice	Friona
Bolin, Mrs. J. B.	Lamesa	Green, Laura	Dallas
Botkin, Clayton W.	State College, N. M.	Green, Mrs. Waldo	Ablene
Boyd, Abbie N.	Ralls	Greenwood, Billie Williford	Garden City
Brandon, M. C.	Stephenville	Greenwood, Max H.	Garden City
Branner, Ernestine	Aspermont	Griffin, Estelle	Lubbock
Brint, Nancy C.	Amarillo	Groves, R. T.	Lubbock
Brooks, Samuel Eustace	Brownwood	Ham, Stella Irene	Rule
Brown, Carlos L.	Wichita Falls	Hampton, Thomas	Dalhart
Brown, Viola	Brownfield	Hamrick, Grady	Lubbock
Bryant, Verta R.	Graham	Haralson, G. Carol	Holliday
Burdette, R. L.	Littlefield	Hardegree, Leland S.	Munday
Burford, Mrs. Rosa Mae	Lubbock	Harmonson, Vivian	Olney
Burk, Oliver A.	Levelland	Harris, Mabel	O'Donnell
Burks, Vera	Dumas	Harris, Verna	Bluff Dale
Rush, Oliver A.	Ablene	Harp, Ernest L.	Roswell, N. M.
Byers, Vera E.	Amarillo	Hart, Jim Allee	Rockwood
Cade, Grace	Chandler	Hayes, Cantrell	Olney
Caldwell, Ann	Lubbock	Haymes, Terrell	Lubbock
Campbell, Mary Louise	Lubbock	Hearn, Lesene Q.	Colorado
Cearly, Emma	Amarillo	Heizer, R. P.	Throckmorton
Chandler, Bonita	Lubbock	Henderson, Margaret	Lubbock
Chapman, Catherine	Lubbock	Henderson, Eulala	Lubbock
Chappelle, Ray L.	Pearsall	Henderson, Mary Morton	Borger
Cheatham, John L.	Denton	Hendrix, Winnie	Southland
Cherry, W. O.	McAdoo	Herod, Tom	Pampa
Chism, L. M.	Albany	Hill, Alta Mae	Blue Ridge
Clark, Lawrence	Anthony	Hill, Mrs. Fannie	Amarillo
Cleavinger, Elmer R.	White Deer	Hill, Jewell W.	Amarillo
Clements, Dollie	Lubbock	Hobbs, Earl	Littlefield
Clewell, Evelyn	Lubbock	Holcomb, Murray L.	El Campo
Coalson, Mrs. Frank	Sweetwater	Honey, Floyd	Lubbock
Collinsworth, Gerald W.	Rotan	Honey, Glenys	Lubbock

Hopping, Lillian	Lubbock	Railsback, H. F.	Big Spring
Horstmann, Hugo Frank	Buckhoits	Rankin, Louise	Abernathy
Hoys, Arthur B.	Amarillo	Rankin, Mary	Abernathy
Howell, Mattie Sue	Lubbock	Ratliff, Ernest C.	Brownwood
Hudson, G. M.	Hereford	Redford, Terry	Brownfield
Huggins, Thomas Fred	Floydada	Reeve, F. H.	Frona
Hutchinson, Joe C.	Lubbock	Reeves, E. R.	Groom
Inman, Maggie Lee (deceased)	Hereford	Rice, Carolyn	Brownwood
Ivans, Ollie Mae	Bomarton	Rice, Harry W.	Throckmorton
Ivans, Lewis Clark	Bomarton	Riddel, Maye Belle	Dallas
Jackson, Harvey	Roaring Springs	Riehmayer, L. C.	Whittenburg
Jackson, Lucy Belle	Lubbock	Rigler, Sadye	Hereford
Jinkins, A. B.	Seminole	Robbins, Ora Mae	Childress
Johnson, Mrs. R. P.	Lubbock	Robertson, Florence	Windom
Jones, Evelyn O.	Lubbock	Robison, Polk	Sparta
Jones, Thelma Darby	Stephenville	Rogers, Jesse	Houston
Jones, Wilford	Lockney	Savage, Evelyn	Lewisville
Judkins, Mary Pearl	Eastland	Schwalbe, Cecil O.	Jonesboro
Keathley, Kate Boyd	Lubbock	Schulz, Eula Dora	Mexia
Keller, Glenna	Lubbock	Shaller, Mrs. Bertha N.	Amarillo
Kersey, Cecil Glenn	Lubbock	Shepherd, Ernest W.	Vernon
Kennedy, J. L.	Lubbock	Simms, M. Georgia	Amarillo
Kirkpatrick, Geraldine	Littfield	Simpson, Lida Faye	Lubbock
Kral, Anne	Roby	Smith, Brooke	Brownwood
Krause, Arthur	Ropesville	Smith, Mabil E.	Valley Spring
Krause, Mrs. Saphrona	Ropesville	Smith, Mac	Waco
Lall, Charles R.	Lubbock	Snoddy, Lois	Brownwood
Leach, T. L.	Frona	Snodgrass, Floyce	Lubbock
Ledger, Morris	Wellington	South, Lawton	Paint Rock
Lee, Z. B.	Sudan	Speck, Mrs. E. B.	Lubbock
Lewis, Roxie S.	Roaring Springs	Speer, J. E.	Amarillo
Lindsey, Margaret	Lubbock	Spencer, Mary C.	Marlin
Little, Woodrow	Edinburg	Stallings, Kathryn	Post
Lomax, Dorothy	Lubbock	Stark, Guy Jr.	Seminole
Ludlow, Odie E.	Crosbyton	Stevens, C. R.	Muleshoe
McCorry, Mrs. Mary Ruth	Lovington, N. M.	Stevens, Thelma	Muleshoe
McElroy, H. M.	Eola	Still, Wilmer E.	Somerville
McDearmon, Ray	Lorenzo	Stine, Lulu	Lubbock
McFarland, Lora Mae	Frona	Strayhorn, Dorothy	Snyder
McGlothlin, Katherine	Bellevue	Stroud, Russell	Eldorado
McIntosh, William A.	Borger	Sults, A. Carl	Lubbock
McKennon, K. S.	Wilson	Suffel, Paul H.	Tuleta
McNece, Mary	Lubbock	Sullins, L. E.	Levelland
McWhirter, George	Plainview	Sullivan, John B.	Hamilton
McWilliams, W. D.	San Benito	Summers, Ann	Lubbock
McWilliams, Kathleen	San Benito	Swanzy, William	Idalou
Magee, Mary	Pecos	Tarter, Cleo W.	Dunn
Maggard, Mable	Hale Center	Tate, D. M.	Sherman
Martin, F. A.	Corpus Christi	Thomas, Fay	Goodlet
May, Clara	Wilson	Tilroy, Ellitabel	Lubbock
May, Dida B.	Lubbock	Travis, Angus	Canton
Messersmith, Marvin	Ft. Worth	Travis, Mildred Lawler	Canton
Michie, Sarah	Lubbock	Turner, T. J.	Rochester
Miller, J. E.	Hale Center	Turney, Irl Houston	Claude
Miller, William A.	Vega	Underwood, Robert	Plainview
Mills, Ellis M.	Lubbock	Usselton, W. E.	Dodsonville
Mize, Gilbert	Rotan	Van Dyke, Lucille	McAdoo
Montgomery, Opal	Wilson	Vardy, Lee	Estelline
Morehead, H. C.	East Vaughn, N. M.	Viles, Bessie	Enloe
Moore, Felton	Texarkana	Viles, Byrtle	Enloe
Moore, Mary Elizabeth	Fort Worth	Wallace, Ernest	Hughes Springs
Morris, Roy	Lubbock	Ward, James F.	Lubbock
Morrow, J. A.	Morton	Warren, J. Irvin	Amherst
Mullings, Vivian Keaster	Plainview	Wasson, Vita	Snyder
Musick, J. Herman	Marlin	Watkins, Ira L.	Meadow
Myers, Ada	Cleburne	Watkins, Margaret	Dallas
Nash, R. M.	Slaton	Watts, Willie Clayton	Lubbock
Nelson, Mrs. J. P.	Snyder	Watson, Lorene	Stephenville
Newsom, W. R.	Vernon	Weaver, Mrs. Hildred	Weatherford
Olsen, Dorothy	Seymour	Weaver, Lem	Jonesboro
O'Neill, Nance	Lubbock	Weaver, M. J.	Earth
O'Neill, T. Roderick	Lubbock	Webb, Holmes	Hamlin
Paige, Russell E.	LeFors	Wells, Nona	Lockney
Pardue, Winona	Lubbock	West, Veda	Wilson
Pearce, William	Lubbock	Whitmire, Jerome R.	Swenson
Phillips, Felix	Amarillo	Wilhite, Gennelle	Lubbock
Phillips, Mrs. Neoma	Sulphur Springs	Wilkinson, C. S.	Brownwood
Phillips, Thomas V.	Childress	Williams, Ed E.	Loraline
Pickett, Florence	Lubbock	Williams, R. K.	Rotan
Pickett, Violet	Lubbock	Williams O. O.	Lubbock
Pierce, Clive	May	Williamson, J. C.	Lubbock
Powers, H. P.	Sweetwater	Willingham, Roberta	Lubbock
Powers, Warren	Muleshoe	Willis, Wade Scott	Amarillo
Prichard, Arthur	Lubbock	Wilson, Frank P.	Gruver
Pruitt, Sidney L.	Ternersville	Wilson, Georgia P.	Gruver
Puryear, Lela	Lubbock	Wilson, James	Hereford

Wilson, Marion	Sanger	Woodward, Elizabeth	Dallas
Withers, Gertrude V.	Sweetwater	Wren, Hazel	Springtown
Wolffarth, Louise	Lubbock	Wylie, Painter C.	Valley View

FALL AND SPRING, 1935-36

Bahm, Luna B.	Lubbock	Lindley, Nina C.	Lubbock
Baker, Coleta J.	Lubbock	McKay, Opal	Lamesa
Ball, John S.	Lubbock	Manire, B. L.	Lubbock
Bearden, Mrs. Ruth Reed ..	Lubbock	May, Lida B.	Lubbock
Bearden, Victor	Lubbock	Merrick, Thelma	Lubbock
Beck, Pearl	Lubbock	Merriman, Mrs. Helen Dial ..	Lubbock
Benn, Owen	Lubbock	Michie, Sue	Lubbock
Blackmon, Glenn	Shallowater	Monk, Roy	Lubbock
Brandon, M. C.	Wilson	O'Neill, T. Roderick	Lubbock
Bratcher, Guy	Lubbock	Pearce, William	Lubbock
Burdette, Robert L.	Lubbock	Plemmons, Elmore	Lubbock
Chappelle, Ray L.	Lubbock	Pool, Phyllis	Lubbock
Clements, Dollie	Lubbock	Prichard, Arthur	Lubbock
Clements, Dorothy F.	El Paso	Purveyar, Raymond	Lubbock
Clevenger, Margery	Hobbs, N. M.	Roberts, Stiles M.	Lubbock
Clewell, Evelyn	Lubbock	Robertson, Florence	Byers
Cowan, Coleman	Lubbock	Russ, Mrs. Kate	Lubbock
Davis, Mrs. Martha K.	Lubbock	Sanderson, John R.	Itasca
Davis, Roy C.	Itasca	Schwalbe, Cecil O.	Lubbock
Deering, Gordon M.	Post	Shipman, Lawrence	Lubbock
Dowell, G. S.	Lorenzo	Smith, J. P.	Anton
D'Spain, Lalla M.	McLean	South, Lawton	Paint Rock
Dunn, Gustus, Jr.	Littlefield	Stafford, W. D.	Earth
Faith, R. L.	Abernathy	Stanton, Billy	Lubbock
Ford, Frances	Lubbock	Stewart, Thomas H. Jr.	Lubbock
Galbraith, Chas. C.	Lubbock	Stubbs, W. F.	Tahoka
Gariand, Fred	Fort Worth	Swanzy, W. R.	Idalou
Gillham, John	Lubbock	Teague, Cagle	Childress
Hargrave, L. M.	Wolforth	Terrell, Mrs. Ethel	Lubbock
Hart, Jim Allee	Rockwood	Thurman, Josephine	Lubbock
Hartzog, Arlin	Lubbock	Vandagriff, Dorothy	Lubbock
Hines, Truman	Lubbock	Vaughn, Voyle	Lubbock
Hinson, H. Houston	Lubbock	Waiter, John Arnold	Lubbock
Hooten, R. L.	Shallowater	Watkins, Eugene	Lubbock
Hurmenice, Howard	Lubbock	Wherry, John K.	Lubbock
Hurmenice, Ruth	Lubbock	Williams, James P.	Lubbock
Hutchinson, Ruth	Lubbock	Williamson, J. C.	Lubbock
James, Philip	Lubbock	Withers, Gertrude V.	Lubbock
Johnson, Joyce	Lubbock	Wolf, Nina Marie	Stamford
Kennedy, Joe L.	Lubbock	Wolffarth, Louise	Lubbock
King, Eunice	Crane	Young, Clarence	Lubbock
Leach, T. L.	Littlefield	Young, Leslie	Lubbock
Lewis, Roxie Sibley	Roaring Springs	Zarafonitis, George	Lubbock
		Zirkle, William	Meadow

TEXAS TECHNOLOGICAL COLLEGE

Application for Admission To Do Graduate Work

Name

Home address

Lubbock address

College awarding Bachelors' degree

Date

Proposed major subject

Proposed first minor subject

Proposed second minor subject (if any)

Undergraduate preparation in major subject, semester hours

Undergraduate preparation in first minor subject, semester hours

Undergraduate preparation in second minor subject, semester hours

Date of filing this application

Date (approximate) for completion of graduate work

Approved for admission by Registrar

Approved for admission by Graduate Committee

TEXAS TECHNOLOGICAL COLLEGE

APPLICATION FOR CANDIDACY FOR MASTER'S DEGREE

(Date filed)

..... (Name)
First Middle Last.....
Age.....
(Lubbock Address).....
(Home Address)

Previous degree Awarded by Date

Degree Desired: Master of Arts in Minor(s)

Master of Science in

Major

Field for thesis investigation. (Subject if possible)

Courses for which graduate credit is desired

Proposed date of graduation

Program of work approved:

.....
(Head of Major Department).....
(Dean of Division).....
(Head of Minor Department).....
(Head of Minor Department).....
(Chairman of Graduate Division)

REQUIREMENTS OF THE GRADUATE COMMITTEE

GOVERNING THESIS FOR THE MASTER OF ARTS DEGREE IN THE
THE TEXAS TECHNOLOGICAL COLLEGE

1. Three bound typewritten copies of the thesis must be submitted:
 - a. One copy to the Librarian
 - b. One copy to the Graduate Committee
 - c. One copy to the department in which the student is majoring.

The thesis must be presented for examination and approval by the Graduate Committee not later than fifteen days prior to graduation. Arrangements for having theses bound must be made with the Librarian to insure uniformity in binding. A receipt from the Librarian must be given to the Graduate Committee showing that the thesis has been deposited for the purpose of binding.

2. Each copy of the thesis should be typewritten:
 - a. In black ink
 - b. In double-spaced lines
 - c. On a good grade of bond paper, 8½ x 11 inches
 - d. With a margin of two inches at the left side and one inch at the top, bottom, and right side.

3. The title page should contain the subject of the thesis, the full name of the author, and the words:

Submitted in partial fulfilment of the requirements for the degree
of Master of Arts of the Graduate School of the Texas Technologi-
cal College, 19.....

4. There should usually be a table of contents.
5. Pages should be numbered.
6. Chapter headings and subheadings should be uniformly distinguished throughout the thesis.
7. Footnotes should be consecutively numbered by chapters, appear single-spaced at the bottom of the pages to which they refer and be plainly set off by rules from the body of the text.
8. The copies should be as free from ink corrections and additions as possible.
9. A formal bibliography of all materials used by the author should be placed at the end of the thesis.

THE STYLE OF JOHN WYCLIFFE, AS EXEMPLIFIED IN
HIS TRANSLATION OF THE NEW TESTAMENT

THESIS

Presented to the Faculty of the Graduate Division of the
Texas Technological College in Partial Fulfillment
of the Requirements

For the Degree of

MASTER OF ARTS

By

Emma May Gill, B. A.

(Home Address)

June, 1934

(NOTE: This form to be used for the Master's thesis)

THE STYLE OF JOHN WYCLIFFE, AS EXEMPLIFIED IN
HIS TRANSLATION OF THE NEW TESTAMENT

THESIS

Approved:

.....
.....
.....

Thesis Committee

Approved:

.....
Head of the Department of English

Approved:

.....
Dean of the Division of Arts and Sciences

Approved:

.....
Chairman of Graduate Division

(NOTE: This form to be used for the Master's thesis)