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TEXAS TECHNOLOGICAL COLLEGE

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THE  
GRADUATE SCHOOL



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## THIRTIETH ANNUAL SESSION

## LONG SESSION 1954-55

## FALL SEMESTER

1954

- Sept. 13. Monday. Fall semester begins.
- Sept. 15. Wednesday. Preregistration consultations for all students.
- Sept. 16-17. Thursday-Friday. Registration for fall semester.
- Sept. 18. Saturday, 8 A.M. Classes begin.
- Sept. 21. Tuesday. Late registration fee will be charged after this date.
- Sept. 25. Saturday. Last day to apply for Graduate Record Examination to be given Oct. 30.
- Sept. 27. Monday. Last day to complete registration and pay fees for fall semester. Last day to add courses.
- Oct. 28. Thursday. Last day on which a student may drop, without grade penalty, a course in which he is failing.
- Oct. 30. Saturday. Graduate Record Examinations.
- Nov. 11. Thursday. Last day to file Personnel Information Forms and photographs at the Placement Office by students planning to complete their work in January.
- Nov. 13. Saturday. Homecoming Day. Classes dismissed at 10 A.M. Saturday, 5 P.M. Midsemester reports due at the Registrar's Office.
- Nov. 23. Tuesday. A course cannot be dropped after this date without a grade of WF, unless drop is initiated by the Dean.
- Nov. 24. Wednesday, 10 P.M. Classes dismissed for Thanksgiving holidays.
- Nov. 29. Monday, 8 A.M. Classes resumed.
- Dec. 22. Wednesday. 12 Noon. Classes dismissed for Christmas holidays.

1955

- Jan. 3. Monday, 8 A.M. Classes resumed.
- Jan. 19-25. Wednesday-Tuesday. Final examinations, fall semester.
- Jan. 26. Wednesday. Students without room reservations for the spring semester must vacate dormitory rooms not later than 10 A.M. of this date. Fall semester ends.

## SPRING SEMESTER

- Jan. 26. Wednesday, 12 Noon. Dormitory rooms open to new occupants.
- Jan. 27. Thursday, 8 A.M. Spring semester begins.
- Jan. 27-28. Thursday-Friday. Registration for spring semester.
- Jan. 29. Saturday, 8 A.M. Classes begin. Last day to apply for Graduate Record Examination to be given March 5.
- Feb. 4. Friday. Late registration fee charged after this date.
- Feb. 11. Friday. Last day to complete registration and pay fees for spring semester. Last day to add courses.
- Mar. 5. Saturday. Last day on which a student may drop, without grade penalty, a course in which he is failing. Graduate Record Examinations.



- Mar. 7-10. Monday-Thursday. Willson Lectures.
- Mar. 12. Saturday. Last day to file Personnel Information Forms and photographs at the Placement Office by students planning to complete their work in May. Last day to file with the Dean the statement of intention to graduate on May 30, 1955.
- Mar. 23. Wednesday, 5 P.M. Midsemester reports due at the Registrar's Office.
- April 2. Saturday. Last day to order academic regalia at College Bookstore. Last day to pay \$5 graduation fee. Last day for refund of \$5 graduation fee to candidates who cannot graduate on May 30, 1955.
- April 7. Thursday, 10 P.M. Classes dismissed for Easter Vacation.
- April 12. Tuesday, 8 A.M. Classes resumed.  
A course cannot be dropped after this date without a grade of WF, unless drop is initiated by the Dean.
- April 21. Thursday. Last day to complete correspondence courses being taken for leveling work. Instructors are to file grades for correspondence work not later than May 5. Students must complete final examination in time for it to reach the instructor by April 26.  
Last day to submit to the Graduate Dean the first draft of theses and dissertations.  
Last day to submit to the Dean a request to graduate *in absentia*.  
Last day for degree candidates to remove grades of "Inc." and "Pr."
- May 20. Friday. Last day to submit to the Graduate Dean the final draft of theses and dissertations and to pay the binding fee.
- May 20-26. Friday-Thursday. Final examinations, spring semester.
- May 26. Thursday. Dormitory dining rooms close with serving of evening meal.
- May 27. Friday, 8:30 A.M. Grades and absence reports through Thursday, May 26, for all degree candidates due in Registrar's Office.  
10 A.M. Dormitories close. Degree candidates may occupy rooms until 10 A.M., Tuesday, May 31.
- May 28. Saturday, 10 A.M. Meetings of divisional faculties to approve final and official graduation lists. These lists are due at the Registrar's Office by 11 A.M.
- May 29. Sunday, 8:30 A.M. Graduation rehearsal at Stadium.  
3:30-5 P.M. President's Reception for Graduates.  
8 P.M. Baccalaureate Sermon in Stadium.
- May 30. Monday, 8 P.M. Commencement. Spring semester ends.
- June 1. Wednesday, 11 A.M. All grades and absence reports due in Registrar's Office.

SUMMER SESSION 1955

- June 6. Monday. Summer Session begins. Registration for first term. Breakfast served as first meal in dormitories.

## BOARD OF DIRECTORS

1954-1955

## OFFICERS

CHARLES C. THOMPSON, *Chairman*  
 ROBERT B. PRICE, *Vice Chairman*  
 J. ROY WELLS, *Secretary*

## MEMBERS

*Term Expires 1955*

C. T. McLAUGHLIN .....	Snyder
RAYMOND PFLUGER .....	Eden
ROBERT B. PRICE .....	El Paso

*Term Expires 1957*

THOMAS F. ABBOTT, JR. ....	Fort Worth
GEORGE E. BENSON .....	Lubbock
CHARLES C. THOMPSON .....	Colorado City

*Term Expires 1959*

WILLIAM H. FRANCIS, JR. ....	Houston
FRED H. MOORE .....	Dallas
WINFIELD D. WATKINS .....	Abilene

## STANDING COMMITTEES

BUILDING: McLaughlin, Pfluger, Price  
 EXECUTIVE: Benson, Price, Moore  
 FINANCE: Price, Benson, Watkins  
 LEGISLATIVE: Francis, McLaughlin, Abbott  
 PUBLIC RELATIONS: Abbott, Pfluger, Watkins

## SPECIAL COMMITTEES

AGRICULTURE: Pfluger, Price, Benson  
 TEXTILES: Watkins, Moore, Abbott  
 MINERALS: Moore, McLaughlin, Francis  
 PANTECH: McLaughlin, Watkins, Pfluger  
 LOCAL AFFAIRS: Benson, Moore, Francis  
 ATHLETICS: Watkins, McLaughlin, Pfluger

## OFFICERS OF ADMINISTRATION

EDWARD NEWLON JONES, B.S., Ph.D., LL.D., President.  
CLIFFORD BARTLETT JONES, LL.D., President Emeritus.  
GUSTAV ERNEST GIESECKE, A.B., M.A., Ph.D., Vice President.  
MARSHALL LEE PENNINGTON, B.B.A., Vice President and Comptroller.  
JAMES ROY WELLS, B.A., B.B.A., M.B.A., Assistant to the President and Secretary of the Board of Directors.  
JAMES GEORGE ALLEN, B.A., M.A., Dean of Student Life.  
WARREN PERRY CLEMENT, B.A., M.A., Registrar and Director of Admissions.  
WILLIAM HODGE CRENSHAW, LL.B., Director of Development.  
SETH THOMAS CUMMINGS, Purchasing Agent and Assistant Business Manager.  
WILLIAM BRYAN GATES, B.S., M.A., Ph.D., Dean of the Graduate School.  
ROBERT CABANISS GOODWIN, B.A., M.A., Ph.D., Dean of Arts and Sciences.  
WILLIAM E. HALL, JR., Ph.D., Director of Public Information.  
GEORGE GAIL HEATHER, B.S., M.A., Ph.D., Dean of Business Administration.  
DYSART EDGAR HOLCOMB, B.S., M.S., Ph.D., Dean of Engineering.  
RAY CURTIS JANEWAY, B.A., B.S. in L.S., M.S., Librarian.  
LEWIS NORTEN JONES, B.S., M.A., Dean of Men.  
JACOB HOMER MILLIKIN, B.A., M.A., Director of Extension.  
FLORENCE PHILLIPS, A.B., M.A., Dean of Women.  
SHIRLEY FRANCES SCHULZ, B.S., Director of Food Service.  
WENZEL LOUIS STANGEL, B.S., M.S., Dean of Agriculture.  
WILLA VAUGHN TINSLEY, B.S., M.S., Ph.D., Dean of Home Economics.  
EVERITT DONALD WALKER, B.S., M.B.A., C.P.A., Auditor.  
HAMPTON LEE GREEN, B.S., Colonel, Corps of Engineers, U.S. Army, Professor of Military Science and Tactics.  
WILLIAM A. SCHULGEN, B.A., Colonel, U.S. Air Force, Professor of Air Science and Tactics.

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FLORENCE EVELYN CLEWELL, B.A., Assistant Registrar.  
GEORGE OLIVER ELLE, B.S., M.S., Ph.D., Assistant Dean of Agriculture.  
WILLIAM RAY GEISERT, A.B., M.S. in Ed., Head Supervisor of Men's Dormitories and Assistant Dean of Men.  
MARTHA H. HALL, B.S., M.A., Assistant Dean of Women.  
WARREN GAMALIEL HARDING, B.A., M.Ed., Assistant Registrar.  
JAMES EDWARD PLATZ, B.A., B.S. in L.S., Assistant Librarian.  
JOE WALKER SEAY, B.B.A., Assistant Purchasing Agent.  
VIRGINIA LEE SNELLING, B.A., Assistant Auditor and Payroll Supervisor.  
JOHN GATES TAYLOR, Assistant Auditor.  
ERNEST WALLACE, B.S., M.A., Ph.D., Assistant Dean of Arts and Sciences.  
JAMES BERLYN WHITEHEAD, A.B., Assistant Dean of Student Life.

## THE GRADUATE COUNCIL\*

1954-1955

The Graduate Council is composed of twelve members, nine of whom are elected by the Graduate Faculty, and three of whom are appointed by the Dean, who is *ex officio* chairman of the Council. Members serve for a period of three years and are not eligible for immediate reelection. By a system of rotation, four new members join the Council each year, replacing four whose term of office has expired. The Graduate Council is charged with the responsibility of formulating the policies of the Graduate School and the requirements for graduate degrees. These policies are administered by the Dean.

WILLIAM BRYAN GATES, Ph.D., Professor of English and Dean of the Graduate School, Chairman.

WILLIAM HOMER CLONINGER, Ph.D., Associate Professor of Animal Husbandry. (1956)

JAMES WILLIAM DAVIS, Ph.D., Professor and Head of the Department of Government. (1955)

JOE DENNIS, Ph.D., Professor and Head of the Department of Chemistry and Chemical Engineering. (1956)

ROBERT CABANISS GOODWIN, Ph.D., Professor of Chemistry and Dean of the Division of Arts and Sciences. (1957)

HORACE C. HARTSELL, Ed.D., Associate Professor Education. (1957)

MINA WOLF LAMB, Ph.D., Professor of Foods and Nutrition. (1955)

GEORGE PEYTON MECHAM, Ph.D., Associate Professor of Education. (1957)

WILLIAM MARTIN PEARCE, Jr., Ph.D., Associate Professor and Head of the Department of History, Anthropology, and Sociology. (1956)

ROBERT LYLE ROUSE, Ph.D., Associate Professor of Economics. (1955)

HAROLD AYLESWORTH SPUHLER, S.M., Associate Professor of Electrical Engineering. (1955)

RUSSELL WILLIAM STRANDTMANN, Ph.D., Professor of Biology. (1957)

ALAN LANG STROUT, Ph.D., Professor of English. (1956)

## ALTERNATES

WILLIAM LYON DUCKER, B.S., Professor and Head of the Department of Petroleum Engineering.

EVERETT ALDEN GILLIS, Ph.D., Associate Professor of English.

RAMON WALTER KIREILIS, P.Ed.D., Professor and Head of the Department of Health and Physical Education and Recreation.

FRED WAYLAND NORWOOD, Ph.D., Associate Professor of Accounting.

CHARLES LATHAN RIGGS, Ph.D., Associate Professor of Mathematics.

\*Date in parentheses after the name indicates the year of expiration of term of office.

## OFFICE OF THE DEAN OF THE GRADUATE SCHOOL

Room 251 Administration Building

William Bryan Gates, Ph.D., Dean

Mrs. Irene F. Temple, Secretary

Miss Mary Randal, Assistant

## THE GRADUATE FACULTY

## REGULAR MEMBERS

- \*BYRON ROBERT ABERNETHY, Ph.D., Professor of Government.  
 OTTO VINCENT ADAMS, D.Sc., Professor of Civil Engineering.  
 VIVIAN JOHNSON ADAMS, M.A., Professor and Head of the Department of Home Economics Education.  
 JAMES GEORGE ALLEN, M.A., Professor of English and Dean of Student Life.  
 WILLIAM BURNSIDE ARPER, Jr., Ph.D., Assistant Professor of Geology.  
 DONALD ASHDOWN, Ph.D., Professor of Horticulture and Park Management and Director of Greenbug Control Research, Pan-Tech Field Laboratory.  
 CECIL IRVY AYERS, M.S., Associate Professor of Agronomy.  
 ALBERT BARNETT, Ph.D., Professor of Education and Psychology and Director of the Guidance Center.  
 NOLAN E. BARRICK, M.Arch., Professor and Head of the Department of Architecture and Allied Arts.  
 HOWARD W. BENISCHEK, B.S., Visiting Professor of Petroleum Engineering.  
 DAVID JACOB BESDIN, Ph.D., Associate Professor of Physics.  
 ROBERT H. BLACK, Ph.D., Professor and Head of the Department of Animal Husbandry.  
 WILLIAM ALLEN BLACKWELL, M.S. in E.E., Assistant Professor of Electrical Engineering.  
 RALPH HURD BOND, M.S., Associate Professor of Geology.  
 CHARLES T. BOURNS, M.S., Associate Professor of Agricultural Engineering.  
 LAWRENCE E. BOWLING, Ph.D., Assistant Professor of English.  
 WELDON LEROY BRADSHAW, B.S. in Arch., Professor of Architecture.  
 JOHN PAUL BRAND, Ph.D., Associate Professor of Geology.  
 BRUCE CORNELIUS BROWNING, Ed.D., Assistant Professor of Education.  
 CHARLES VICTOR BULLEN, M.S. in E.E., Professor and Head of the Department of Electrical Engineering.  
 MARTHA WASHINGTON BUTTRILL, M.A., Assistant Professor of Foods and Nutrition.  
 SANNIE CALLAN, M.A., Professor and Head of the Department of Child Development and Family Relations.  
 EARL D. CAMP, Ph.D., Associate Professor of Biology.  
 TRUMAN WILDES CAMP, Ph.D., Professor and Head of the Department of English.  
 JOHN STEPHEN CARROLL, Ph.D., Professor and Head of the Department of Education.  
 RAY LEON CHAPPELLE, M.S., Professor and Head of the Department of Agricultural Education.  
 GERALDINE CLEWELL, Ph.D., Professor of Home Economics Education.  
 WILLIAM HOMER CLONINGER, Ph.D., Associate Professor of Animal Husbandry.  
 VERNON THOMAS CLOVER, Ph.D., Professor of Economics.  
 LEWIS BRISCOE COOPER, Ph.D., Professor of Education.  
 WILLIAM MOORE CRAIG, Ph.D., Professor of Chemistry.  
 HERMAN ROBERT CROOKSHANK, Ph.D., Associate Professor of Animal Husbandry and Animal Nutritionist, Pan-Tech Field Laboratory.  
 JAMES CECIL CROSS, Ph.D., Professor and Head of the Department of Biology.  
 MARY BURWELL DABNEY, EdD., Professor and Associate Head of the Department of Health and Physical Education and Recreation.  
 RAYMOND LEON DAVIDSON, Ed.D., Assistant Professor of Education.  
 JAMES WILLIAM DAVIS, Ph.D., Professor and Head of the Department of Government.  
 JOE DENNIS, Ph.D., Professor and Head of the Department of Chemistry and Chemical Engineering.  
 JOHN CLARKSON DOWLING, Ph.D., Professor and Head of the Department of Foreign Languages.

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\* On leave of absence.

WILLIAM LYON DUCKER, B.S., Professor and Head of the Department of Petroleum Engineering.

JOSEPH S. DWYER, M.S. in I.E., Professor and Head of the Department of Industrial Engineering.

CHARLES DUDLEY EAVES, Ph.D., Professor of History.

TED ELDON EDWARDS, Ed.D., Assistant Professor of Education.

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MABEL DEANE ERWIN, M.A., Professor and Head of the Department of Clothing and Textiles.

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\*NEIL CASEY FINE, Ph.D., Professor of Animal Husbandry and Assistant Dean of Agriculture.

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STERLING HALE FULLER, Ph.D., Associate Professor of Government.

RAYMOND ERNEST GARLIN, Ph.D., Professor of Education.

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PRESTON FRAZIER GOTT, M.A., Assistant Professor of Physics.

ALAN MURRAY FINLAY GUNN, Ph.D., Professor of English.

WILLIAM EDWARD HALL, Ph.D., Associate Professor and Head of the Department of Journalism.

WOODROW FERRON HALVORSON, M.A., Assistant Professor of Speech.

THOMAS EARLE HAMILTON, Ph.D., Associate Professor of Foreign Languages.

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

CLARK HARVEY, Ph.D., Assistant Professor of Agronomy.

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EMMETT ALLEN HAZLEWOOD, Ph.D., Professor and Head of the Department of Mathematics.

GEORGE GAIL HEATHER, Ph.D., Professor of Marketing and Dean of Business Administration.

ELLIS RICHARD HEINEMAN, M.A., Professor of Mathematics.

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DYSART EDGAR HOLCOMB, Ph.D., Professor of Chemical Engineering and Dean of Engineering.

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

CHARLES ERNEST HOUSTON, M.A., Associate Professor of Electrical Engineering.

DOYLE DAVID JACKSON, Ph.D., Professor of Education.

J. W. JACKSON, M.A., Professor of Government.

WILLIAM MORLEY JENNINGS, B.S., Professor of Physical Education.

EDWARD NEWLON JONES, Ph.D., Professor of Biology and President.

SYLVAN JULIAN KAPLAN, Ph.D., Professor and Head of the Department of Psychology.

SABE McLAIN KENNEDY, JR., Ph.D., Associate Professor of Government.

OSCAR ARVLE KINCHEN, Ph.D., Professor of History.

RAMON WALTER KIREILIS, Ph.D., Professor and Head of the Department of Health and Physical Education and Recreation.

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\*On leave of absence.

- FLORIAN ARTHUR KLEINSCHMIDT, M.Arch., Professor of Architecture and Allied Arts.
- JAMES E. KUNTZ, Ph.D., Associate Professor of Psychology.
- MINA WOLF LAMB, Ph.D., Associate Professor of Foods and Nutrition.
- MILTON FREDERIC LANDWER, Ph.D., Professor of Zoology.
- PAUL MERVILLE LARSON, Ph.D., Professor and Head of the Department of Speech.
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- ROBERT IVAN LOCKARD, M.S., Professor of Architecture.
- ROY RAYMOND MALE, JR., Ph.D., Associate Professor of English.
- RICHARD B. MATTOX, Ph.D., Associate Professor of Geology.
- ELMER LEON MCBRIDE, M.S., Professor and Head of the Department of Agricultural Economics.
- \*JOSEPH THOMAS McCULLEN, JR., Ph.D., Associate Professor of English.
- KENNETH S. McCUTCHAN, Ph.D., Assistant Professor of Psychology.
- SETH SHEPARD McKAY, Ph.D., Professor of History.
- \*FITZHUGH LEE McREE, M.S. in C.E., Professor of Civil Engineering.
- GEORGE PEYTON MECHAM, Ph.D., Associate Professor of Education.
- WILLIAM HOWARD MELCHING, Ph.D., Assistant Professor of Psychology.
- WILLIAM WALTER MERRYMON, Ph.D., Associate Professor of Physics.
- JONNIE McCRERY MICHIE, M.A., Professor and Head of the Department of Foods and Nutrition.
- FREEDIS LLOYD MIZE, Ph.D., Professor and Head of the Department of Management.
- RAY CLIFFORD MOWERY, M.S., Professor of Animal Husbandry.
- JAMES HAROLD MURDOUGH, M.S.E., Professor and Head of the Department of Civil Engineering.
- DORIS NESBITT, M.S., Assistant Professor of Home Economics Education.
- ROBERT LEE NEWELL, M.S. in M.E., Associate Professor of Mechanical Engineering.
- FRED WAYLAND NORWOOD, Ph.D., Associate Professor of Accounting and Finance.
- AARON GUSTAF OBERG, Ph.D., Professor of Chemistry and Chemical Engineering.
- L. E. PARSONS, B.S., Professor of Textile Engineering.
- WILLIAM MARTIN PEARCE, JR., Ph.D., Associate Professor and Head of the Department of History, Anthropology, and Sociology.
- ANNAH JOE PENDLETON, M.A., Professor of Speech.
- JOHN MOORE PENICK, JR., Ph.D., Professor of Industrial Engineering.
- LOUIS JOHN POWERS, M.S. in M.E., Professor and Head of the Department of Mechanical Engineering.
- CHARLES BLAISE QUALIA, Ph.D., Professor of Foreign Languages.
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- JESSE Q. SEALEY, Ph.D., Associate Professor of Biology.
- RAYMOND GILBERT SIDWELL, Ph.D., Professor of Geology.
- WILLIAM MACKEY SLAGLE, M.A., Professor of Chemistry.
- FRED WINCHELL SPARKS, Ph.D., Professor of Mathematics.

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\*On leave of absence.

HAROLD AYLESWORTH SPUHLER, S.M., Associate professor Electrical Engineering.  
 WENZEL LOUIS STANGEL, M.S., Professor of Animal Husbandry and Dean of Agriculture.  
 OSCAR ALLEN ST. CLAIR, B.S. in E.E., Professor of Industrial Engineering.  
 PER GUSTAF STENSLAND, Ph.D., Professor of Education and Head of the Adult Education Program.  
 RUSSELL WILLIAM STRANDTMANN, Ph.D., Professor of Biology.  
 ALFRED BELL STREHLI, M.A., Associate rofessor of Foreign Languages.  
 ALAN LANG STROUT, Ph.D., Professor of English.  
 RICHARD ARTHUR STUDHALTER, Ph.D., Professor of Botany.  
 DONALD J. TATE, Ed.D., Professor and Head of the Department of Business Education.  
 HASKELL GRANT TAYLOR, M.A., Professor of Accounting and Finance.  
 ISABEL CECILIA THOMPSON, Ph.D., Associate Professor of Speech.  
 WILLA VAUGHN TINSLEY, Ph.D., Professor and Head of the Department of Home Management and Dean of Home Economics.  
 AGNES ANN TRUE, Ph.D., Associate Professor of Psychology.  
 KIRK B. TURNER, M.S., Assistant Professor of Animal Husbandry.  
 RALPH SYLVESTER UNDERWOOD, Ph.D., Professor of Mathematics.  
 ELO JOE URBANOVSKY, B.S., Professor and Head of the Department of Horticulture and Park Management.  
 DODD VERNON, M.A., Assistant Professor of Journalism.  
 FRANKLIN ALTON WADE, Ph.D., Professor and Head of the Department of Geology.  
 ERNEST WALLACE, Ph.D., Professor of History and Assistant Dean of Arts and Sciences.  
 GEORGE FREDERICK WARN, M.S., Associate Professor of Geology.  
 WESLEY WILLIAM WENDLANDT, Ph.D., Assistant Professor of Chemistry and Chemical Engineering.  
 GEORGE ARTHUR WHETSTONE, Ph.D., Associate Professor of Civil Engineering.  
 THOMAS FERDINAND WIESEN, M.B.A., Professor and Head of the Department of Economics.  
 DEWEY O. WILEY, D.Mus., Professor of Music and Director of Bands.  
 RANDOLPH CARROLL WILHOIT, Ph.D., Assistant Professor of Chemistry and Chemical Engineering.  
 IRA L. WILLIAMS, M.S., Professor and Head of the Department of Agricultural Engineering.  
 JUDDIE JOHNSON WILLINGHAM, Ph.D., Professor and Head of the Department of Dairy Industry.  
 WARREN WATSON YOCUM, Ph.D., Professor of Horticulture.  
 ARTHUR WESLEY YOUNG, Ph.D., Professor and Head of the Department of Agronomy.

### ASSOCIATE MEMBERS

THEODOR WALTER ALEXANDER, M.S., Assistant Professor of Foreign Languages.  
 LOUISE CRAWFORD ALLEN, M.A., Assistant Professor of Journalism.  
 HUGH ALLEN ANDERSON, M.A., Associate Professor of Economics.  
 JACK OTHO ASHWORTH, M.S., Instructor in Agricultural Economics.  
 ROY BYRN BASS, A.B., LL.B., Part-time Instructor in Finance.  
 ETHEL JANE BEITLER, M.Ed., Assistant Professor of Applied Arts.  
 JAMES WAYLAND BENNETT, M.S., Assistant Professor of Agricultural Economics.  
 FRED WILLIAM BOREN, M.S., Assistant Professor of Animal Husbandry.  
 EDNA WALKER BUSTER, M.A., Associate Professor of Clothing and Textiles.  
 HARRISON JAMES CAMERON, JR., Ed.D., Assistant Professor of Business Education and Secretarial Administration.  
 OTIS HERBERT COLVIN, JR., M.Mus., Instructor in Music.  
 CHARLES GARFIELD DECKER, M.S. in E., Associate Professor of Civil Engineering.  
 PHILIP ELDON DENNIS, M.A., Associate Professor of Geology.  
 LOLA MARIE DREW, M.A., Associate Professor of Home Management.  
 RICHARD DURAN, M.S., Assistant Professor of Architecture.  
 LUTA PELHAM EAVES, M.B.A., Assistant Professor of Accounting and Finance.  
 RAYMOND PRUITT ELLIOTT, M.S., Associate Professor of Music.



JOHN ELZIE HARDING, M.A., Assistant Professor of Management.  
LEVI MARLIN HARGRAVE, M.S., Associate Professor of Agricultural Education.  
JACK ALLEN HILL, M.B.A., Assistant Professor of Management.  
JEFFERSON MELVIN HOOPER, M.A., Associate Professor of Finance.  
AMOS H. HOWARD, B.A., LL.B., Part-time Instructor in Finance.  
LILA ALLRED KINCHEN, M.S., Assistant Professor of Clothing and Textiles.  
HELEN ALMA LINDELL, M.A., Assistant Professor of Speech.  
JONATHAN WATTAM LINDSEY, M.A., Instructor in Mathematics.  
SAMUEL NOYES LITTLE, Ph.D., Assistant Professor of Agronomy.  
TROY ALLEN LOCKARD, M.A., Assistant Professor of Applied Arts.  
JOHN E. MCCAULEY, M.S., Instructor in Agronomy.  
DARRELL KEITH MCCARTY, M.Mus., Instructor in Music.  
RAYMOND DeELMONT MACK, M.A., Instructor in Government.  
DONALD CHARLES BURR MARSH, Ph.D., Assistant Professor of Mathematics.  
ROBERT E. MARTIN, M.S. in M.E., Assistant Professor of Mechanical Engineering.  
ROBERT LOUIS MASON, M.S., in M.E., Associate Professor of Mechanical Engineering.  
LIDA BELLE MAY, M.A., Assistant Professor of Mathematics.  
ALFRED OTTO MONASCH, Diplom-Ingenieur, Assistant Professor of Mechanical Engineering.  
DONALD VAN DALE MURPHY, M.A., Associate Professor of English.  
KLINE ALLEN NALL, Ph.D., Assistant Professor of English.  
WILLIAM EUGENE ODEN, M.A., Instructor in Government.  
ROBERT MARSHALL PARKER, M.A., Assistant Professor of Mathematics.  
RODERICK PARKINSON, M.Ed., Instructor in Architecture.  
GEORGE REX PHILBRICK, M.Ed., Associate Professor of Health and Physical Education and Recreation.  
SUE AVA RAINNEY, M.A., Associate Professor of Health and Physical Education and Recreation.  
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A. B. SEGARS, M.B.A., Part-time Instructor in Accounting.  
RONALD SCHULZ, M.A., Assistant Professor of Speech.  
MABEL BROOKS SMITH, M.A., Instructor in Sociology.  
NELDA SNOW, M.B.A., Instructor in Business Education and Secretarial Administration.  
HELEN JANET STAFFORD, M.A., Instructor in Biology.  
TOM BASIL STENIS, M.S. in E.E., Assistant Professor of Electrical Engineering.  
MARGRET R. STUART, M.S., Assistant Professor of Chemistry.  
GUSSIE LEE TEAGUE, M.A., Associate Professor of English.  
HUGH SPENCER THOMAS, M.A., Part-time Instructor in Accounting.  
RICHARD KRAUSE TRACY, B.F.A., Instructor in Architecture.  
SCOTTI MAE TUCKER, Ph.D., Assistant Professor of Foreign Languages.  
MARY JEAN van APPLIEDORN, M.Mus., Instructor in Music.  
OLIVE BOONE WHEELER, M.A., Part-time Instructor in Education.  
HAROLD NORTON WHITE, M.A., Assistant Professor of English.  
HORACE EUGENE WOODWARD, M.A., Assistant Professor of Mathematics.

## GEOGRAPHICAL AND HISTORICAL STATEMENT

Texas Technological College is a state-supported coeducational institution comprising six major schools or divisions: Agriculture, Arts and Sciences, Business Administration, Engineering, Home Economics, and the Graduate School. Lubbock, its seat, is a city of about 108,000 inhabitants. It is situated in the Plains area of West Texas at an altitude of more than three thousand feet. Dry, crisp air and sunny days throughout practically the entire year provide a healthful, invigorating climate. Three air lines, two railways, and a network of bus routes make the city easily accessible from all directions.

Graduate work has been offered at Texas Technological College since 1927. In 1935 this work was set apart as the Division of Graduate Studies, and since 1937 the Division has operated as a unit under its own Dean and Council. In 1954, by action of the Board of Directors, the name was changed to The Graduate School.

## PURPOSE OF THE GRADUATE SCHOOL AND THE DEGREES OFFERED

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

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

### I

Master of Arts      Master of Science      Doctor of Philosophy

### II

Master of Business Administration      Master of Education  
Master of Science in Agriculture  
Master of Science in Chemical Engineering  
and Electrical Engineering  
Master of Science in Home Economics  
Doctor of Education

## GENERAL REGULATIONS

### RESPONSIBILITY OF THE STUDENT

For graduate students, the publication of information in the Bulletin is considered sufficient notification concerning all of the regulations and requirements. Every graduate student should therefore thoroughly familiarize himself with the material in this Bulletin. Failure to observe the regulations may lead to complications for which the Graduate School cannot assume responsibility. The General Regulations apply to all degree plans unless exceptions are specifically noted.

### ADMISSION REQUIREMENTS

General Admission to the Graduate School. Applicants with a Bachelor's degree from a recognized college or university may be admitted as unclassified graduate students on the basis of a complete transcript of their previous work. Well in advance of registration, the prospective student (including students who hold degrees from Texas Technological College) should make formal application for admission to the Graduate School. This application is to be made at the Office of the Registrar and Director of Admissions, not at the Dean's office. It should be noted that mere permission to enroll for courses, either in residence or by extension, does not carry with it official admission to the Graduate School, even as an unclassified graduate student.

Admission as Applicants for Graduate Degrees. After September 1, 1954, every one (including graduates of Texas Technological College) who seeks admission to the Graduate School with the intention of working toward a Master's or Doctor's degree will be required to take the Aptitude Test of the Graduate Record Examinations either prior to registration or at the first examination date thereafter.

Students enrolling for courses without a degree objective are not required to take the Aptitude Test, but if they later decide to work toward a degree, they will become subject to the usual requirements with respect to it, and not more than twelve hours' credit will be allowed for work completed prior to the taking of the test.

No special review is necessary for the Aptitude Test. Students who have taken it elsewhere are not required to repeat it; they should request the Educational Testing Service (20 Nassau Street, Princeton, New Jersey, or 4641 Hollywood Boulevard, Los Angeles 27, California) to send their reports to the Dean of the Graduate School of Texas Technological College. Those who wish to take this examination at another testing center may make arrangements directly with the Educational Testing Service and request that their score be sent to this college.

Those who wish to take the Aptitude Test at Texas Technological College must make written application to the Dean at least six weeks in advance of the particular test date selected. The application must be

accompanied by the \$4.00 examination fee. The Aptitude Test is regularly given twice in each long session (in October and in March) and once in the summer session (about the middle of the summer). Exact dates may be ascertained by writing the Dean.

To be admitted to the Graduate School as an applicant for a graduate degree, a student must have an Aptitude Test score which is satisfactory to the Graduate Council. Those failing to reach the required standard will remain as unclassified graduate students without a degree objective. However, if they wish to be considered further for admission to degree work, they will take the Advanced Test in their major subject. No special review is necessary for the Advanced Test, and those who need to take it should do so as soon as possible after the Aptitude Test. The dates for the Advanced Test are the same as those for the Aptitude Test. The fee is \$4.00.

Upon receipt of the scores on the Advanced Test, the Graduate Council will reconsider the record of those taking this test, and they will be granted admission as applicants for a degree, or they will be permanently designated unclassified graduate students. As such they may continue to take graduate courses, but their work will not apply toward a degree. Further details may be obtained from the Dean.

### ELIGIBILITY FOR ENROLLMENT

Members of the Faculty and Staff. Full-time members of the faculty and staff may not enroll for courses without special permission from the President of the College.

No member of the faculty with a rank above instructor is eligible to receive a graduate degree from Texas Technological College.

Undergraduate Students Taking Work for Graduate Credit. An undergraduate student who is within nine semester hours of graduation and who has at least a "B" average in his major and minor subjects may enroll for courses carrying graduate credit, subject to the approval of the Dean of the undergraduate division and the Dean of the Graduate School.

This approval must be obtained on special forms at the time of registration. No course taken without this approval may ever be counted for graduate credit. Such a student may not register for more than fifteen semester hours, including graduate and undergraduate work, and he is expected to complete his undergraduate requirements within the academic year in which he first enrolls for graduate courses.

An undergraduate may not receive graduate credit for more than twelve semester hours' work completed before he has been admitted to the Graduate School with at least the standing of an unclassified graduate student.

Undergraduate Students Taking Graduate Courses for Undergraduate Credit. In exceptional circumstances, a senior may, upon the

written recommendation of the department concerned, enroll for some of the courses listed as "For Graduates," but each case will be considered individually.

### PRELIMINARY OUTLINE OF WORK FOR THE MASTER'S DEGREE

Before registering for any graduate work, or at the time of his first registration, the student should secure at the Graduate Office the forms for the preliminary outline of his program, have them filled out by official representatives of his major and minor departments, and leave them at the Graduate Office to be checked. An approved copy of this preliminary outline will be sent to the student, and he is expected to keep it and use it as the basis of future registrations until he is ready to file the formal application for admission to candidacy for the Master's degree. A transcript of previous college work is necessary for the preparation of the preliminary outline. Consequently, the student should bring a transcript with him or he should apply for admission to the Graduate School early enough for the Registrar and Dean to have secured transcripts from the institutions he attended. This usually requires several weeks.

### PRELIMINARY STAGES OF WORK FOR THE DOCTOR'S DEGREE

All details connected with doctoral study are discussed under the requirements for the Doctor's degree.

### REGISTRATION

A few days before registration (see the Calendar at the front of this Bulletin), the student should apply at the Office of the Registrar for instructions for registration. At the time of enrollment, the student should have his complete schedule made out and approved by a representative of his major department and have each of the individual courses approved by the department which offers it. When all of these approvals have been secured, the student will take his card to the Graduate Office for the Dean's approval. The registration cards of all graduate students and of all students enrolling for any graduate credit must be approved by the Dean of the Graduate School before the payment of fees.

### GRADUATE ADVISERS

At the beginning of his work, the applicant for a graduate degree will be advised by the head of his major and minor departments or by professors designated for this counseling. If, however, the student is an applicant for a Master's degree requiring a thesis, an advisory committee of three members (two from the major department and one from the minor department) will be appointed by the Dean on the recommendation of the departments concerned.

The functions of the advisory committee for applicants for the doctorate are discussed under the requirements for the Doctor's degree.

### PREREQUISITES IN THE MAJOR AND MINOR SUBJECTS

For full acceptance by the major department, the student is expected to have completed an undergraduate major in that department—thirty to thirty-six hours of work. He must have completed at least twelve semester hours of junior and senior work in it, together with the prerequisites for such courses, and, in addition, he must have had sufficient junior and senior work in closely allied subjects to make the total approximately equivalent to an undergraduate major in Texas Technological College.

Full acceptance by the minor department requires an undergraduate minor in that department or, normally, at least twelve semester hours of work in it, six of which must be in junior and senior courses.

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

### REQUIREMENTS IN THE MAJOR AND MINOR SUBJECTS

In general, candidates for the Master's degree will complete from eighteen to twenty-four semester hours (including the thesis) in the major subject and the remainder of the course work in one or two minor subjects. Fewer than six hours will not be considered a "minor." At least six hours must be in a department other than the major.

In the programs for certain of the professional degrees (the Master's degree in Agriculture, Business Administration, and Home Economics), these requirements may be somewhat modified. A student may have a minor program embodying a variety of courses within the broad area of professional specialization. Likewise, in the programs leading to the degree of Master of Education, there is considerable latitude in the minor subject. Special requirements for the various Masters' degrees will be found on page 27 of this Bulletin.

Requirements in majors and minors for the doctoral program are found in the general material pertaining to the Doctor's degree.

### RANK OF COURSES

Any course listed in this Bulletin may be taken for graduate credit, but in those numbered below "500" the graduate student must do additional work beyond that required of undergraduates. Courses numbered in the "500" series and above are for graduate students. At least nine semester hours of the work credited toward the Master's degree (exclusive of the thesis) must be in "500" courses or others designed for graduates. In the 36-hour, non-thesis program, at least

half of the work must be in courses designed for graduate students. It is expected that most of the courses credited toward the doctorate will be in the group numbered "500" and above.

## TYPES OF COURSES AND RESIDENCE REQUIREMENTS

The basic philosophy underlying the practically universal establishment of minimum residence requirements for graduate degrees is that the true spirit of graduate study is found only in close association among groups of scholars working in related fields in proximity to libraries and laboratories. This spirit is not likely to be achieved by students who attend classes only in the evenings or at centers remote from the college campus. Texas Technological College recognizes the worth of this type of study but acknowledges also its obligation to widely accepted graduate standards, as exemplified in the following material, which, though not materially changing the regulations which have been in force here, specifically interprets the policy of the College. These interpretations apply to all students beginning their work for a Master's or Doctor's degree at Texas Technological College after June 1, 1953.

### TYPES OF COURSES

I. Residence Courses: Two types of Residence Courses are recognized: (a) Classes meeting for an entire term or semester on the college campus at a definitely scheduled class period and established primarily for full-time or practically full-time advanced and graduate students. Only this type of course may be used in satisfying the minimum residence requirements as shown below. (b) Classes meeting on the campus in the evenings or on Saturdays and established primarily for part-time students. Courses of this type may be used to satisfy any of the requirements except that of the specified minimum that must be in Residence Courses of the type defined in I (a).

II. Extension Courses: An Extension Course is defined as a class which meets off the college campus and which the instructor visits at regular intervals for lectures, discussions, reports, and examinations, but which requires little or no library or laboratory facilities.

III. Supplementary Courses: The term *Supplementary Courses* covers any type of work not properly coming under the head of *Residence Courses* or *Extension Courses*, particularly "Individual Study Courses" (including theses and dissertations) and "Field Courses," that is, classes meeting at an off-campus site selected because of special facilities, such as a foreign country, a location for field work in geology, archeology, etc., a public school system used as the laboratory for an education class, and so on.

*Correspondence courses, given under the direction of the Division of Extension, are never credited toward a Graduate Degree. However, undergraduate leveling work may sometimes be done by correspondence.*

*No course of any type may count toward a Graduate Degree unless it forms part of a logical plan acceptable to the major and minor departments and unless registration for it was approved by the Dean of the Graduate School.*

#### Minimum Residence Requirements

##### *For the Master's Degree*

An applicant for the Master's degree is required to complete as a residence student at Texas Technological College at least eighteen semester hours of *Residence Courses* as defined under I (a) above. This requirement may be satisfied in long sessions or summer sessions. The remainder of the thirty or thirty-six semester hours required for the Master's degree may be completed in the same type of courses or in the other types, subject to the following limitations:

Not more than six semester hours of extension work or work completed at another graduate school or more than nine hours of any combination of the two may be credited on a Master's degree program.

Not more than twelve semester hours of supplementary courses may be credited on a Master's program which requires thirty hours and not more than eighteen on a program which requires thirty-six hours.

Moreover, in any combination of extension work, transferred credit, and supplementary courses, not more than twelve hours of the combination may be credited on a program which requires thirty hours and not more than eighteen on a program which requires thirty-six hours.

##### *For the Doctor's Degree*

An applicant for the degree of Doctor of Philosophy is required to complete as a residence student at Texas Technological College a minimum of one year of residence course work beyond the Master's degree, or beyond the course work equivalent to this degree if he chooses to proceed to the doctorate without stopping for the Master's degree.

This requirement can be satisfied only by the successful completion of from twelve to fifteen semester hours of *Residence Courses* as defined under I (a) above, in each of the two consecutive semesters of a long session. Holders of fellowships and others carrying reduced loads or lacking some of the prerequisites will usually have to spend two years in satisfying this minimum residence requirement.

An applicant for the degree of Doctor of Education may satisfy the minimum requirement of a year of residence by the method indicated in the preceding paragraph or by the successful completion in summer sessions of at least thirty-six semester hours of *Residence Courses* as defined under I (a) above.

It must be emphasized that the foregoing statements concerning the doctorate represent only the minimum residence requirements. Appli-



cants for either doctorate will be expected to spend at least the equivalent of three years in graduate study beyond the Bachelor's degree.

## GRADES

The grade average of all work credited toward a graduate degree must be at least "B" in the major and in the minor considered separately. In degree programs not having a regular graduate minor, all work taken outside the major subject is treated as "a minor" in determining the grade average. No grade less than "C" will be counted in a graduate program.

The grade of "Pr" may be given by a professor when a student's work in a thesis or other research course is satisfactorily in progress at the end of a term or semester. This grade must be replaced by a regular letter grade before final credit can be awarded for the work. "Pr" is the grade to be given on the first half of a thesis or dissertation (631 or 831), and no final grade is to be assigned on a thesis or dissertation (631-2 or 831-2) until the completed work has been approved by the advisory committee and accepted by the Dean of the Graduate School.

The grade of "I" may be given when a student's work in an ordinary course shows a major deficiency in quantity though not in quality, provided the deficiency was occasioned by causes beyond the student's control. When the grade of "I" stands for one year without action, it may become "F."

## ADDING OR DROPPING COURSES AND WITHDRAWING FROM COLLEGE

No course may be added or dropped without the approval of the Dean of the Graduate School. Students who find it necessary to withdraw from college must apply at the Graduate Office for the official withdrawal blanks. Students must keep in mind that notifying the instructor of their intention to withdraw is not sufficient. They should remember also that if they are enrolled for only one course and wish to drop it, the ordinary drop slip is not sufficient; they will have to go through the process of withdrawing from college. Students who simply quit a course will receive "F" on it.

## CREDIT BY TRANSFER AND EXTENSION

Not more than six semester hours of extension work or work completed at another graduate school or more than nine hours of any combination of the two may be credited on a Master's degree program.

Regulations concerning credit for the Doctor's degree for work completed elsewhere are given under the special requirements for the doctorate.

### TIME LIMIT ON WORK FOR THE MASTER'S DEGREE

All work credited toward the Master's degree must be completed within a period of six calendar years, but for veterans, the period is extended by the length of time they were in military service after beginning their graduate work.

### STUDENT LOAD

Graduate students devoting their full time to their studies may enroll for a maximum of fifteen hours of work in a semester or six hours in a six-weeks summer term if any portion of the work is to count for graduate credit.

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

For teachers and others employed in full-time duties on or off the campus, the maximum enrollment is for three hours in any term or semester if they wish graduate credit for any portion of the work completed in that term or semester.

Any correspondence courses which may be carried to satisfy undergraduate prerequisites and any extension work for which the student is enrolled, whether for graduate credit or not, will be counted as a part of the student's total load.

An exception may sometimes be made in the case of courses to satisfy the State law in Government or of courses in a language to satisfy the requirements in foreign languages.

### REQUIREMENTS IN FOREIGN LANGUAGES

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

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

Applicants for the degree of Doctor of Philosophy are required to pass a reading examination in at least two foreign languages, usually French and German. Applicants for the degree of Doctor of Education may be required to pass a reading examination in one foreign language if their research necessitates such competency. Further details will be found under the special requirements for the Doctor's degree.

## STATE OF TEXAS REQUIREMENT IN GOVERNMENT

By an act of the Texas legislature, no student in a State-supported college or university may be certified for graduation without the completion of "at least six (6) hours for credit in the governments of the State of Texas or of the United States of America, or the equivalent in both."

## RESTRICTION ON USE OF THESES AND DISSERTATIONS

Unpublished theses and dissertations submitted to the Graduate Faculty of Texas Technological College in partial fulfillment of the requirements for graduate degrees and deposited in the College Library are, as a rule, open to the public for reference purposes. However, extended quotations or summaries may be published only with the permission of the author and the Dean of the Graduate School.

## ADMISSION TO CANDIDACY FOR A GRADUATE DEGREE

Admission to the Graduate School and registration for courses do not automatically admit a student to candidacy for a graduate degree. The term *candidacy* is a somewhat technical one and represents a distinct stage in a graduate program. A student is admitted to candidacy for a graduate degree only after he has successfully completed certain earlier stages of his work.

### CANDIDACY FOR THE DOCTOR'S DEGREE

Admission to candidacy for the Doctor's degree is granted only by the Graduate Council and solely on the recommendation of the applicant's advisory committee, not on an application by the student. Further details concerning admission to candidacy for the doctorate are given in the general regulations governing the Doctor's degree.

### CANDIDACY FOR THE MASTER'S DEGREE

Unlike the applicant for the doctorate, the applicant for the Master's degree must file a formal application for admission to candidacy — on blanks to be secured at the Graduate Office.

This application (sometimes called the final degree plan) is to be made by the student when he has completed twelve hours of graduate work. It must be filed at least twelve weeks before a long-session commencement or at least nine weeks before a summer-session commencement.

Before this application can be approved by the Dean and the applicant officially admitted to candidacy for the Master's degree, the student must have satisfied the following requirements:

- (1) He must have completed at least twelve hours of work in residence;
- (2) He must have at least a "B" average on all graduate work

which he has completed up to the date of the application and which is to form a part of his program;

(3) He must have satisfied the foreign language requirement if his program includes a language;

(4) The general field of his thesis must have been approved if his program requires a thesis;

(5) His graduate work up to this point must be acceptable in quality and quantity to his major and minor departments as attested by their approval of his application;

(6) His entire program must conform to the general regulations of the Graduate School and the requirements for his particular degree;

(7) If he has not been admitted to candidacy before September 1, 1955, he must have taken the Aptitude Test of the Graduate Record Examinations and have made a score which is satisfactory to the Graduate Council.

Each student who files an application for admission to candidacy for the Master's degree will receive from the Graduate Office an approved copy of the application or a letter from the Dean explaining why approval has been withheld.

The student is expected to preserve his approved copy of the application and have it with him at all subsequent registrations or at conferences with his professors or the Dean. As he completes a course, he should check it off the program, and thus he can know at any stage of his work where he stands.

After an application for admission to candidacy has been approved by the departments and the Dean, substitutions of courses can be made only if the student files at the Graduate Office a written statement from the particular department certifying that such substitutions have been approved. This statement is not necessary for courses comprising the composite minor for the Master of Education.

### STATEMENT OF INTENTION TO GRADUATE

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

This list is made up solely on the basis of the receipt of the "Statement of Intention to Graduate." Names are not automatically carried forward from one graduation to the next. Candidates who fail to graduate at the time designated in the statement of intention are required to file a supplementary notice for any subsequent graduation.

## PERSONAL DATA FILE

One of the requirements for graduation (graduates as well as undergraduates) is the filing of complete personal data, with photographs, at the Placement Office. This requirement must be satisfied by graduate students whether they expect to use the services of the Placement Office in securing a position or not. Each college calendar and list of deadlines for commencement indicate the proper time for filing this record.

## FINAL EXAMINATION FOR THE MASTER'S DEGREE

Before being recommended for graduation, every candidate for the Master's degree is required to pass a final examination in his major subject and in his minor subject (s) unless he has a composite minor for the Master of Education, in which case the examinations in the courses comprising the composite minor will suffice.

The final examination for the Master's degree is normally given once in each long session and once each summer; it may be oral or written or both, at the discretion of the department concerned. A student who fails to pass this examination may repeat it but not until after an interval of at least four months.

It is the student's responsibility to confer with the chairman of his advisory committee or the head of his major and minor departments regarding the time and place of the examination. No reminders will be sent him by the Graduate Office or the departments.

The final examination for the Master's degree is not to be confused with the Graduate Record Examinations, which are administered by the Graduate School, not by the individual departments.

## THESIS REQUIREMENTS FOR THE MASTER'S DEGREE

A thesis is required for all Masters' degrees except the Master of Education, in the program for which two plans are available: thirty hours with a thesis or thirty-six hours without a thesis.

Research for the thesis is supervised by a committee appointed by the Dean on the recommendation of the head of the student's major and minor departments. Primary responsibility for the direction of the thesis rests upon the chairman of this committee, but he and the student should consult frequently with the other members of the committee. All members share equally in the acceptance or rejection of the finished thesis. This committee is charged also with the responsibility of conducting the applicant's final examination for the Master's degree.

Available at the Graduate Office is a mimeographed pamphlet giving complete instructions for preparing and submitting a thesis or dissertation. Each student who plans to write a thesis or dissertation is expected to secure a copy of these instructions and to follow them carefully at all stages of the work.

An "official first draft," prepared and approved as directed in the mimeographed instructions, is to be in the hands of the Dean of the Graduate School at least twenty days before the commencement at which the candidate expects to receive his degree. This means that the manuscript must be in the hands of the chairman of the advisory committee at least thirty days before commencement.

The "final version" of the thesis, prepared and approved as directed in the mimeographed instructions, must be in the hands of the Dean at least four days before the commencement at which the candidate expects to receive his degree. Three copies of the final version are required by the college; the ribbon copy and the first carbon copy are for the Library; the second carbon copy is for the student's major department.

At the time the copies of the final version are submitted to the Dean, the candidate will pay the fee (\$2.00 per copy) for the binding of the manuscripts. No candidate will be certified for graduation until all of these requirements (as well as others applicable to him) have been satisfied.

Information concerning the Doctor's dissertation is found in the general material dealing with the Ph.D. and the Ed.D. degrees.

## SPECIAL REQUIREMENTS FOR THE VARIOUS DEGREES

Students whose undergraduate preparation is not adequate for their particular graduate program will be required to complete the necessary undergraduate leveling work without graduate credit.

### MASTER OF ARTS AND MASTER OF SCIENCE

*Prerequisite:* A Bachelor's degree with sufficient undergraduate preparation in the major and minor subjects. See page 18 of this Bulletin for the general statement concerning prerequisites in the major and minor.

*Required:* A minimum of thirty semester hours of work, from eighteen to twenty-four of which, including the thesis (631-2), will be in the major subject. The student may have one minor or two, but at least six semester hours must be completed in some subject which lies outside the major department and for which the student has the prerequisites. A reading knowledge of a foreign language is required. See page 22 of this Bulletin.

As a general policy, the Master of Arts degree will be conferred on candidates who successfully complete majors in Economics, Education, English, Government, History, Psychology, Sociology, Spanish, or Speech; and the Master of Science degree will be conferred on those who complete majors in Biology, Chemistry, Geology, Mathematics, or Physics.

### MASTER OF BUSINESS ADMINISTRATION MASTER OF SCIENCE IN AGRICULTURE MASTER OF SCIENCE IN CHEMICAL ENGINEERING MASTER OF SCIENCE IN ELECTRICAL ENGINEERING MASTER OF SCIENCE IN HOME ECONOMICS

*Prerequisite:* A Bachelor's degree with a major in the appropriate field or its equivalent.

*Required:* A minimum of thirty semester hours of work, including the thesis (631-2).

The requirements for these professional degrees differ slightly from those for the Master of Arts and Master of Science. First, the requirements with respect to the minor are not quite so rigid; yet, in general, not all of the work for the degree should be in the same department. Second, not all of these programs include the requirement of a foreign language; an applicant for one of these degrees should consult the head of his major department about this requirement at the beginning of his work. Since the programs for these degrees may embody courses from several separate departments, the preliminary outlines and applications for admission to candidacy should ordinarily bear the approval of the "Graduate Adviser" for the division as well as that of the department heads.

## MASTER OF EDUCATION

**Prerequisite:** A Bachelor's degree with a major in the appropriate field or its equivalent.

For the professional degree of Master of Education, the student may choose either of the two plans outlined below, with a major in Education, Agricultural Education, Business Education, Home Economics Education, Music Education, or Physical Education. A combination involving a major in one field of education and a minor in another is not permitted.

**Plan I—With Thesis—Required:** A minimum of thirty semester hours of graduate work, eighteen of which, including the thesis (631-2), are to be in the major subject, and twelve of which are to be outside any field of education. These twelve hours may be completed as conventional graduate minors (See page 18) or as a composite minor from the list of courses shown below.

The courses in Group A of the Composite Minor are open to all majors for the degree of Master of Education and occasionally to other students; the courses in Group B are restricted to graduate students working in elementary education.

**Plan II—Without Thesis—Required:** A minimum of thirty-six semester hours of graduate work, eighteen of which are normally to be in the major subject. The remaining work may be completed as conventional graduate minors (See page 18) outside any field of education or as a composite minor from the list of courses shown below. Sometimes, a combination of conventional minor and composite minor may be permitted.

In the normal program with eighteen hours in the major subject, the student may take, as part of his minor, as much as six hours' work in any courses which carry graduate credit, which lie outside his major subject, and for which he has the prerequisites.

The courses in Group A of the Composite Minor are open to all majors for the degree of Master of Education and occasionally to other students; the courses in Group B are restricted to graduate students working in elementary education.

### LIST OF COURSES COMPRISING THE COMPOSITE MINOR FOR THE DEGREE OF MASTER OF EDUCATION

#### GROUP A

#### *Open to All Applicants for the Degree of Master of Education*

Allied Arts 4351. Modern World Art.  
 Anthropology 4351. The Origin of Social Customs and Institutions.  
 English 4351. Appreciation of the Literature of Western Civilization.  
 Government 4351. Political Ideologies and Issues in the Modern World.  
 History 4351. Patterns of World History.  
 Music 4351. Music in General Culture.  
 Philosophy 4351. Structure and Dynamics of Philosophical Thought.  
 Speech 4351. History of Speech and the Theater.



## GROUP B

*Open Only to Graduate Students in Elementary Education*

Allied Arts 4335. Art in Elementary Education.

Applied Arts 4335. Theory and Practice of Art for Elementary Teachers.

Clothing and Textiles 4335. Textile Trends and Resources for Elementary Teachers.

Economics 4335. Human Geography.

English 4335. Principles of Language.

Foods and Nutrition 4335. Nutrition Trends and Resources for Elementary Teachers.

History 4335. History Appreciation for Elementary Teachers.

Music 4335. Music for Children.

Spanish 4335. Spanish in the Elementary School.

(As a part of the Composite Minor or for credit in Education, no formal prerequisites in Spanish are necessary for this course. A student who wishes to count it as part of a major or minor in Spanish must have completed Spanish 331 and 332 or their equivalent.)

Speech 4335. Basic Speech for Elementary Teachers.

With the exception of Spanish 4335, the courses carrying the number 4335 do not count toward a major or minor in the particular field.

## DOCTOR OF EDUCATION AND DOCTOR OF PHILOSOPHY

The degrees of Doctor of Education and Doctor of Philosophy are awarded in recognition of superior attainments in scholarship and independent thinking, not for mere routine fulfillment of requirements. Only students with exceptional records should undertake work for the doctorate.

Major work leading to the degree of Doctor of Philosophy is offered in American Civilization, Chemistry, Education, English, History, and Psychology. The degree of Doctor of Education provides a major in Education with supplementary work in other subjects.

## ADMISSION TO THE DOCTORAL PROGRAM

The general requirement for admission to the Graduate School as an unclassified graduate student is the possession of the Bachelor's degree from a recognized college or university. For doctoral work, the possession of the Master's degree is desirable but not a requirement.

However, no one is considered an official applicant for the doctorate until he has taken the necessary examinations and his status has been favorably determined by his major and minor departments and by the Graduate Council.

To be admitted to doctoral study, an applicant must take the Aptitude Test of the Graduate Record Examinations and make a score satisfactory to the Graduate Council. This regulation applies to all students, regardless of the time they began taking graduate courses.

Those failing to reach the required standard on the Aptitude Test may continue to take courses as unclassified graduate students without a degree objective, or, if they wish to be considered further for admission to doctoral study, they will take the Advanced Test in their major subject. Those making satisfactory scores on the Advanced Test will ordinarily be admitted to the doctoral program in spite of low scores on the Aptitude Test. Those making unsatisfactory scores on both the Aptitude Test and the Advanced Test will be advised not to attempt the doctorate. However, a department which considers a student to be exceptionally promising material for the doctorate in spite of low scores on both tests may petition the Graduate Council for a special review of the record.

#### FIELDS OF STUDY

An applicant for the degree of Doctor of Philosophy will devote most of his time to his major subject, but he must have a minor of at least eighteen semester hours of course work (beyond the Bachelor's degree) in a department other than his major.

An applicant for the degree of Doctor of Education will likewise devote most of his time to his major subject, but he must complete at least twenty-four semester hours of course work (beyond the Bachelor's degree) outside any field of education.

#### PROGRAM OF WORK

Although the applicant for the Doctor's degree is not required to complete his work in a series of successive years, the general program should conform somewhat to the following plan:

*First Year Beyond the Bachelor's Degree:* This is normally the year devoted to the attainment of the Master's degree. The applicant should complete from twenty-four to thirty semester hours of course work in his major and minor subjects.

*Second Year:* During this year, the applicant should satisfy the requirements in foreign languages and/or other tools of research; he should take the preliminary examination in his major and minor, and he should complete from twenty-four to thirty semester hours of course work. Near the end of this year, the applicant should ordinarily take the qualifying examination for admission to candidacy for the Doctor's degree, and he should begin work on his dissertation.

*Third Year and Beyond:* In the third year the applicant should finish whatever course work has been recommended by his advisory committee. The dissertation and the final examinations may sometimes also be completed in the third year, but often more time is necessary.

Doctoral study cannot be stated merely in terms of semester hours, but as a rule, it demands the completion of from seventy-two to ninety or more hours beyond the Bachelor's degree.

#### RESIDENCE REQUIREMENTS

A minimum of three years of graduate study beyond the Bachelor's degree is required for the degree of Doctor of Education or Doctor of

Philosophy. Work completed for the Master's degree is considered one of these years provided it forms part of a logical sequence in the entire program.

Work completed at another graduate school will be considered for residence credit and course credit on the recommendation of the departments concerned and the advisory committee, and credit allowed in accordance with their recommendations. However, if the work was completed after the attainment of the Master's degree, credit toward the Doctor's degree will be allowed only if the work was done at a college or university having a doctoral program in the particular field.

In all cases, regardless of the amount of work completed elsewhere, an applicant for the Ed.D. or the Ph.D. must complete at least one year of residence work beyond the Master's degree at Texas Technological College. The methods of satisfying this requirement are indicated in the following paragraphs.

An applicant for the degree of Doctor of Philosophy is required to complete as a residence student at Texas Technological College a minimum of one year of residence course work beyond the Master's degree, or beyond the course work equivalent to this degree if he chooses to proceed to the doctorate without stopping for the Master's degree. This requirement can be satisfied only by the successful completion of from twelve to fifteen hours of Residence Courses as defined under I (a), on page 19 of this Bulletin, in each of the two consecutive semesters of a long session. Holders of fellowships and others carrying reduced loads or lacking some of the prerequisites will usually have to spend two years in satisfying this requirement.

An applicant for the degree of Doctor of Education may satisfy the minimum requirement of a year of residence by the method indicated in the preceding paragraph or by the successful completion, in summer sessions, of at least thirty-six semester hours of Residence Courses as defined under I (a), above.

#### TOOLS OF RESEARCH

Every applicant for the doctorate is required to demonstrate, early in his program, an adequate command of the basic tools of research, including the English language.

Applicants for the degree of Doctor of Philosophy are required to pass reading examinations in two foreign languages acceptable to the major and minor departments. These examinations (usually in French and German) are given by the Department of Foreign Languages and ordinarily cover critical or historical material in the student's major field. The student is to satisfy this requirement before taking the qualifying examination for admission to candidacy.

Applicants for the degree of Doctor of Education are required to show competency in educational evaluation and educational statistics and also a foreign language if the research requires such competency. The examination in educational statistics is given by a committee repre-

senting the departments of Education, Psychology, and Mathematics. The student is to satisfy this requirement in statistics before taking the qualifying examination for admission to candidacy.

#### PRELIMINARY EXAMINATIONS

After an applicant for the Doctor's degree has established himself satisfactorily on the basis of the Graduate Record Examinations and has completed enough work at Texas Technological College to become somewhat known to his professors, he will be given a preliminary examination by his major and minor departments. This examination, which may be oral or written or both, will serve somewhat as the basis of further counseling of the applicant. A report on this examination is to be filed at the Dean's office within one week after its completion.

#### ADVISORY COMMITTEE

In the early stages of his work, the applicant for the doctorate is ordinarily counseled by the head of his major and minor departments or by professors designated for this work. However, as soon as the applicant has been officially admitted to the doctoral program on the basis of his standing on the Graduate Record Examinations and consideration by the Graduate Council, an Advisory Committee will be appointed to guide him through the remainder of his work for the doctorate. This committee, appointed by the Dean on the recommendation of the departments concerned, will include representatives from the major and minor departments. It will hold meetings with the applicant as often as may be desirable and will, from time to time, report to the Dean and the head of the departments concerned on the applicant's progress. Mimeographed material setting forth the specific functions of the advisory committee is available to faculty members and students.

#### QUALIFYING EXAMINATION FOR ADMISSION TO CANDIDACY

When the applicant has satisfied all of the foregoing requirements (Graduate Record Examinations, language or statistics, preliminary examination) and has completed most of the course work prescribed as a result of the preliminary examination, and at a time suggested by his advisory committee, he will undergo the qualifying examination, which helps to determine whether he is to be admitted to candidacy for the Doctor's degree.

This examination is prepared and administered by the student's advisory committee. The major portion of it will be a written test of at least six hours' duration on the major and minor subjects, the distribution of this time being determined by the extent of the two fields. Approximately one half of the written portion of the examination in both the major and the minor will be of the essay or discussion type, and the applicant is expected to demonstrate a high degree of skill in composition. The written examination will ordinarily be supplemented by an oral examination, also under the supervision of the advisory committee.

If the qualifying examination is considered satisfactory by the advisory committee, the chairman will prepare a recommendation to the

Graduate Council that the applicant be admitted to candidacy for the Doctor's degree.

If the qualifying examination is considered unsatisfactory by the advisory committee, the applicant may be permitted to undertake the examination once more but not until the lapse of one full semester or at least fifteen weeks.

#### ADMISSION TO CANDIDACY FOR THE DOCTOR'S DEGREE

When the applicant for the degree of Doctor of Philosophy or Doctor of Education has satisfied all of the requirements shown above, the chairman of the advisory committee will present a formal written request to the Graduate Council that the applicant be admitted to candidacy for the Doctor's degree.

This request will include a statement about the applicant's course work, the quality of the preliminary examination and the qualifying examination, his status with respect to the residence requirements, the status of the research on his dissertation, and a general estimate of the applicant's fitness for further graduate study. This request must be approved by the Graduate Council before an applicant can be admitted to candidacy for the doctorate. No request will be approved unless the applicant has satisfied the requirements in foreign languages and/or statistics.

Upon the admission of an applicant to candidacy for the doctorate, the Dean will notify him in writing, with copies of the letter to the chairman of the advisory committee and the head of the departments concerned.

#### LIMITATION ON THE NUMBER OF DOCTORAL CANDIDATES

To insure proper individual attention to each applicant for the doctorate, the Graduate Council has set a maximum limit on the number of applicants that will be admitted to candidacy from any department in any one year (September 1 to August 31). This quota is determined by the number of departmental staff members who hold earned doctorates and who have full membership on the Graduate Faculty. For each staff member so qualified, one applicant may be admitted to candidacy.

#### THE DISSERTATION

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

The dissertation must demonstrate a mastery of the techniques of research, a thorough understanding of the subject matter, skill in organizing and presenting the material, and an adequate command of the English language. It must also reveal the candidate's ability to attack a problem with independence and sound judgment, and it must be a contribution to learning in the field within which it falls, including a significant re-evaluation of existing data. The work on the dissertation

will be constantly under the supervision of the advisory committee and any other professors the committee or the Dean may consider necessary.

Available at the Graduate Office (for faculty members as well as students) is a mimeographed pamphlet entitled "Instructions for Preparing and Submitting a Thesis or Dissertation." Each candidate and the chairman of each advisory committee is expected to secure this material and follow it carefully.

An "official first draft" of the dissertation, prepared and approved as indicated in the mimeographed pamphlet, must be in the hands of the Dean at least twenty days before the commencement at which the candidate hopes to receive his degree. Naturally, it must be submitted to the advisory committee well in advance of this time.

The "final version" of the dissertation, prepared and approved as indicated in the mimeographed pamphlet, must be in the hands of the Dean at least four days before the commencement at which the candidate hopes to receive his degree. Three typewritten copies of the final version are required by the college.

Accompanying the final version must be an abstract of the dissertation, not more than two thousand words long. Abstracts should be carefully prepared; they will be published in a college bulletin.

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

#### THE FINAL EXAMINATION

A final oral examination is required of all candidates for the Doctor's degree. It will ordinarily be over the field of the dissertation, and it will be conducted by the advisory committee under the supervision of the Dean. Professors other than those on the advisory committee may be invited to participate in the examination and discussion, but they will have no vote in determining the outcome.

#### SPECIAL DEPARTMENTAL REQUIREMENTS

Subject to the approval of the Dean, a department may impose any additional requirements deemed necessary for a doctoral program. In all instances, however, the general regulations of the Graduate School and the general requirements for the doctorate will prevail. Departmental requirements (if any) will be in addition to, not a substitute for, the regulations of the Graduate School.

## GENERAL INFORMATION

## FEES AND DEPOSITS

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

## REGISTRATION FEE FOR RESIDENTS OF TEXAS\*

For students enrolled for twelve or more semester hours, the registration fee is \$25.00 each semester. For those enrolled for fewer than twelve hours, the fee is charged as follows:

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

## REGISTRATION FEE FOR NON-RESIDENTS OF TEXAS\*

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

## REGISTRATION FEE FOR EVENING PROGRAM COURSES

Resident students enrolling only in the Evening Program are charged at the rate of \$10 per semester for each course carrying three semester hours' credit or less; for each course carrying four hours' credit, or more, the fee is \$12. All Evening Program students are required to make the general property deposit of \$7. If they register for a laboratory course, they are required to pay the customary laboratory fee.

Non-Resident students will pay the non-resident tuition shown above.

## REGISTRATION FEE FOR FIELD COURSES AND INDIVIDUAL STUDY COURSES

Students enrolling only for Field Courses and/or Individual Study Courses are charged at the rate indicated in the table shown above in the second paragraph if they are residents of Texas. The fee for non-residents is shown in paragraph three above. All students enrolled for Field Courses or Individual Study Courses are required to make the general property deposit of \$7. If they register for a laboratory course, they are required to pay the customary laboratory fee.

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

The Master's thesis and the Doctor's dissertation are considered Individual Study Courses when the student enrolls for no work other than the thesis or dissertation.

Summer School Fees. See the special Summer Session Bulletin.

#### EXAMINATION FEE

A fee of \$4.00 is required for each of the Graduate Record Examinations. Admission to these examinations is by ticket only. Any student who plans to take the Aptitude Test or the Advanced Test (see page 15 of this Bulletin) will have to make application and send a check for the fee at least six weeks in advance of the proposed test date.

#### VISITOR'S FEE

A fee of \$5.00 for each course is required for the privilege of attending courses as a visitor. No credit may be obtained from courses audited in this manner. Permission to audit courses is not granted in the Evening Program or in the summer session, but students may register for non-credit by paying the regular registration fees.

#### LATE REGISTRATION FEE

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

#### GENERAL PROPERTY DEPOSIT

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

#### LABORATORY FEES

For all courses in which the combined credit of lecture and laboratory is from one to three semester hours, a laboratory fee of \$2.00 is charged for each semester. For courses in which the semester credit is four hours or more, the laboratory fee is \$4.00 per semester.

#### GRADUATION FEE

The graduation fee is \$5.00. After a student's diploma has been ordered, there can be no refund of this fee even if the candidate does not graduate. The fee will have to be paid again for a subsequent graduation.



## STUDENT ACTIVITY FEE

This is an optional fee of \$15.00 for the Fall Semester and \$8.00 for the Spring Semester. It covers recreational activities, student publications (except *La Ventana*), admission to intercollegiate athletic contests, and admission to the Artists Course numbers.

## SPECIAL FEES FOR CERTAIN COURSES

For materials, equipment, or services, a special fee is charged for the following courses as indicated:

Accounting 441, 442 — \$4.00 each semester.

Allied Arts 4311, 4312, 341 (when the work is in ceramics) — \$5.00 each semester.

Applied Music (private lessons) — \$30.00 each semester for each course.

Architecture 423, 424, 4316, 4317 — \$5.00 each semester.

Education 4315 — \$3.00.

Secretarial Administration 421 — \$4.00.

## IDENTIFICATION CARD FEE

A small fee is charged for the identification card and photograph required of all students except those enrolling in the Evening Program only. This fee is thirty cents for the first card and twenty-one cents for each term or semester thereafter.

## COST OF RESEARCH MATERIALS

The individual student will bear the cost of all research materials required in the preparation of his thesis or dissertation or research project. This applies to questionnaires, charts, maps, slides, photostats, microfilms, postage, paper, and any other item necessary for the completion of any research study forming part of a graduate program for an advanced degree.

## STUDENT UNION FEE\*

This is a \$5.00 fee that each student must pay each semester of the long session. The fee is \$2.50 for each summer term.

## REFUND OF FEES

Any student withdrawing officially during either semester will receive a refund on registration and activity fees according to the following schedule:

During the first two weeks of the semester—80%.

During the third week of the semester—60%.

During the fourth week of the semester—40%.

During the fifth week of the semester—20%.

After the fifth week of the semester—no refund.

\* S. B. No. 232, Regular Session, Fifty-third Legislature.

In the summer session, any student withdrawing officially during the first week of either term will receive a refund of sixty per cent of his registration and activity fees, and during the second week, twenty per cent. A student who withdraws during the third week of the term and thereafter will receive no refund.

#### EXEMPTION FROM FEES BECAUSE OF HONORABLE DISCHARGE FROM THE ARMED FORCES

Men and women who have been legal residents of Texas for a period of not less than twelve months immediately preceding their registration in Texas Technological College and who hold an honorable discharge from the Armed Forces of the United States during the Spanish-American War, World War I, World War II, or the Korean War are by State law exempt from the payment of all fees except library and laboratory fees or similar deposits and fees or charges for room and board. The provisions of this act shall apply to the benefit of all nurses, members of the Women's Army Auxiliary Corps, and Women's Auxiliary Volunteer Emergency Service. The benefits and provisions of this act shall also apply to the benefit of the children of members of the United States Armed Forces where such members of the Armed Forces were killed in action or died while in the service during World War II or the Korean War. The provisions of this act shall not apply to or include any member of such United States Armed Forces, or other persons herein above named, who were discharged from the service because of being over the age of thirty-eight or because of a personal request on the part of such person to be discharged from such service.

Discharge papers must be presented by the student to the Coordinator of Veterans' Affairs, who will in turn certify the student's eligibility to the Business Office.

Veterans are not eligible to the above outlined benefits under State law until their eligibility to educational benefits from Federal funds through the Veterans' Administration has expired.

#### STUDENT HEALTH SERVICE

For details about the Health Service, see the General Catalog.

#### HOUSING ACCOMMODATIONS

The college owns and operates eight dormitories with a normal capacity of almost three thousand students. Charges for room and board vary with the cost of living and are subject to change without notice. Inquiries regarding dormitory accommodations should be addressed to Mr. H. L. Burgess, Office of Dormitory Reservations.

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

#### FELLOWSHIPS AND SCHOLARSHIPS

A number of graduate assistantships, scholarships, and fellowships are available each year. Prospective graduate students are invited to

correspond directly with the head of the department in which they plan to do their major work. In general, the stipend varies from \$1000 to \$1500 depending upon the qualifications of the applicant, the larger awards usually being made to applicants for the Doctor's degree.

In connection with the graduate program in Counseling and Guidance, several assistantships in personnel work are available to both men and women students. Information concerning these positions may be secured by addressing the Dean of Men or the Dean of Women or the Head of the Department of Psychology.

### THE LIBRARY

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

At the beginning of the session of 1954-1955 the Library holdings consisted of approximately 115,000 catalogued volumes, 30,000 periodicals, and 305,000 documents. Approximately ten thousand items are being added each year.

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

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

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## DEPARTMENTS AND DIVISIONS OF INSTRUCTION

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

The college reserves the right, however, to cancel any scheduled course or to withdraw any course or program from the list of graduate offerings if the best interests of the institution require such action.

Each course listed on a student's schedule must be approved by a representative of that department, and the whole program of courses must be approved by a representative of the major department and the Dean of the Graduate School.

The number of semester hours' credit for each course is indicated immediately following the title of the course. Numbers in parentheses following the credit hour value show the number of lecture hours and the number of laboratory hours required each week.

In all departments offering major work for the Master's degree, the Master's Thesis is listed as course No. 631-2; it carries six semester hours' credit.

While working on the doctoral dissertation, candidates for the Doctor's degree will enroll for course No. 731, 732 (Research), which may be repeated for credit as many times as the student's advisory committee may require.

For bookkeeping purposes, final registration for the doctoral dissertation will be under course No. 831-2.

## AGRICULTURE

Dean W. L. Stangel, Graduate Chairman

\* Assistant Dean N. C. Fine, Vice Chairman

\*\* Assistant Dean G. O. Elle, Vice Chairman

Applicants for the Master's degree will have a conventional major in one department; they may have one or two conventional minors in other departments, or they may have a general minor comprising work in several departments in Agriculture. Such general programs should be approved by the Graduate Chairman or Vice Chairman.

## AGRICULTURAL ECONOMICS

Professor Elmer L. McBride

Head of the Department

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

#### *For Undergraduates and Graduates*

- 411, 412. Agricultural Economics Seminar. Cr. 1 each. Mr. Leonard.  
Prerequisite: Senior standing in agriculture.
- 421. Land Economics. Cr. 2. Mr. Leonard.  
Prerequisite: Junior standing in agriculture.
- 431. Livestock Marketing. Cr. 3. Mr. Bennett.  
Prerequisite: Junior standing in agriculture including Agricultural Economics 236.
- 432. Statistical Methods in Agricultural Research. Cr. 3. Mr. Ashworth.  
Prerequisite: Approval of the instructor.
- 433. Farm Management and Records. Cr. 3. (2-3). Mr. Leonard.  
Prerequisite: Junior standing in agriculture.
- 434. Advanced Farm Management. Cr. 3. Mr. Leonard.  
Prerequisite: Agricultural Economics 433.
- 436. World Trade in Agricultural Products. Cr. 3. Mr. Ashworth.  
Prerequisite: Senior standing or permission of the instructor.
- 437. Farm Appraisal and Finance. Cr. 3. (2-3). Mr. Leonard.  
Prerequisite: Junior standing.
- Rural Sociology 431. Socio-Economic Surveys of Rural Areas. Cr. 3.  
Mr. McBride.

#### *For Graduates*

- 511. Seminar. Cr. 1. Mr. McBride, Mr. Leonard.  
May be repeated for credit.
- 533. Marketing Problems. Cr. 3. Mr. McBride.  
Prerequisite: Consent of major professor.
- 534. Research in Agricultural Economics. Cr. 3. Mr. McBride, Mr. Leonard.  
May be repeated for credit.
- 631-2. Master's Thesis. Cr. 6. Mr. McBride, Mr. Leonard.

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\* On leave of absence for 1954-1956.

\*\* For 1954-1956.

## AGRICULTURAL EDUCATION

Professor Ray L. Chappelle  
Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

*For Undergraduates and Graduates*

423. Problems. Cr. 2.  
Prerequisite: Senior standing. May be repeated for credit.
424. Organization and Administration of Vocational Agriculture. Cr. 2.  
Prerequisite: Senior standing in agriculture.
426. Advanced Methods in Future Farmer Work. Cr. 2. Mr. Chappelle.
432. Methods in Adult Agricultural Education. Cr. 3. (2-3). Mr. Leach,  
Mr. Hargrave.  
Prerequisite: Senior standing in agriculture.
443. Methods of Teaching Vocational Agriculture in the High School.  
Cr. 4. (2-6). Mr. Chappelle.  
Prerequisite: Senior standing in agriculture.
461. Student Teaching. Cr. 6. (0-18).  
Prerequisite: Senior standing in agriculture.

*For Graduates*

511. Problems. Cr. 1. Mr. Chappelle.  
May be repeated for credit.
522. Advanced Methods in High School Vocational Agriculture. Cr. 2.  
Mr. Chappelle.
523. Advanced Methods in Adult Agricultural Education. Cr. 2. Mr.  
Leach.
531. Investigation in the Field of Agricultural Education. Cr. 3. Mr.  
Leach.  
Prerequisite: Consent of the head of the department. May be repeated for credit.
- 631-2. Master's Thesis. Cr. 6.

## AGRICULTURAL ENGINEERING

Professor Ira L. Williams  
Head of the Department

## MINORS ONLY FOR THE MASTER'S DEGREE

*For Undergraduates and Graduates*

430. Agricultural Engineering Problems. Cr. 3. Mr. Bourns.  
Prerequisite: Senior standing and approval of the head of the department. May  
be repeated for credit.
431. Structural and Functional Design of Farm Buildings. Cr. 3. (2-3).  
Mr. Bourns.  
Prerequisite: C.E. 333.
432. Engineering for Soil and Water Conservation and Drainage. Cr. 3.  
(2-3). Mr. Bourns.  
Prerequisite: C.E. 334 and 339.
433. Elements of Tractor Design. Cr. 3. (2-3). Mr. Williams.  
Prerequisite: M.E. 329 or C.E. 332.
434. Rural Electrification. Cr. 3. (2-3). Mr. Williams.  
Prerequisite: Physics 142 or Physics 236.
435. Farm Mechanics Problems. Cr. 3. Mr. Williams.  
Prerequisite: Senior standing and approval of the head of the department.  
May be repeated for Credit.

437. Design of Farm Irrigation Systems. Cr. 3. (2-3). Mr. Bourns.  
Prerequisite: C.E. 334, C.E. 339, and Ag. Engr. 335.

## AGRONOMY

Professor Arthur W. Young  
Head of the Department

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

#### *For Undergraduates and Graduates*

421. Cotton Production. Cr. 2. Mr. Ayers.  
Prerequisite: Junior standing in agronomy or approval of instructor.
422. Dry Farm Soil Management. Cr. 2. Mr. Young.  
Prerequisite: Agronomy 241, 331 and senior standing in agriculture.
423. Soil Fertility. Cr. 2. Mr. Young.  
Prerequisite: Agronomy 241, 331 and senior standing in agriculture.
425. Seed Technology. Cr. 2. (1-2). Mr. Ayers.  
Prerequisite: Agronomy 342.
430. Agronomy Problems. Cr. 3.  
May be repeated for credit.
431. Plant Breeding and Improvement. Cr. 3. Mr. Ayers.  
Prerequisite: Agronomy 341.
432. Advanced Range Management. Cr. 3. (2-3).  
Prerequisite: Agronomy 333, 437 and senior standing in agriculture.
434. Soil Conservation and Land Use Planning. Cr. 3. (2-3). Mr. Young.  
Prerequisite: Agronomy 241, and 331 and junior standing.
435. Soil Morphology and Genesis. Cr. 3. (2-3). Mr. Little.  
Prerequisite: Agronomy 241 and advanced standing in agriculture.
436. Soil Chemistry. Cr. 3. Mr. Little.  
Prerequisite: Agronomy 241, 12 hours of chemistry and advanced standing in agriculture.
437. Range Plant Management. Cr. 3. (2-3).  
Prerequisite: Senior standing in agriculture and Agronomy 331, 333, A.H. 331.
439. Soil Microbiology. Cr. 3. Mr. Young.  
Prerequisite: Agronomy 241, Bacteriology 231, 12 hours of chemistry and advanced standing in agriculture.

#### *For Graduates*

511. Agronomy Seminar. Cr. 1, each time taken.  
May be repeated for credit.
534. Agronomy Research. Cr. 3, each time taken.  
Prerequisite: Approval of major professor. May be repeated for credit.
535. Research Methods. Cr. 3. Mr. Young.
- 631-2. Master's Thesis. Cr. 6.

## ANIMAL HUSBANDRY

Professor Robert H. Black  
Head of the Department

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

#### *For Undergraduates and Graduates*

411. Animal Husbandry Seminar. Cr. 1.  
Prerequisite: Senior standing in agriculture.
425. Horse Production. Cr. 2. Mr. Harbaugh.  
Prerequisite: Approval of instructor.

427. Swine Production. Cr. 2.  
Prerequisite: A.H. 331.
431. Beef Cattle Production. Cr. 3. Mr. Stangel.  
Prerequisite: A.H. 331.
432. Animal Breeding. Cr. 3. Mr. Fine.  
Prerequisite: Agron. 341.
433. Sheep Production. Cr. 3. Mr. Fine.  
Prerequisite: A.H. 331.
435. Dairy Cattle Production. Cr. 3. Mr. Cloninger.  
Prerequisite: A.H. 331.
436. Advanced Animal Nutrition. Cr. 3. Mr. Turner.  
Prerequisite: A.H. 331.
438. Range Livestock Production. Cr. 3.  
Prerequisite: Agron. 437.
439. Hormones in Animal Production. Cr. 3. Mr. Cloninger.  
Prerequisite: Any one of the following: V.S. 331, Chem. 342, A.H. 435, or approval of instructor.

### *For Graduates*

533. Current Investigations in Animal Husbandry. Cr. 3.  
Prerequisite: Graduate standing and consent of head of department. May be repeated for credit.
- 631-2. Master's Thesis. Cr. 6.

### Poultry Husbandry

#### *For Undergraduates and Graduates*

431. Poultry Production. Cr. 3. Mr. Turner.  
Prerequisite: P.H. 231.
432. Turkey Production. Cr. 3. Mr. Turner.  
Prerequisite: P.H. 231.

### DAIRY INDUSTRY

Professor J. J. Willingham  
Head of the Department

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

#### *For Undergraduates and Graduates*

411. Dairy Seminar. Cr. 1.  
Prerequisite: Senior standing in the department. Graduate students may repeat for credit.
412. Starters and Cultured Milk. Cr. 1. (0-3).  
Prerequisite: D.I. 335.
422. Condensed and Powdered Milk. Cr. 2.  
Prerequisite: D.I. 222.
431. Cheese Making. Cr. 3. (2-3).  
Prerequisite: D.I. 131, Bact. 231.
432. Dairy Industry Problems. Cr. 3.  
Prerequisite: 21 hours in the department and consent of instructor.
433. Ice Cream Making. Cr. 3. (2-3). Mr. Willingham.  
Prerequisite: D.I. 131.
434. Buttermaking. Cr. 3. (2-3).  
Prerequisite: D.I. 131.
435. Dairy and Food Inspection. Cr. 3. (2-3).  
Prerequisite: D.I. 131.
437. Creamery Management and Merchandising. Cr. 3. Mr. Willingham.  
Prerequisite: D.I. 222.



*For Graduates*

531. Dairy Industry Research. Cr. 3. (0-9).  
Prerequisite: Consent of major professor. May be repeated for credit.
535. Dairy Bacteriology Research. Cr. 3. (0-9).  
Prerequisite: Consent of major professor. May be repeated for credit.
- 631-2. Master's Thesis. Cr. 6.

## HORTICULTURE AND PARK MANAGEMENT

Professor E. J. Urbanovsky  
Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

*For Undergraduates and Graduates*

422. Design and Operation of Parks and Recreation Systems. Cr. 2. Mr. Urbanovsky.  
Prerequisite: Junior standing and consent of instructor.
423. Design and Operation of Parks and Recreation Systems. Cr. 2. Mr. Urbanovsky.  
Prerequisite: Junior standing and consent of instructor.
425. Horticulture Problems. Cr. 2. Mr. Yocum.
430. Horticulture Problems. Cr. 3. Mr. Yocum.  
May be repeated for credit.
431. Pomology. Cr. 3. Mr. Yocum.  
Prerequisite: Hort. 333 and advanced standing in agriculture.
435. Vegetable Production. Cr. 3. (2-3). Mr. Elle.  
Prerequisite: Hort. 231 and advanced standing in agriculture.

*For Graduates*

511. Horticulture Seminar. Cr. 1. Mr. Urbanovsky.  
May be repeated for credit.
531. Horticultural Research. Cr. 3. Mr. Elle.  
May be repeated for credit.
- 631-2. Master's Thesis. Cr. 6. Staff.

## AMERICAN CIVILIZATION

## Committee in Charge:

Professors T. W. Camp (English), J. W. Davis (Government),  
and W. M. Pearce (History)  
Professor Davis, *Chairman*

*Majors only for the Doctor of Philosophy*

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

Applicants will be expected to have the usual course prerequisites in at least two of the principal areas of study—government, history, and

literature, but, with the consent of the advisory committee and the heads of the departments concerned, they may enroll for graduate courses in the other departments without having all of the customary prerequisites.

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

## BIOLOGY

Professor J. C. Cross  
Head of the Department

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

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

Likewise before being recommended for admission to candidacy for the Master's degree, the student must pass a reading examination in French or German or some other language acceptable to this department. The examination will be given under the direction of the Department of Foreign Languages and will deal with critical material in the area of the student's major subject.

If the student's major is botany, his minor may be bacteriology, chemistry, geology, mathematics, physics, or zoology; if his major is zoology, his minor may be bacteriology, botany, chemistry, mathematics, or physics.

## BACTERIOLOGY

### *For Undergraduates and Graduates*

#### 331-2. Principles of Bacteriology. Cr. 3. (2-3). Mr. Sealey.

Prerequisite: 12 semester hours in the Department of Biology, Chemistry, Geology, or Physics; prerequisite or parallel: 6 semester hours in chemistry.

#### 333. Communicable Diseases. Cr. 3. Mr. Sealey.

Prerequisite: 3 semester hours in bacteriology; junior standing.

#### 334. Bacteriology of Foods and Food Sanitation. Cr. 3. (2-3). Mr. Sealey.

Prerequisite: 3 semester hours in bacteriology; junior standing.

#### 431. Problems in Bacteriology. Cr. 3. (0-9). Mr. Sealey.

Prerequisite: 6 semester hours of bacteriology. May be repeated for full credit in another field or with new materials in the same field.

#### 432. Immunology and Serology. Cr. 3. (2-3). Mr. Sealey.

Prerequisite: 6 semester hours of bacteriology; 10 semester hours of chemistry.

#### 433. Physiology of Bacteria. Cr. 3. (2-3). Mr. Sealey.

Prerequisite: 6 semester hours of bacteriology; 12 semester hours of chemistry.

## BIOLOGY

*For Undergraduates and Graduates*

331. Heredity. Cr. 3. Mr. Cross.  
Prerequisite: 12 semester hours in the Biology Department.
333. Bio-ecology. Cr. 3. (2-3). Mr. Studhalter.  
Prerequisite: 12 semester hours in the Biology Department, or junior standing in the Division of Agriculture.
411. Biology Seminar. Cr. 1. Mr. Studhalter and Staff.  
Prerequisite: Senior or graduate standing in bacteriology, botany or zoology. May be repeated for credit.

## BOTANY

*For Undergraduates and Graduates*

331. Plant Physiology. Cr. 3. (2-3). Mr. Camp.  
Prerequisite: Botany 231-2; or Biology 133-4 and 6 semester hours in horticulture or agronomy; prerequisite or parallel, Chemistry 141.
332. Plant Pathology. Cr. 3. (2-3). Mr. Camp.  
Prerequisite: Biology 133-4 and six additional hours in agronomy, botany, or horticulture; prerequisite or parallel, Bacteriology 231 or equivalent.
339. Plant Anatomy. Cr. 3. (2-3). Mr. Studhalter.  
Prerequisite: Botany 231-2; or Biology 133-4 and 6 semester hours in horticulture or agronomy.
431. Botanical Microtechnique. Cr. 3. (0-9). Mr. Studhalter.  
Prerequisite: Botany 339; or 3 semester hours of botany of sophomore rank and 9 semester hours in horticulture or agronomy.
435. Advanced Taxonomy. Cr. 3. (0-9). Mr. Studhalter.  
Prerequisite: Botany 232, 331, 339; or Botany 232 and 9 semester hours in horticulture or agronomy.
436. Plant Geography. Cr. 3. Mr. Studhalter.  
Prerequisite: 6 semester hours in botany of junior rank; or Biology 133-4 and 12 semester hours in zoology, geology, geography, horticulture, or agronomy.
437. Problems in Plant Geography. Cr. 3. Mr. Studhalter.  
Prerequisite: 6 semester hours in botany of junior rank; or Biology 133-4 and 12 semester hours in zoology, geology, geography, horticulture, or agronomy.
438. Morphology of Fungi. Cr. 3. (2-3). Mr. Studhalter.  
Prerequisite: Botany 331, 339; or Botany 232 and 9 semester hours in horticulture or agronomy.

*For Graduates*

531. Problems in Botany. Cr. 3. (0-9). Mr. Studhalter.  
Prerequisite: Graduate standing in botany. May be repeated for credit in another field or with new materials in the same field.
534. Advanced Plant Anatomy. Cr. 3. (0-9). Mr. Studhalter.  
Prerequisite: Botany 339 and graduate standing in Botany.
535. Field Botany. Cr. 3. Mr. Studhalter.  
Prerequisite: Graduate standing in botany. May be repeated for credit with new materials.
- 631-2. Master's Thesis. Cr. 6. Staff.

## ZOOLOGY

*For Undergraduates and Graduates*

331. Animal Histology. Cr. 3. (2-4). Mr. Landwer.  
Prerequisite: Zoology 231-232.
332. Comparative Vertebrate Embryology. Cr. 3. (2-4). Mr. Landwer.  
Prerequisite: Zoology 231-232.
333. Parasitology. Cr. 3. (2-3). Mr. Strandtmann.  
Prerequisite: Zoology 231-232 or Zoology 336.

334. Entomology. Cr. 3. (2-3). Mr. Strandtmann.  
Prerequisite: Zoology 231-232 or Zoology 336; or Biology 133-134 and six semester hours of sophomore rank in the Division of Agriculture.
335. Insect Taxonomy. Cr. 3. (1-6). Mr. Strandtmann.  
Prerequisite: Zoology 334.
336. Comparative Invertebrate Morphology. Cr. 3. (2-3). Mr. Strandtmann.  
Prerequisite: Biology 133-134 and Zoology 231-232, or Geology 335-336.
435. Cytology. Cr. 3. (2-3). Mr. Cross.  
Prerequisite: Biology 331 or Zoology 331 or Zoology 332, or junior standing in botany.
436. Zoological Technique. Cr. 3. (0-9). Mr. Cross.  
Prerequisite: 12 semester hours of zoology above the freshman year.
4312. Advanced Parasitology. Cr. 3. (2-3). Mr. Strandtmann.  
Prerequisite: Zoology 333 and Zoology 436.

### *For Graduates*

531. Problems in Zoology. Cr. 3. (0-9). Mr. Cross, Mr. Strandtmann.  
Prerequisite: Graduate standing in zoology. May be repeated for credit in another field or with new materials in the same field.
535. Field Zoology. Cr. 3. (0-9). Mr. Strandtmann.  
Prerequisite: Graduate standing in zoology. May be repeated for credit with new materials.
- 631-2. Master's Thesis. Cr. 6. Staff.

## BUSINESS ADMINISTRATION

Dean George G. Heather, Graduate Chairman

Applicants for the Master's degree will ordinarily have a conventional major in one department. They may have one or two conventional minors in other departments, or they may have a general minor comprising work in several departments. Such general programs should be approved by the Graduate Chairman as well as the department heads.

All courses numbered in the "400" and "500" series may be taken for graduate credit. With the prior approval of the Dean of Business Administration and the Dean of the Graduate School, a student may register for certain "300" courses (not shown in this Bulletin), but not more than three such courses (nine or ten semester hours) may be credited on any Master's degree program.

For convenience, the courses restricted to graduate students are grouped according to the various types or approaches under which graduate study may be carried on. The specific course content and title of each of the following graduate courses will be designated at the time it is offered. In general, these types of programs will be available: C. P. A. Problems; Market Research; Readings in Current Economic Theory; Guidance in Business Education; and more individualized subject matter combinations to satisfy the requirements of particular students.

### *For Graduates*

- 511, 531. Problems. Cr. 1 or 3.

Individual and group investigation, solution, report, and discussion of specific problems under the direction of the instructor. Generally available in all departments of the Division of Business Administration.

## 522, 532. Research. Cr. 2 or 3.

Individual student research in selected areas with written reports under the direction of a qualified instructor. Generally available in all departments of the Division of Business Administration.

## 513, 523, 533. Readings. Cr. 1, 2, or 3.

Assigned readings of selected literature with oral and written reports under the direction of the instructor. Registration, assignments, and conferences on an individual basis. Generally available in all departments in the Division of Business Administration.

## 524, 534. Seminar. Cr. 2 or 3.

Group and individual investigation of areas of particular interest with regularly scheduled reports and discussions under the direction of the instructor. On the graduate level this type of instruction replaces the more formal lecture approach typical at the undergraduate level. Generally available in all departments in the Division of Business Administration.

## 631-2. Master's Thesis. Cr. 6.

## ACCOUNTING AND FINANCE

Professor Reginald Rushing  
Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

## Accounting

*For Undergraduates and Graduates*

## 430. Income Tax Accounting. Cr. 3. Mr. Taylor.

Prerequisite: Accounting 244-5 and junior classification.

## 431. Advanced Income Tax Accounting. Cr. 3. Mr. Taylor.

Prerequisite: Accounting 430.

## 432. Governmental Accounting. Cr. 3. Mr. Whittington.

Prerequisite: Accounting 245.

## 433. Petroleum Accounting. Cr. 3.

Prerequisite: Accounting 245.

## 434. Advanced Accounting I. Cr. 3. Mr. Rushing.

Prerequisite: Intermediate accounting.

## 435. Advanced Accounting II. Cr. 3. Mr. Rushing.

Prerequisite: Accounting 245.

## 436. Accounting Systems. Cr. 3. Mr. Norwood.

Prerequisite: Accounting 245.

## 437. Principles of Auditing. Cr. 3. Mr. Rushing.

Prerequisite: Accounting 335.

## 438. Advanced Auditing. Cr. 3. Mr. Rushing.

Prerequisite: Accounting 437.

## 439. Budgeting. Cr. 3. Mr. Whittington.

Prerequisite: Accounting 245.

## 441. Machine Accounting. Cr. 4. (3-3). Mrs. Eaves.

Prerequisite: Accounting 245. Machine service fee \$4.

## 442. Machine Accounting. Cr. 4. (3-3). Mrs. Eaves.

Prerequisite: Accounting 441. Machine service fee \$4.

*For Graduates*

For graduate courses refer to the Business Administration program of graduate studies, pages 48-49.

## Finance

*For Undergraduates and Graduates*

## 431. The Federal Reserve System. Cr. 3. Mr. Rouse.

Prerequisite: Finance 333.

## 432. Real Estate. Cr. 3. Mr. Hooper.

Recommended prerequisite: Finance 331.

## 433. Corporate Financial Problems and Cases. Cr. 3.

Prerequisite: Finance 331.

Mr. Hooper, Mr. Taylor.

## 434. Investments. Cr. 3.

Prerequisite: Finance 331.

## 437. Casualty Insurance. Cr. 3.

Prerequisite: General Insurance and Property Insurance.

## 4311. C.P.A. Law Review. Cr. 3.

*For Graduates*

For graduate courses refer to the Business Administration program of graduate studies, pages 48-49.

## BUSINESS EDUCATION AND SECRETARIAL ADMINISTRATION

Professor Donald J. Tate

Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

## Business Education

*For Undergraduates and Graduates*

## 422. Improvement of Instruction in Bookkeeping and the Social-Business Subjects. Cr. 2. Mr. Tate.

Prerequisite: Accounting 245, Business Law 338.

## 423. Improvement of Instruction in Typewriting and Shorthand. Cr. 2. Mr. Tate.

Prerequisite: Secretarial Administration 122, 235.

## 424. Improvement of Instruction in Basic Business. Cr. 2. Mr. Tate.

Prerequisite: Business Law 338, Marketing 332.

*For Graduates*

For graduate courses refer to the Business Administration program of graduate studies, pages 48-49.

## Secretarial Administration

*For Undergraduates and Graduates*

## 421. Voice-writing and Duplicating Machines. Cr. 2. (2-4). Miss Snow.

Prerequisite: Secretarial Administration 122 or equivalent. Machine service, \$4.

## 431. Internship. Cr. 3. (1-5). Mr. Tate.

Prerequisite: Secretarial Administration 235.

## ECONOMICS

Professor T. F. Wiesen

Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

*For Undergraduates and Graduates*

## 432. Foreign Market Surveys. Cr. 3. Mr. Wiesen.

Prerequisite: Economics 231-2.

## 433. International Economic Relations. Cr. 3. Mr. Wiesen.

Prerequisite: 12 hours in economics.

435. Transportation Economics. Cr. 3. Mr. Wiesen.  
Prerequisite: Economics 231-2 and Finance 331.
436. Development of Economic Doctrines. Cr. 3. Mr. Rouse.  
Prerequisite: Economics 231-2.
437. Current Economic Problems. Cr. 3. Mr. Clover.  
Prerequisite: Economics 231-2.
4311. Advanced Economic Theory. Cr. 3. Mr. Anderson.  
Prerequisite: 12 hours in economics.
4312. Theories of Depressions. Cr. 3. Mr. Anderson.  
Prerequisite: 12 hours in economics.
4313. Distribution Theory. Cr. 3. Mr. Anderson.  
Prerequisite: 12 hours in economics.
4314. Consumer Economics. Cr. 3. Mr. Clover.  
Prerequisite: 6 hours in economics.

### *For Graduates*

4335. Human Geography. Cr. 3. Mr. Clover.  
Enrollment limited to graduate students in elementary education.  
For other graduate courses refer to the Business Administration program of graduate studies, pages 48-49.

## MANAGEMENT

Professor F. L. Mize  
Head of the Department

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

#### *For Undergraduates and Graduates*

421. Job Evaluation. Cr. 2.  
Prerequisite: Management 334.
422. Administrative Policies and Procedures. Cr. 2. Mr. Mize.  
Prerequisite: Management 451 or Management 452, or consent of instructor.
433. Labor Legislation. Cr. 3.  
Prerequisite: Management 333.
435. Employee Supervision. Cr. 3. Mr. Mize.  
Prerequisite: Management 334 or consent of instructor.
436. Problems in Office Management. Cr. 3.  
Prerequisite: Management 339.
437. Industrial Traffic Management. Cr. 3.  
Prerequisite: Senior standing in Management or consent of instructor.
441. Management of Small Business Enterprise. Cr. 4.  
Prerequisite: Management 331.
451. Advanced Personnel Management. Cr. 5. Mr. Mize.  
Prerequisite: Management 333, 334, and Psychology 330.
452. Industrial Management Problems. Cr. 5. Mr. Mize.  
Prerequisite: Management 331 and 335 or consent of instructor.

### *For Graduates*

For graduate courses refer to the Business Administration program of graduate studies, pages 48-49.

## MARKETING

Professor George G. Heather  
Acting Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

*For Undergraduates and Graduates*

426. Index Numbers. Cr. 2. Mr. Golden.  
Prerequisite: Marketing 346.
431. Commodity Marketing. Cr. 3. Mr. Golden.  
Prerequisite: Marketing 332.
433. Marketing Problems. Cr. 3. Mr. Golden, Mr. Shaw.  
Prerequisite: Marketing 332.
434. Wholesaling. Cr. 3. Mr. Shaw.  
Prerequisite: Marketing 332.
435. Business Cycles and Forecasts. Cr. 3. Mr. Golden.  
Prerequisite: Marketing 346.
437. Advanced Business Statistics. Cr. 3. Mr. Golden.  
Prerequisite: Marketing 346.
438. Display. Cr. 3.  
Prerequisite: Marketing 334 or 335.
439. Sales Management. Cr. 3. Mr. Shaw.  
Prerequisite: Marketing 332 and 339.
4314. Advertising Copy. Cr. 3.  
Prerequisite: Marketing 332 and 334.
4315. Retail Buying. Cr. 3. Mr. Shaw.  
Prerequisite: Marketing 335.
4317. Advertising Layout. Cr. 3.  
Prerequisite or parallel: Marketing 4314.
4318. Mechanical Production of Advertising. Cr. 3.  
Prerequisite: Marketing 4317.
4319. Advertising Internship. Cr. 3.  
Prerequisite or parallel: Marketing 4318.

*For Graduates*

For graduate courses refer to the Business Administration program of graduate studies, pages 48-49.

## CHEMISTRY AND CHEMICAL ENGINEERING

Professor Joe Dennis  
Head of the Department

CHEMISTRY: MAJORS AND MINORS FOR THE MASTER'S DEGREE  
AND THE DOCTOR'S DEGREE  
CHEMICAL ENGINEERING: MAJORS AND MINORS  
FOR THE MASTER'S DEGREE

## Special Regulations Concerning The Master's Degree

Before being recommended for admission to candidacy for the Master's degree with a major in this department, the student must take written preliminary examinations on his undergraduate work. The scope of these examinations is as follows: For applicants for the Master's degree



in Chemistry: Inorganic, organic, and analytical chemistry and either physical or biological chemistry. For applicants for the Master's degree in Chemical Engineering: Inorganic, organic, analytical, and physical chemistry and chemical engineering.

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

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

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

The Master's thesis must be based on experimental work except in extraordinary cases; it shall be the duty of each thesis committee in this department to see that the spirit of this regulation is carried out.

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

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

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

### Chemistry

#### *For Undergraduates and Graduates*

- 411-2. Chemical Literature and Seminar. Cr. 1.  
Prerequisite: Senior standing in chemistry.
- 431. Qualitative Organic Analysis. Cr. 3. (1-6). Mr. Dennis.  
Prerequisite: Senior standing in chemistry.
- 433. Inorganic Preparations. Cr. 3. (0-9). Mr. Wendlendt.  
Prerequisite: Senior standing in chemistry.
- 434. Organic Preparations. Cr. 3. (0-9). Mr. Dennis.  
Prerequisite: Senior standing in chemistry.
- 436. Biological Chemistry I. Cr. 3. (2-3). Mr. Dennis.  
Prerequisite: Senior standing in chemistry.
- 437. Biological Chemistry II. Cr. 3. (2-3). Mr. Dennis.  
Prerequisite: Senior standing in chemistry.
- 438. Physical Chemistry III. Cr. 3. Mr. Oberg, Mr. Wilhoit.  
Prerequisite: Chem. 441-2.
- 439. Instrumental Methods of Analysis. Cr. 3. (1-6). Mr. Oberg.  
Prerequisite: Senior standing in chemistry.
- 441-2. Physical Chemistry I-II. Cr. 4. (3-3). Mr. Craig.  
Prerequisite: Chem. 331-2, 5-6 semester hours in calculus, 6 semester hours in physics. Prerequisite or parallel: Chem. 353-4.

*For Graduates*

- 511, 512. Graduate Seminar. Cr. 1, each.  
Prerequisite: Graduate standing in chemistry. Required of all graduate students majoring in this department. May be repeated for credit.
5301. Advanced Inorganic Chemistry I. Cr. 3. Mr. Wendlandt.  
Prerequisite: Chem. 441-2.
5302. Advanced Inorganic Chemistry II. Cr. 3. Mr. Wendlandt.
5303. Nuclear Chemistry. Cr. 3.  
Prerequisite: Chem. 5301.
5304. Selected Topics in Inorganic Chemistry. Cr. 3. Mr. Wendlandt.  
Prerequisite: Consent of instructor.
5314. Advanced Analytical Chemistry. Cr. 3. Mr. Craig.  
Prerequisite: Chem. 331-2.
5315. Spectrographic Analysis I, Emission Spectra. Cr. 3. (2-3).  
Mr. Craig.  
Prerequisite: Consent of instructor. Physics 331 is recommended.
5316. Spectrographic Analysis II, Absorption Spectra. Cr. 3. (2-3).  
Mr. Craig.  
Prerequisite: Chem. 5315.
5318. Chemical Microscopy. Cr. 3. (1-6).
5321. Advanced Organic Chemistry I. Cr. 3. Mr. Lee, Mr. Estok.  
Prerequisite: Chem. 353-4.
5322. Advanced Organic Chemistry II. Cr. 3. Mr. Lee, Mr. Estok.  
Prerequisite: Chem. 5321.
5324. Quantitative Organic Analysis. Cr. 3. (0-9).  
Prerequisite: Chem. 353-4.
5325. Selected Topics in Organic Chemistry. Cr. 3.  
Prerequisite: Chem. 5321. May be repeated for credit.
5327. Physical Organic Chemistry. Cr. 3. Mr. Lee, Mr. Estok.  
Prerequisite: Chem. 5321 and 5342.
5328. Mechanisms of Organic Chemistry. Cr. 3. Mr. Lee, Mr. Estok.  
Prerequisite: Chem. 5327.
5334. Selected Topics in Biological Chemistry. Cr. 3. Mr. Dennis.  
May be repeated for credit.
5335. Physical Biochemistry. Cr. 3.  
Prerequisite: Chem. 436, 437. Prerequisite or parallel: Chem. 5342.
5342. Advanced Physical Chemistry. Cr. 3. Mr. Wilhoit.  
Prerequisite: Chem. 441-2.
5343. Colloidal Chemistry. Cr. 3. (2-3).  
Prerequisite: Chem. 5342.
5344. Kinetics of Chemical Reactions. Cr. 3. Mr. Lee, Mr. Oberg.  
Prerequisite: Chem. 5342.
5346. Electrochemistry. Cr. 3.  
Prerequisite: Chem. 5342.
5347. Chemical Thermodynamics. Cr. 3. Mr. Oberg.  
Prerequisite: Chem. 5342.
5348. Selected Topics in Physical Chemistry. Cr. 3.  
Prerequisite: Chem. 5342. May be repeated for credit.
- 537, 538. Advanced Work in Specific Fields. Cr. 3 to 6.  
Prerequisite: Graduate standing and approval of the head of department. Nature of course and amount of credit depend on interest of students. May be taken for chemistry credit by chemistry students, or for chemical engineering credit by chemical engineering students. See same course under Chemical Engineering, Graduate Courses.
- 631-2. Master's Thesis. Cr. 6.
- 731, 732. Research. Cr. 3, each.  
Required of students working on the Doctor's dissertation. May be repeated for credit as many times as the advisory committee recommends.
- 831-2. Doctor's Dissertation. Cr. 6.  
Required as the final registration for the dissertation.

## Chemical Engineering

*For Undergraduates and Graduates*

- 425-6. Unit Operations Laboratory. Cr. 2 each. (0-6). Mr. Renard.  
Prerequisite: Ch.E. 331-2.
430. Chemical Engineering Plant Design. Cr. 3. (1-6). Mr. Renard.  
Prerequisite: Ch.E. 437 and parallel registration in Ch.E. 432.
431. Unit Processes. Cr. 3. (3-0). Mr. Renard.  
Prerequisite: Chem. 353-4 and Ch.E. 331-2.
432. Process Development. Cr. 3. (3-0). Mr. Renard.  
Prerequisite: Ch.E. 431. This course must be taken before or in parallel with Ch.E. 430.
- 433-4. Chemical Engineering Thermodynamics. Cr. 3 each.  
Mr. Oberg.  
Prerequisite: Ch.E. 331-2.
435. Instrumentation. Cr. 3. (2-3). Mr. Renard.  
Prerequisite: Ch.E. 331-2.
437. Principles of Chemical Engineering III. Cr. 3. Mr. Holcomb.  
Prerequisite or parallel: Ch.E. 331-2.
438. Petroleum Refining Engineering. Cr. 3. Mr. Holcomb.  
Prerequisite: Consent of the instructor.

*For Graduates*

531. Advanced Chemical Engineering Thermodynamics. Cr. 3.  
Mr. Oberg.  
Prerequisite: Ch.E. 433-4 and Ch.E. 437 or equivalent.
532. Chemical Engineering Design. Cr. 3. (1-6). Mr. Renard.  
Prerequisite: Ch.E. 430, Ch.E. 431-2, and Ch.E. 437 or equivalent.
533. Organic Unit Processes. Cr. 3. Mr. Renard.  
Prerequisite: Chem. 353-4.
534. Absorption and Extraction. Cr. 3.  
Prerequisite: Ch.E. 433-4 and Ch.E. 437 or equivalent.
535. Heat Transfer. Cr. 3.  
Prerequisite: Ch.E. 433-4 and Ch.E. 437 or equivalent.
536. Distillation. Cr. 3. Mr. Holcomb.  
Prerequisite: Ch.E. 433-4 and Ch.E. 437 or equivalent.
- 537, 538. Advanced Work in Specific Fields. Cr. 3 each.  
Prerequisite: Graduate standing. Course and credit depend on interests of students. All registration must be approved by the head of the department. Offered on demand. See Chem. 537, 538.
- 631-2. Master's Thesis. Cr. 6.

## EDUCATION AND PHILOSOPHY

Professor John S. Carroll  
Head of the Department

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

## EDUCATION

*For Undergraduates and Graduates*

330. Principles of Modern Education. Cr. 3. Mr. Garlin.  
Prerequisite: Upper division classification.
333. Curriculum Development in Elementary Education. Cr. 3.  
Mr. Browning, Mr. Livingston.  
Prerequisite: Upper division classification.

334. Curriculum Development in Secondary Education. Cr. 3.  
Mr. Cooper, Mr. Jackson.  
Prerequisite: Upper division classification.
335. Elementary Education Methods. Cr. 3. Mr. Browning,  
Mr. Mecham.  
Prerequisite: Upper division classification.
336. Secondary Education Methods. Cr. 3. Mr. Cooper, Mr. Garlin.  
Prerequisite: Upper division classification.
430. History and Philosophy of Education. Cr. 3. Mr. Jackson.  
Prerequisite: Upper division classification.
435. Educational Evaluation. Cr. 3. Mr. Livingston.  
Prerequisite: Upper division classification and 12 hours in education and educational psychology.
436. Public School Administration. Cr. 3. Mr. Edwards.  
Prerequisite: Upper division classification and 18 hours in education and educational psychology.
437. Public School Relations. Cr. 3. Mr. Hartsell.  
Prerequisite: Upper division classification and 18 hours in education and educational psychology.
438. Supervision and Curriculum Development. Cr. 3.  
Prerequisite: Upper division classification and 18 hours in education and educational psychology.
4312. Elementary School Organization and Administration. Cr. 3.  
Mr. Browning, Mr. Edwards.  
Prerequisite: Upper division classification and 18 hours in education and educational psychology.
4313. Secondary School Organization and Administration. Cr. 3.  
Mr. Edwards.  
Prerequisite: Upper division classification, including one course in secondary education.
4315. Audio-Visual Education. Cr. 3. Mr. Davidson, Mr. Hartsell.  
Prerequisite: Upper division classification, including one course in elementary or secondary education. Machine service fee, \$3.
4316. Workshop in Curriculum Development. Cr. 3. Mr. Cooper.  
Prerequisite: Upper division classification and a course in curriculum development.
4317. Curriculum Development Practicum. Cr. 3. Staff.  
Prerequisite: Upper division classification and one course in student teaching.
4323. Applied Curriculum Development. Cr. 3. Mr. Cooper.  
Prerequisite: Upper division classification.
4324. Applied Curriculum Practicum. Cr. 3. Staff.  
Prerequisite: Upper division classification.
4325. Children's Literature. Cr. 3. Mr. Browning.  
Prerequisite: 12 hours in education and educational psychology, including a course in elementary education, and upper division classification.
4326. Reading Development in the Elementary School. Cr. 3.  
Mr. Livingston, Mr. Mecham.  
Prerequisite: Upper division classification, including one course in elementary education.

### *For Graduates*

5139. Advanced Administration Workshops. Cr. 1. Mr. Carroll.  
Prerequisite: Graduate classification, 18 hours in education and educational psychology and 6 hours in administration or experience as an administrator. May be taken for a minimum of 2 and a maximum of 6 semester hours credit by repeating the course.
530. Advanced Educational Psychology. Cr. 3. Mr. Livingston,  
Mr. Mecham.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.
532. Philosophy of Education. Cr. 3. Mr. Jackson.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.
534. Advanced Educational Sociology. Cr. 3. Mr. Jackson.  
Prerequisite: Graduate classification and 18 hours in education and educational sociology.

535. Federal, State, County and Local School Administration. Cr. 3.  
Mr. Carroll, Mr. Edwards.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.
536. Elementary School Administration. Cr. 3. Mr. Mecham,  
Mr. Edwards.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.
537. Secondary School Administration. Cr. 3. Mr. Carroll,  
Mr. Edwards.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.
538. Advanced Audio-Visual Education. Cr. 3. Mr. Davidson,  
Mr. Hartsell.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.
539. Administration of Business Services. Cr. 3. Mr. Carroll,  
Mr. Edwards.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.
5312. Elementary Supervision and Curriculum Development. Cr. 3.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.
5313. Secondary Supervision and Curriculum Development. Cr. 3.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.
5314. Advanced Curriculum Development. Cr. 3. Mr. Mecham.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.
5316. Junior College Education. Cr. 3. Mr. Garlin.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.
5317. Advanced Curriculum Practicum. Cr. 3. Staff.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.
5318. Audio-Visual Education Practicum. Cr. 3. Mr. Edwards.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.
5319. Audio-Visual Production. Cr. 3. Mr. Davidson, Mr. Hartsell.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.
5321. Individual Study in Education. Cr. 3. Staff.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology. Enrollment limited to students who have completed the first stage (Master's degree) of graduate work in education and who have been recommended for this course by the Education Department Committee on Individual Study. May be repeated for credit.
5322. Foundations of Educational Research. Cr. 3. Mr. Cooper.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.
5331. Human Development in Education. Cr. 3.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.
5337. Advanced Supervision Workshop. Cr. 3.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology, and 6 hours in supervision or experience as a supervisor.
5338. Foundations of Special Education. Cr. 3. Staff.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.
5341. Developing Arithmetic Programs in Elementary Education.  
Cr. 3. Mr. Livingston, Mr. Mecham.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.
5342. Developing Reading Programs in Elementary Education. Cr. 3.  
Mr. Livingston.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.

5343. Developing Natural and Physical Environment Concepts in Elementary Education. Cr. 3.

Prerequisite: Graduate classification, 6 hours in science, and 18 hours in education and educational psychology.

5344. Developing Language Arts Programs in Elementary Education.

Cr. 3. Mr. Livingston, Mr. Mecham.

Prerequisite: Graduate classification, 12 hours of English and/or speech including six hours of English Composition, and 18 hours in education and educational psychology.

5345. Developing Social Studies Programs in Elementary Education.

Cr. 3.

Prerequisite: Graduate classification and 18 hours in education and educational psychology.

5351. General Education Seminar. Cr. 3. Mr. Garlin.

Prerequisite: Completion of first stage, or fifth year, of graduate work in education and approval of admissions committee of Education faculty. Basic course for second stage of graduate work in education.

5352. Seminar in History and Philosophy of Education. Cr. 3.

Mr. Jackson.

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for this seminar.

5353. Seminar in Comparative Education. Cr. 3. Staff.

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for this seminar.

5354. Seminar in Educational Sociology. Cr. 3. Mr. Jackson,

Mr. Stensland.

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for this seminar.

5355. Seminar in Elementary Education. Cr. 3. Mr. Mecham.

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for this seminar.

5356. Seminar in Secondary Education. Cr. 3. Mr. Garlin.

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for this seminar.

5357. Seminar in the Junior College. Cr. 3. Mr. Garlin.

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for this seminar.

5358. Seminar in Educational Administration. Cr. 3. Mr. Carroll.

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for this seminar.

5359. Seminar in Supervision and Curriculum Development. Cr. 3.

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for this seminar.

5361. Seminar in Health Education. Cr. 3. Staff.

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for this seminar.

5363. Seminar in Audio-Visual Education. Cr. 3. Mr. Hartsell.

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for this seminar.

5364. Seminar in Educational Psychology. Cr. 3. Mr. Livingston,

Mr. Mecham.

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for this seminar.

5371. In-Service Development of Secondary Education. Cr. 3. Staff.

Prerequisite: Graduate classification, 18 hours in education and educational psychology, and approval of the Education Department. Class members must be teachers who are in service.

5372. In-Service Development of Elementary Education Programs.

Cr. 3. Staff.

Prerequisite: Graduate classification, 18 hours in education and educational psychology, and approval of the Education Department. Class members must be teachers who are in service.

631-2. Master's Thesis. Cr. 6. Staff.

731, 732. Research. Cr. 3, each. Staff.

Required of students working on the Doctor's dissertation. May be repeated for credit as many times as the advisory committee recommends.

- 831-2. Doctor's Dissertation. Cr. 6. Staff.  
Required as the final registration for the dissertation.

## ADULT EDUCATION

### *For Graduates*

5315. Adult Education. Cr. 3. Mr. Stensland.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.
5328. Adult Education Administration. Cr. 3. Mr. Stensland.  
Prerequisite: Education 5315.
5329. Program Planning in Adult Education. Cr. 3. Mr. Stensland.  
Prerequisite: Education 5315 or consent of the Education Department.
5332. Democratic Group Processes. Cr. 3. Mr. Stensland.  
Prerequisite: Graduate classification and 18 hours in education and educational psychology.
5362. Seminar in Adult Education. Cr. 3. Mr. Stensland.  
Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for the seminar. May be repeated for credit.

## PHILOSOPHY

### *For Undergraduates and Graduates*

332. History of Philosophy. Cr. 3. Mr. Little.  
Prerequisite: Junior classification.
333. Development of American Philosophy. Cr. 3. Mr. Little.  
Prerequisite: Junior classification.
335. Oriental Philosophies. Cr. 3. Mr. Little.  
Prerequisite: Junior classification.
337. Logic. Cr. 3. Mr. Little.  
Prerequisite: Junior classification.
431. Aesthetics. Cr. 3. Mr. Little.  
Prerequisite: Senior classification or consent of instructor.
432. Philosophy of Value. Cr. 3. Mr. Little.  
Prerequisite: Senior classification or consent of instructor.
436. Philosophy of Religion. Cr. 3. Mr. Little.  
Prerequisite: Senior classification or consent of instructor.
438. Seminar in Philosophical Problems. Cr. 3. Mr. Little.  
Prerequisite: Senior classification and major or minor in philosophy.
4351. Structure and Dynamics of Philosophical Thought. Cr. 3.  
Mr. Little.  
Prerequisite: Graduate or upper division classification.

## ENGINEERING

Dean Dysart E. Holcomb, Graduate Chairman  
Advisory Committee: Professors Bullen, Ducker,  
Murdough, Oberg, and Powers

Applicants for the Master's degree will have a conventional major in one department; they may have one or two conventional minors in other departments, or they may have a general minor comprising work in several departments. Such general programs should be approved by the Graduate Chairman or a member of the advisory committee for Engineering.

## ARCHITECTURE AND ALLIED ARTS

Professor Nolan E. Barrick  
Head of the Department

## MINORS ONLY FOR THE MASTER'S DEGREE

Many courses in Architecture and Allied Arts, especially those in City Planning, History of Architecture, and History of Painting and Sculpture are available for electives to students majoring in education, history, music, government, landscape architecture, etc. Consent of the instructor may be secured in lieu of the professional prerequisites listed.

## Architecture

*For Undergraduates and Graduates*

320. History of Furniture and Costume. Cr. 2. (2-9). Mrs. Sasser.  
Prerequisite: Architecture 323.
321. History of Early American Architecture. Cr. 2. Mr. Barrick,  
Mr. Kleinschmidt, Mrs. Sasser.  
Prerequisite: Architecture 322.
322. History of Renaissance Architecture. Cr. 2. Mrs. Sasser.  
Prerequisite: Architecture 222.
323. History of Modern Architecture. Cr. 2. Mr. Barrick,  
Mr. Kleinschmidt, Mrs. Sasser.  
Prerequisite: Architecture 322.
- 333-4. Architectural Working Drawing. Cr. 3 each. (1-6).  
Mr. Bradshaw.  
Prerequisite: Architecture 232.
420. Professional Practice. Cr. 2. Mr. Barrick, Mr. Bradshaw.  
Prerequisite: Junior standing.
- 423-4. Life Drawing II, III. Cr. 2 each. (0-6). Mr. Parkinson.  
Prerequisite: Architecture 327. \$5 model fee each.
- 4316-17. Architectural Sculpture. Cr. 3 each. (1-6). Mr. Tracy.  
Prerequisite: Architecture 224. Fee for ceramics materials \$5 each.
435. Advanced Architectural Working Drawings. Cr. 3. (1-6).  
Mr. Bradshaw.
436. City Planning. Cr. 3. (1-6). Mr. Bradshaw.  
Prerequisite: Architecture 435 and registration in Architecture 352.

## Allied Arts

*For Undergraduates and Graduates*

341. Art Workshop. Cr. 4. (0-12).  
\$5.00 materials fee for ceramics part of the course.
- 433-4. Commercial Design II. Cr. 3 each. (0-9). Mr. Parkinson.
- 4311-12. Ceramics. Cr. 3 each. (0-9). Mr. Tracy.  
Prerequisite: Allied Arts 3311-2. Materials fee, \$5 each.
- 4313-14. Methods of Teaching Art Integrated for the High School.  
Cr. 3 each. (2-3). Mrs. Sasser.  
Prerequisite: Allied Arts 335-6, 337-8, or senior standing.
- 4318-19. History of Painting and Sculpture. Cr. 3 each.  
Mr. Kleinschmidt, Mrs. Sasser.  
Prerequisite: Architecture 324.
- 4321-22. Methods of Teaching Art Integrated for the Elementary  
School. Cr. 3 each. (2-3). Mrs. Sasser.  
Prerequisite: Allied Arts 335-6, 337-8, or senior standing.



4335. Art in Elementary Education. Cr. 3. (1-6). Mrs. Sasser.  
 Prerequisite: 12 semester hours of Allied Arts or equivalent, or two years art teaching experience plus 6 hours of Child Psychology. Enrollment limited to graduate students in elementary education.
4351. Art in the Modern World. Cr. 3. Mrs. Sasser.

## CHEMICAL ENGINEERING

See Department of Chemistry and Chemical Engineering, page 52.

## CIVIL ENGINEERING

Professor J. H. Murdough  
 Head of the Department

### MINORS ONLY FOR THE MASTER'S DEGREE

#### *For Undergraduates and Graduates*

321. Municipal Sanitation. Cr. 2.  
 Prerequisite: Junior standing or approval of head of department.
3311. Hydraulic Machinery. Cr. 3. Mr. Whetstone.  
 Prerequisite: C.E. 332 and 339.
424. Materials. Cr. 2. (1-3). Mr. Adams, Mr. McRee.  
 Prerequisite: Junior engineering standing.
425. Materials. Cr. 2. (1-3). Mr. Adams, Mr. McRee.  
 Prerequisite: C.E. 333.
431. Reinforced Concrete. Cr. 3. Mr. Murdough.  
 Prerequisite: C.E. 333.
432. Reinforced Concrete. Cr. 3. Mr. Murdough.  
 Prerequisite: C.E. 431.
433. Structures. Cr. 3. (2-6). Mr. Murdough.  
 Prerequisite: C.E. 330, 333.
434. Structures. Cr. 3. Mr. Murdough.  
 Prerequisite: C.E. 333.
437. Water Supply and Treatment. Cr. 3. (2-3).  
 Prerequisite: C.E. 339 or Ch.E. 332.
438. Sewerage and Sewage Treatment. Cr. 3. (2-3).  
 Prerequisite: C.E. 339 or Ch.E. 332.
439. Law and Ethics in Engineering. Cr. 3. Mr. Adams, Mr. McRee.  
 Prerequisite: Senior standing in engineering or approval of head of department.
4312. Soil Mechanics and Foundations. Cr. 3.  
 Prerequisite: C.E. 333.
4313. Sanitary Engineering Design—Water. Cr. 3. (1-6).  
 Prerequisite: Registration in C.E. 437.
4314. Sanitary Engineering Design—Sewage. Cr. 3. (1-6).  
 Prerequisite: Registration in C.E. 438 and C.E. 431.

## ELECTRICAL ENGINEERING

Professor C. V. Bullen  
 Head of the Department

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

#### *For Undergraduates and Graduates*

- 312-3. Alternating Current Circuits Laboratory. Cr. 1 each. (0-3).  
 Prerequisite: Registration in E.E. 332-3.
317. Electronics Laboratory. Cr. 1. (0-3).  
 Prerequisite: Registration in E.E. 337.

321. Static Electric and Magnetic Fields. Cr. 2. Mr. Bullen, Mr. Spuhler.  
Prerequisite: Phys. 236 and Math. 331.
- 332-3. Alternating Current Circuits. Cr. 3 each.  
Prerequisite: E.E. 221, 231 and Math. 251.
337. Electronics. Cr. 3. Mr. Spuhler, Mr. Stenis.  
Prerequisite: E.E. 321 and 332.
- 436-7. Principles of Electromagnetic Fields. Cr. 3 each. Mr. Houston.  
Prerequisite: Math. 321 and E.E. 321.
- 4112-13. Alternating Current Machinery Laboratory. Cr. 1 each. (0-3). Mr. Bullen, Mr. Blackwell.  
Prerequisite: Registration in E.E. 4312-13.
- 4115-16. Vacuum Tube Circuits Laboratory. Cr. 1 each. (0-3). Mr. Houston.  
Prerequisite: Parallel enrollment in E.E. 4315-16.
- 4121-22. Control System Instrumentation Laboratory. Cr. 1 each. (0-3). Mr. Spuhler.  
Prerequisite: Registration in E.E. 4221-22.
4124. Electrical Transmission Lines Laboratory. Cr. 1. (0-3). Mr. Houston.  
Prerequisite: Registration in E.E. 4224.
- 4221-22. Control System Instrumentation. Cr. 2 each. Mr. Spuhler.  
Prerequisite: Senior standing in electrical engineering. For non-majors, consent of instructor.
- 4312-13. Alternating Current Machines. Cr. 3 each. Mr. Blackwell.  
Prerequisite: E.E. 334.
- 4315-16. Vacuum Tube Circuits and Systems. Cr. 3 each. Mr. Houston, Mr. Spuhler.  
Prerequisite: E.E. 337 and 334.
- 4323-4224. Electrical Transmission Lines. Cr. 3, 2. Mr. Houston, Mr. Blackwell.  
Prerequisite: E.E. 334 and 321.

### *For Graduates*

- 531-2. Vacuum Tubes and Associated Circuits. Cr. 3 each. Mr. Houston, Mr. Spuhler.  
Prerequisite: E.E. 4316 or the equivalent and consent of instructor.
533. Symmetrical Components. Cr. 3.  
Prerequisite: B.S. in E.E. or consent of instructor.
535. Electric Power Systems. Cr. 3.  
Prerequisite: E.E. 4224 or consent of instructor.
- 536-7. Advanced Network Theory. Cr. 3 each. Mr. Houston, Mr. Spuhler.  
Prerequisite: B.S. in E.E. or consent of instructor.
- 538-9. Advanced Electrical Machine Theory. Cr. 3 each.  
Prerequisite: B.S. in E.E. or consent of instructor.
- 5211-12. Special Problems in Electrical Engineering. Cr. 2 each. Staff.
- 5311-12. Automatic Control Systems. Cr. 3 each. Mr. Spuhler.  
Prerequisite: E.E. 4221-22 or equivalent.
- 631-2. Master's Thesis. Cr. 6. Staff.

## INDUSTRIAL ENGINEERING

Professor J. S. Dwyer  
Head of the Department

## MINORS ONLY FOR THE MASTER'S DEGREE

*For Undergraduates and Graduates*

411. Industrial Engineering Problems. Cr. 1. (0-3). Mr. St. Clair.  
Prerequisite: Senior standing in Industrial Engineering.
423. Industrial Procurement. Cr. 2. Mr. Penick.  
Prerequisite: Senior standing.
- 432-433. Industrial Plant Design. Cr. 3 each. (1-6). Mr. St. Clair.  
Prerequisite: Senior standing in Industrial Engineering, and C.E. 333 or parallel registration.
435. Safety Engineering. Cr. 3. Mr. St. Clair.  
Prerequisite: Senior standing in engineering.
436. Engineering Economy. Cr. 3. Mr. Dwyer, Mr. Penick.  
Prerequisite: 3 hours economics and senior standing in engineering.
437. Quality Control. Cr. 3. Mr. Dwyer.  
Prerequisite: Senior standing in engineering.

## MECHANICAL ENGINEERING

Professor L. J. Powers  
Head of the Department

## MINORS ONLY FOR THE MASTER'S DEGREE

*For Undergraduates and Graduates*

330. Engineering Thermodynamics. Cr. 3. Mr. Godeke, Mr. Newell.  
Prerequisite: Parallel enrollment in Math. 331, Phys. 142 or Phys. 235.
331. Engineering Thermodynamics. Cr. 3. Mr. Godeke, Mr. Newell.  
Prerequisite: M.E. 330.
420. Special Problems in Mechanical Engineering. Cr. 2. Mr. Powers.  
Prerequisite: Parallel enrollment in M.E. 435, 436.
425. Heat Transfer. Cr. 2. Mr. Helmers.  
Prerequisite: M.E. 331 or Phys. 332 and M.E. 435.
426. Dynamics. Cr. 2. Mr. Powers.  
Prerequisite: C.E. 332 and Math. 332.
427. Dynamics. Cr. 2. Mr. Powers.  
Prerequisite: M.E. 426.
428. Air Conditioning. Cr. 2. Mr. Newell.  
Prerequisite: M.E. 331 or M.E. 334 or M.E. 335.
429. Air Conditioning. Cr. 2. Mr. Newell.  
Prerequisite: M.E. 428.
431. Heat Power Laboratory. Cr. 3. (1-6). Mr. Helmers.  
Prerequisite: M.E. 318 or M.E. 421 and M.E. 433.
432. Heat Power Design. Cr. 3. Mr. Helmers.  
Prerequisite: M.E. 435.
433. Combustion Engines. Cr. 3. Mr. Helmers, Mr. Newell.  
Prerequisite: M.E. 331 or M.E. 334.
435. Fluid Dynamics. Cr. 3. Mr. Helmers, Mr. Powers.  
Prerequisite: M.E. 331 or Physics 332 and Math. 332.
436. Mechanical Design. Cr. 3. (2-3). Mr. Powers.  
Prerequisite: C.E. 333.
437. Mechanical Design. Cr. 3. (1-6). Mr. Powers.  
Prerequisite: M.E. 436.

## PETROLEUM ENGINEERING

Professor W. L. Ducker  
Head of the Department

## MINORS ONLY FOR THE MASTER'S DEGREE

*For Undergraduates and Graduates*

- 320. Well Logging Methods. Cr. 2.  
Prerequisite: Pet.E. 230 or junior standing in geology.
- 321. Phase Behavior. Cr. 2.  
Prerequisite: Junior standing in petroleum engineering and enrollment in M.E. 330.
- 333. Petroleum Production Methods. Cr. 3. (2-3).  
Prerequisite: Pet.E. 230 and junior standing.
- 413. Natural Gas Laboratory. Cr. 1. (0-3). Mr. Ducker.  
Prerequisite: Registration in Pet.E. 434.
- 414. Production Laboratory. Cr. 1. (0-3).  
Prerequisite: Registration in Pet.E. 433.
- 416. Reservoir Engineering Laboratory. Cr. 1. (0-3).  
Prerequisite: Registration in Pet.E. 433.
- 420. Special Petroleum Engineering Problems. Cr. 2. Mr. Ducker.  
Prerequisite: Senior standing and approval of the head of the department.
- 430. Special Natural Gas Problems. Cr. 3. Mr. Ducker.  
Prerequisite: Senior standing and approval of the head of the department.
- 433. Advanced Production Engineering. Cr. 3.  
Prerequisite: Pet.E. 320 and 333 and C.E. 339.
- 434. Natural Gas Engineering. Cr. 3. Mr. Ducker.  
Prerequisite: M.E. 331 and 318.
- 435. Advanced Natural Gas Engineering. Cr. 3. Mr. Ducker.  
Prerequisite: Pet.E. 434.
- 436. Reservoir Engineering. Cr. 3.  
Prerequisite: Pet.E. 433.

## ENGLISH

Professor Truman W. Camp  
Head of the Department

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

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

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

An applicant for the doctorate in English must complete at least one graduate course in each of these nine fields: Old English, Middle English, the Renaissance, Shakespeare, the Seventeenth Century, the Eighteenth Century, Romanticism, the Nineteenth Century, and American literature. He will select one field (or two or more closely related

fields) as his area of concentration, in which he will take additional courses and write his dissertation. For a minor subject (at least twelve semester hours of graduate work), the department recommends work in history, foreign languages, or speech. All applicants for the doctorate in English should take English 531, preferably near the beginning of their graduate program.

### *For Undergraduates and Graduates*

Prerequisites: At least twelve semester hours of work in English, including six semester hours in literature.

- 430. Chaucer. Cr. 3. Mr. Gunn.
- 432. Shakespeare. Cr. 3. Mr. Camp, Mr. Gates.  
(This course will not duplicate any material in English 335.)
- 434. Milton and His Age. Cr. 3. Mr. Allen, Mr. McCullen.
- 435. English Romanticism. Cr. 3. Mr. Strout.
- 436. The Later Romantic Poets. Cr. 3. Mr. Strout.
- 438. History of the English Language. Cr. 3. Mr. Gunn.
- 439. American English. Cr. 3. Mr. Gunn.
- 4311. The Neo-Classical Age. Cr. 3. Mr. Camp.
- 4312. Age of Johnson. Cr. 3. Mr. Camp.
- 4314. Literature of the English Renaissance. Cr. 3. Mr. Strout.
- 4319. Victorian Literature. Cr. 3. Miss Teague.  
(Not to be taken by those who have credit in English 337.)
- 4322. Literature of the Southwest. Cr. 3. Mr. Gillis.
- 4323. American Literature and Its Backgrounds. Cr. 3.  
Mr. Gates, Mr. Male, Mr. White, Mr. Nall.
- 4324. American Literature and Its Backgrounds. Cr. 3.  
Mr. Gates, Mr. Male, Mr. White, Mr. Nall.
- 4325. The American Novel. Cr. 3. Mr. Male, Mr. White.
- 4327. English Novel from Lyly to Scott. Cr. 3. Mr. Allen.
- 4328. English and Foreign Fiction from 1825 to 1910. Cr. 3.  
Mr. Murphy.
- 4329. Contemporary American and British Literature. Cr. 3.  
Mr. Gillis, Mr. Male.
- 4331. Pre-Shakespearean Drama. Cr. 3. Mr. McCullen.
- 4332. Elizabethan Drama through 1642. Cr. 3. Mr. McCullen.
- 4333. Philosophical Ideas in Literature. Cr. 3. Mr. McCullen.  
May be repeated for credit.
- 4334. Literary Interpretation and Criticism. Cr. 3. Mr. Gillis,  
Mr. Bowling.
- 4351. Appreciation of the Literature of Western Civilization. Cr. 3.  
Mr. Murphy.  
May be taken by graduate students in secondary education to complete a part  
of a composite minor.

### *For Graduates*

- 4335. Principles of Language. Cr. 3. Mr. Gunn.  
Enrollment limited to graduate students in elementary education.
- 530. Studies in Middle English Literature. Cr. 3. Mr. Gunn.  
May be repeated for credit.
- 531. Bibliography and Methods of Literary Research. Cr. 3.  
Mr. Gunn.  
Should be taken by all graduate students in English at the earliest possible time.

533. Studies in Renaissance Literature. Cr. 3. Mr. Strout,  
Mr. McCullen.  
May be repeated for credit.
534. Old English. Cr. 3.
535. Studies in Nineteenth Century English Literature. Cr. 3.  
Mr. Strout.  
May be repeated for credit.
536. Studies in American Literature. Cr. 3. Mr. Gates, Mr. Male.  
May be repeated for credit.
538. Studies in the English Romantic Poets. Cr. 3. Mr. Strout.  
May be repeated for credit.
539. Studies in Eighteenth Century Literature. Cr. 3. Mr. Camp.  
May be repeated for credit.
5319. Studies in Shakespeare. Cr. 3. Mr. Camp, Mr. Gates.  
May be repeated for credit.
- 631-2. Master's Thesis. Cr. 6.
- 731, 732. Research. Cr. 3, each.  
Required of students working on the Doctor's dissertation. May be repeated for credit as many times as the advisory committee recommends.
- 831-2. Doctor's Dissertation. Cr. 6.  
Required as the final registration for the dissertation.

## FOREIGN LANGUAGES

Professor John C. Dowling  
Head of the Department

### MINORS ONLY FOR THE DOCTOR'S DEGREE

#### FRENCH

#### MINORS ONLY FOR THE MASTER'S DEGREE

##### *For Undergraduates and Graduates*

431. The Modern Drama. Cr. 3. Mr. Qualia.  
Prerequisite: French 331-2, or the equivalent.
432. The Modern Drama. Cr. 3. Mr. Qualia.  
Prerequisite: French 331-2, or the equivalent.
433. The Literature of the Nineteenth Century. Cr. 3. Mr. Qualia.  
Prerequisite: French 331-2, or the equivalent.
434. The Literature of the Nineteenth Century. Cr. 3. Mr. Qualia.  
Prerequisite: French 331-2, or the equivalent.
435. Readings in French Literature. Cr. 3. Mr. Qualia.  
Prerequisite: French 331-2, or the equivalent.
436. Readings in French Literature. Cr. 3. Mr. Qualia.  
Prerequisite: French 331-2, or the equivalent.

#### SPANISH

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

##### *For Undergraduates and Graduates*

431. Nineteenth-Century Prose. Cr. 3. Mr. Qualia.  
Prerequisite: Spanish 331-2, or the equivalent.
432. Nineteenth-Century Prose. Cr. 3. Mr. Qualia.  
Prerequisite: Spanish 331-2, or the equivalent.
433. Modern Drama and Poetry. Cr. 3. Mr. Qualia.  
Prerequisite: Spanish 331-2, or the equivalent.

434. Modern Drama and Poetry. Cr. 3. Mr. Qualia.  
Prerequisite: Spanish 331-2, or the equivalent.
436. Advanced Composition and Conversation. Cr. 3.  
Prerequisite: Spanish 331-2, or the equivalent.
437. Advanced Composition and Conversation. Cr. 3.  
Prerequisite: Spanish 331-2, or the equivalent.
4312. The Prose of the Golden Age. Cr. 3. Mr. Hamilton.  
Prerequisite: Spanish 331-2, or the equivalent.
4313. The Prose of the Golden Age. Cr. 3. Mr. Hamilton.  
Prerequisite: Spanish 331-2, or the equivalent.
4314. The Drama of the Golden Age. Cr. 3. Mr. Hamilton.  
Prerequisite: Spanish 331-2, or the equivalent.
4315. The Drama of the Golden Age. Cr. 3. Mr. Hamilton.  
Prerequisite: Spanish 331-2, or the equivalent.
4316. A Survey of Spanish Literature. Cr. 3. Mr. Strehli.  
Prerequisite: Spanish 331-2, or the equivalent. Required for graduate majors.
4317. A Survey of Spanish Literature. Cr. 3. Mr. Strehli.  
Prerequisite: Spanish 331-2, or the equivalent.
4318. Readings in Contemporary Spanish Literature. Cr. 3.  
Mr. Qualia.  
Prerequisite: Spanish 331-2, or the equivalent.
4319. Readings in Contemporary Spanish Literature. Cr. 3.  
Mr. Dowling, Mr. Qualia.  
Prerequisite: Spanish 331-2, or the equivalent.
4324. Readings in Spanish American Literature and Civilization. Cr. 3.  
Mrs. Gates.  
Prerequisite: Spanish 331-2, or the equivalent.
4325. Readings in Spanish American Literature and Civilization. Cr. 3.  
Mrs. Gates.  
Prerequisite: Spanish 331-2, or the equivalent.
4326. Survey of Spanish American Literature. Cr. 3. Mr. Dowling,  
Mrs. Gates.  
Prerequisite: Spanish 331-2, or the equivalent.
4327. Survey of Spanish American Literature. Cr. 3. Mr. Dowling,  
Mrs. Gates.  
Prerequisite: Spanish 331-2, or the equivalent.
- 4328-29. Spanish Civilization. Cr. 3 each. Mr. Hamilton.  
Prerequisite: Spanish 331-2, or the equivalent. Offered in alternate summers in Mexico City.
4335. Spanish in the Elementary School. Cr. 3.  
Prerequisite: For credit toward a major or minor in Spanish, Span. 331-2 or their equivalent.

### *For Graduates*

5312. Studies in Spanish and Spanish American Literature. Cr. 3.  
Prerequisite: Consent of the Head of the Department. May be repeated for credit.
5313. Studies in Spanish and Spanish American Literature. Cr. 3.  
Prerequisite: Consent of the Head of the Department. May be repeated for credit.
- 631-2. Master's Thesis. Cr. 6.

### METHODS

Foreign Language 4311. Teachers' Course in Methods of Teaching

Foreign Languages. Cr. 3.

Prerequisite: French, German, Latin, or Spanish 331-2 or 333-4 and 6 semester hours of education. Instruction in scientific methods of teaching foreign languages with as much practice work as possible. May be counted as education or as foreign language. Required of those preparing to teach a foreign language.

## GEOLOGY

Professor F. A. Wade  
Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

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

*For Undergraduates and Graduates*

- 333-4. Petrology, Mineral Optics, and Petrography. Cr. 3 each. (1-6).

Mr. Wade.

Prerequisite: Geology 131-2, 231. Graduate credit for minors only.

- 335-6. General Paleontology. Cr. 3 each. (2-3). Mr. Brand.

Prerequisite: Geology 131-2 and junior standing.

337. Ground Water. Cr. 3.

Prerequisite: Geology 231-2, 235-6.

338. Metallic Ores. Cr. 3.

Prerequisite: Geology 231-2, 235-6.

339. Non-Metallic Deposits. Cr. 3.

Prerequisite: Geology 231-2, 235-6.

363. Field Geology. Cr. 6.

Prerequisite: Geology 235-6. Graduate credit for minors only.

433. Structural Geology. Cr. 3. Mr. Warn.

Prerequisite: Geology 235-6.

434. Geology of Oil and Gas. Cr. 3. Mr. Warn.

Prerequisite: Geology 433.

436. Micropaleontology. Cr. 3. (1-6). Mr. Brand.

Prerequisite: Geology 335-6.

437. Sedimentation, Environments. Cr. 3. (2-3). Mr. Sidwell.

Prerequisite: 24 hours of geology.

438. Sedimentation, Products. Cr. 3. (2-3). Mr. Sidwell.

Prerequisite: 24 hours of geology.

4314. Principles of Stratigraphy. Cr. 3. Mr. Brand.

Prerequisite: Geology 231-2, 235-6.

4315. Paleozoic, Mesozoic, Cenozoic Stratigraphy. Cr. 3. Mr. Brand.

Prerequisite: Geology 4314.

4316. Aerial Photo Interpretation. Cr. 3. (2-3). Mr. Warn.

Prerequisite: Geology 235-6.

*For Graduates*

531. Advanced Sedimentation. Cr. 3. Mr. Sidwell.

Prerequisite: Graduate standing in geology and consent of Head of Department.

532. Advanced Sedimentation. Cr. 3. Mr. Sidwell.

533. Structures of Oil and Gas Reservoirs. Cr. 3. Mr. Arper.

535. Advanced Work in Specific Fields. Cr. 3.

536. Advanced Work in Specific Fields. Cr. 3.

538. Geology of the Southwest. Cr. 3.

539. Advanced Invertebrate Paleontology. Cr. 3. Mr. Brand.

Prerequisite: Geology 335-6.



5311. Stratigraphic Micropaleontology. Cr. 3.  
Prerequisite: Geology 436.
5313. Stratigraphy of the United States. Cr. 3.
5319. Eolian Sedimentation. Cr. 3. (2-3). Mr. Warn.  
Prerequisite: Geology 437-8.
5322. Advanced Field Geology. Cr. 3. (1-6).  
Prerequisite: Elementary field geology.
5324. Problems in Sedimentation. Cr. 3. Mr. Sidwell.
5326. Problems in Stratigraphy. Cr. 3.
5327. Problems in Micropaleontology. Cr. 3. Mr. Brand.
5328. Problems in Structural Geology. Cr. 3. Mr. Warn.
- 631-2. Master's Thesis. Cr. 6.
- 731, 732. Research. Cr. 3, each.  
Required of students working on the Doctor's dissertation. May be repeated for credit as many times as the advisory committee recommends.
- 831-2. Doctor's Dissertation. Cr. 6.  
Required as the final registration for the dissertation.

## GEOGRAPHY

### *For Undergraduates and Graduates*

331. General Meteorology. Cr. 3. (2-3). Mr. Warn.  
Prerequisite: Geology 131-2, or Physics 141-2, or Geography.
332. Practical Meteorology. Cr. 3. (2-3). Mr. Warn.  
Prerequisite: Geography 331.

## GOVERNMENT

Professor J. William Davis  
Head of the Department

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

#### *For Undergraduates and Graduates*

331. Local Government. Cr. 3. Mr. Jackson.
332. European Political Ideas. Cr. 3. Mr. Davis.
333. American Political Ideas. Cr. 3. Mr. Davis.
334. Political Parties. Cr. 3. Mr. Oden.
335. International Politics. Cr. 3. Mr. Fuller.
336. United States Foreign Policy. Cr. 3. Mr. Fuller.
337. Public Administration, Organization. Cr. 3. Mr. Jackson.
338. Public Administration, Procedure. Cr. 3. Mr. Jackson.
339. Legislation. Cr. 3. Mr. Oden.
3312. British Government. Cr. 3. Mr. Kennedy.
3313. Russian Government. Cr. 3. Mr. Kennedy.
3314. Latin-American Governments. Cr. 3. Mr. Mack.
3315. Government and Business. Cr. 3. Mr. Abernethy.
3316. Government and Labor. Cr. 3. Mr. Abernethy.
431. American Constitutional Law, Powers. Cr. 3. Mr. Davis.
432. American Constitutional Law, Limitations. Cr. 3. Mr. Davis.
433. Modern Political Ideas. Cr. 3. Mr. Abernethy.

- 435. International Organization. Cr. 3. Mr. Fuller.
- 436. International Law. Cr. 3. Mr. Mack.
- 437. Political Geography. Cr. 3. Mr. Kennedy.
- 438. Local Administration. Cr. 3. Mr. Jackson.
- 439. Administrative Law. Cr. 3. Mr. Davis.
- 4351. Political Ideologies and Institutions. Cr. 3. Staff.

*For Graduates*

- 531. Reading and Research. Cr. 3. Staff.  
May be repeated in different fields of emphasis.
- 631-2. Master's Thesis. Cr. 6. Staff.

## HEALTH AND PHYSICAL EDUCATION AND RECREATION

Professor R. W. Kireilis  
Head of the Department

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

*For Undergraduates and Graduates*

- 422. Theory of Coaching Football and Basketball. Cr. 2. (2-2).  
(Men) Mr. Jennings.  
Prerequisite: P.E. 121 and 122.
- 431. Kinesiology. Cr. 3. (1-2). Mr. Kireilis.  
Prerequisite: 12 hours of science.
- 4311. Physical Education for the Junior and Senior High School. Cr. 3.  
(Women). Miss Rainey.  
Prerequisite: Junior standing in physical education.
- 432. Physiology of Exercise. Cr. 3. Mr. Kireilis.  
Prerequisite: 12 hours of science.
- 4321. Methods and Techniques of Driver Instruction. Cr. 3. (3-2).  
Mr. Jennings.  
Prerequisite: 6 hours of physical education, 6 hours of education, and junior standing.
- 4322. Organization and Administration of Interscholastic and Inter-collegiate Athletic Programs. Cr. 3. (Men). Mr. Jennings.
- 4323. Organization and Administration of Camps. Cr. 3. Mr. Kireilis.  
Prerequisite: 6 hours of physical education and 6 hours of education.
- 4324. Organization and Administration of Intramural Sports. Cr. 3.  
(Men). Mr. Philbrick.
- 4326. Safety Education. Cr. 3. (3-2). Mr. Kireilis.
- 436. Physical Examinations and Corrective Physical Education. Cr. 3.  
Mr. Kireilis.  
Prerequisite: 6 hours of science.
- 437. Measurements in Physical Education. Cr. 3. Mr. Kireilis.
- 438. Curriculum Development in Physical Education. Cr. 3.  
Miss Dabney, Mr. Kireilis.
- 439. Organization and Administration of Recreation Programs. Cr. 3.  
Miss Dabney.

*For Graduates*

- 531. Administration of Physical Education. Cr. 3. Mr. Kireilis.  
Prerequisite: Major in health and physical education or B.S. in Education with physical education minor, including P.E. 437 and 438 or the equivalent.

532. Supervision of Physical Education. Cr. 3. Miss Dabney,  
Mr. Kireilis.  
Prerequisite: Same as P.E. 531.
533. Facilities for Physical Education. Cr. 3. Mr. Kireilis.  
Prerequisite: Same as P.E. 531.
534. Administration of the School Health Program. Cr. 3.  
Mr. Kireilis.  
Prerequisite: 6 hours of health education and 12 hours of science.
- 631-2. Master's Thesis. Cr. 6.

## HISTORY, ANTHROPOLOGY, AND SOCIOLOGY

Professor W. M. Pearce  
Head of the Department

### HISTORY

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

##### *For Undergraduates and Graduates*

Prerequisite: junior classification or higher.

333. Europe, 1500-1789. Cr. 3. Mr. Pearce.
334. The French Revolution and Napoleon. Cr. 3. Mr. Pearce.
335. Modern Europe, 1815-1918. Cr. 3. Mr. Pearce.
336. Europe Since 1918. Cr. 3. Mr. Eaves.
337. Tudor and Stuart England. Cr. 3. Mr. Kinchen.
338. Eighteenth and Nineteenth Century England. Cr. 3.  
Mr. Kinchen.
339. Twentieth Century Britain. Cr. 3. Mr. Kinchen.
3311. The Canadian Dominion. Cr. 3. Mr. Kinchen.
3312. History of Russia. Cr. 3. Mr. Eaves.
3313. The Far East. Cr. 3. Mr. Eaves.
- 3314-15. Contemporary Europe; A Travel Course. Cr. 6. Mr. Eaves.
3316. The Near East in Modern Times. Cr. 3. Mr. Eaves.
432. Constitutional History of the United States to 1865. Cr. 3.  
Mr. McKay.
433. Constitutional History of the United States Since 1865. Cr. 3.  
Mr. McKay.
434. Diplomatic History of the United States to 1865. Cr. 3.  
Mr. Wallace.
435. Diplomatic History of the United States Since 1865. Cr. 3.  
Mr. McKay.
436. History of the United States, 1789 to 1829. Cr. 3. Mr. Wallace.
437. History of the United States, 1829 to 1860. Cr. 3. Mr. Wallace.
438. History of Texas; the Colonial Period. Cr. 3. Mr. Wallace.
439. History of Texas; the Republic and Early Statehood. Cr. 3.  
Mr. Wallace.
4316. History of the United States, 1900 to 1932. Cr. 3. Mr. McKay.
4317. History of the United States Since 1932. Cr. 3. Mr. McKay.

4321. Constitutional and Political History of Texas Since 1875. Cr. 3.  
Mr. McKay.
4322. Life in the Southwest. Cr. 3. Mr. Rister.
4323. Spanish Colonial America. Cr. 3.
4324. History of Mexico Since Independence. Cr. 3.
4326. Social and Cultural History of Texas. Cr. 3. Mr. Holden.
4327. History of the American Frontier, 1763-1803. Cr. 3.  
Mr. Rister.
4328. The Trans-Mississippi West, 1803 to the Present. Cr. 3.  
Mr. Rister.
4351. Patterns of World History. Cr. 3. Mr. Wallace.

### *For Graduates*

4335. History Appreciation for Elementary Teachers. Cr. 3.  
Mr. Pearce.  
Enrollment limited to graduate students in elementary education.
530. Seminar in Southwestern History. Cr. 3. Mr. Rister.
531. Seminar in Texas History. Cr. 3. Mr. McKay.
532. Seminar in American History. Cr. 3. Mr. Wallace.
533. Seminar in European History (British or Continental). Cr. 3.  
Mr. Kinchen.
534. Historical Methods and Historiography. Cr. 3. Staff.
535. The American Heritage. Cr. 3. Mr. Rister.
- 631-2. Master's Thesis. Cr. 6. Staff.
- 731-2. Research. Cr. 3, each. Staff.  
Required of students working on the Doctor's dissertation. May be repeated for credit as many times as the advisory committee recommends.
- 831-2. Doctor's Dissertation. Cr. 6. Staff.  
Required as the final registration for the dissertation.

## ANTHROPOLOGY

### MINORS ONLY FOR THE MASTER'S DEGREE

#### *For Undergraduates and Graduates*

Prerequisite: junior classification or higher.

330. Cultures and Peoples of the Southwest. Cr. 3. Mr. Holden.
333. Social Customs of the Plains Indians. Cr. 3. Mr. Wallace.
334. Races, Peoples and Languages of North America. Cr. 3.  
Mr. Holden.
335. Archaeology of America North of Mexico. Cr. 3. Mr. Holden.
- 336-7. Archaeology of Mexico. Cr. 6. Mr. Pearce.  
Conducted biennially in the summer.
431. Field Archaeology. Cr. 3. Mr. Holden.
- 433-4. Southwestern Archaeology. Cr. 6. Mr. Holden.  
A field course. Lectures, research and excavation. Summer only.
4351. Origins of Social Customs and Institutions. Cr. 3. Mr. Holden.

### *For Graduates*

531. Seminar in Anthropology. Cr. 3. Mr. Holden.
532. Seminar in Anthropology. Cr. 3. Mr. Holden.

## SOCIOLOGY

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

*For Undergraduates and Graduates*

Prerequisite: junior classification or higher.

- 332. Marriage. Cr. 3. Mr. Little.
- 333. American Minority Problems. Cr. 3. Miss Smith.
- 334. Patterns of Cultural Tradition. Cr. 3. Mr. Little.
- 336. Social Life and Culture of Mexico. Cr. 3. Miss Smith.
- 337. Social Organization and Movement. Cr. 3.
- 338. The Sociology of the Person. Cr. 3.
- 3311. Population Problems. Cr. 3. Miss Smith.
- 3312. Community Organization. Cr. 3.
- 431. Regional Patterns in American Life. Cr. 3.
- 432. Problems in Social Work. Cr. 3. Miss Smith.  
Prerequisite: senior standing or consent of instructor.
- 433. Criminology. Cr. 3. Miss Smith.  
Prerequisite: Senior standing or consent of instructor.
- 436. The Development of Sociological Thought and Theory. Cr. 3.  
Mr. Little.
- 437. Social Change. Cr. 3.

*For Graduates*

- 531. Seminar in Social Problems. Cr. 3. Staff.
- 532. Research Methods in Sociology. Cr. 3. Staff.
- 631-2. Master's Thesis. Cr. 6. Staff.

## HOME ECONOMICS

Dean Willa Vaughn Tinsley, Graduate Chairman

Applicants for the Master's degree will ordinarily have a conventional major in one department; they may have one or two conventional minors in other departments, or they may have a general minor comprising work in several departments of Home Economics. An interdepartmental major in General Home Economics is also available. Such general programs should be approved by the Graduate Chairman.

## APPLIED ARTS

Professor A. W. Randall  
Head of the Department

## MINORS ONLY FOR THE MASTER'S DEGREE

*For Undergraduates and Graduates*

- 425. Silk Screen Printing. Cr. 2. (0-6). Mrs. Beitler.
- 426. Leatherwork. Cr. 2. (0-6). Mrs. Lockard.
- 427. Sculpture in Wood. Cr. 2. (0-6). Mr. Randall.

433. Advanced Interior Design. Cr. 3. (1-6). Mrs. Beitler.  
Prerequisite: Junior standing and Ap.A. 331.
434. Metal and Plastic. Cr. 3. (1-6). Mrs. Lockard.  
Prerequisite: Junior standing.
435. Lapidary. Cr. 3. (1-6). Mrs. Lockard.  
Prerequisite: Junior standing.
437. Arts for Exceptional Children. Cr. 3. (2-3). Mr. Randall.  
Prerequisite: Ch.D. & F.R. 438.
439. Experience Training in Applied Arts. Cr. 3. (0-9).  
Mr. Randall.  
Prerequisite: Senior standing. May be repeated once for credit.

#### *For Graduates*

4335. Theory and Practice of Art for Elementary Teachers. Cr. 3.  
Mr. Randall.  
Enrollment limited to graduate students in elementary education.
531. Special Problems. Cr. 3. (1-6). Mr. Randall.  
Prerequisite: Twelve semester hours in applied arts or the equivalent three hours must have been taken in the medium chosen for the special problems:  

A. Costume Design	C. Textile Design	E. Metal
B. Interior Design	D. Leather	F. Wood

May be repeated for credit.

### CHILD DEVELOPMENT AND FAMILY RELATIONS

Professor Sannie Callan  
Head of the Department

#### MINORS ONLY FOR THE MASTER'S DEGREE

##### *For Undergraduates and Graduates*

431. Later Childhood. Cr. 3. (2-3). Miss Callan.  
Prerequisite: Ed. 230 or Psy. 230 and junior standing.
432. Skills and Techniques in Work with Pre-School Child. Cr. 3.  
(2-3). Miss Callan.  
Prerequisite: Ch.D. & F.R. 331.
433. Family Relations. Cr. 3. Miss Callan.  
Prerequisite: Junior standing.
435. Student Teaching in Pre-School. Cr. 3. (1-6). Miss Callan.  
Prerequisite: Ch.D. & F.R. 432 and senior standing in Ch.D. & F.R.
436. Parent Education. Cr. 3. (2-3). Miss Callan.  
Prerequisite: Senior standing, 6 hrs. in Ch.D. & F.R., and Psy. 230.
438. Exceptional Children in the Family. Cr. 3. (2-3). Miss Callan.  
Prerequisite: Junior standing.

##### *For Graduates*

5336. Family Life Conference. Cr. 3. Miss Callan.  
Prerequisite: Graduate standing in Home Economics, Education, Psychology or Sociology. Offered in summer only.

### CLOTHING AND TEXTILES

Professor Mabel D. Erwin  
Head of the Department

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

##### *For Undergraduates and Graduates*

411. Special Problems. Cr. 1. Miss Erwin.  
Prerequisites: Senior standing and advanced courses.
431. Advanced Textiles. Cr. 3. Mrs. Buster.  
Prerequisites: Clo. 231 and Eco. 231.

432. Textile Testing. Cr. 3. (2-3). Miss Erwin.  
Prerequisites: Clo. 231, 431.
433. History and Philosophy of Dress. Cr. 3. Mrs. Buster.  
Prerequisite: Junior standing.
434. Advanced Tailoring. Cr. 3. (2-3). Miss Erwin, Mrs. Kinchen.  
Prerequisite: Junior standing in Clothing.
435. Home Furnishings. Cr. 3. (2-3). Miss Erwin, Mrs. Kinchen.  
Prerequisite: Senior standing, Clo. 232, and A.A. 331 or parallel.
436. Advanced Pattern Design. Cr. 3. (2-3). Miss Erwin.  
Prerequisite: Clo. 232 and A.A. 231.
437. Clothing in Secondary Schools. Cr. 3. Mrs. Kinchen.  
Prerequisites: Clo. 232, and H.E.Ed. 331.

#### *For Graduates*

4335. Textile Trends and Resources for Elementary Teachers. Cr. 3.  
Mrs. Buster.  
Enrollment limited to graduate students in elementary education.
511. Advanced Clothing Units. Cr. 1. Miss Erwin.  
Prerequisites: Advanced clothing courses and graduate standing. May be repeated for two or three hours credit.
531. Special Problems in Clothing and Textiles. Cr. 3. Miss Erwin.  
Prerequisites: Advanced clothing courses and graduate standing. May be repeated for six or nine hours credit.
- 631-2. Master's Thesis. Cr. 6. Staff.

### FOODS AND NUTRITION

Professor Jonnie M. Michie  
Head of the Department

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

##### *For Undergraduates and Graduates*

411. Nutrition and the School Lunch. Cr. 1. Mrs. Lamb.
415. Food Preservation. Cr. 1. (0-3).  
Prerequisite: Bact. 231 or equivalent, and junior standing.  
May be repeated for credit.
431. Nutrition in Disease. Cr. 3. (2-3). Mrs. Michie.  
Prerequisite: Foods & Nutr. 334, and Organic Chemistry.
432. Advanced Nutrition. Cr. 3. (2-3). Mrs. Michie, Mrs. Lamb.  
Prerequisite: Foods & Nutr. 334.
433. Child Nutrition. Cr. 3. Mrs. Michie.  
Prerequisite: Foods & Nutr. 331, 334.
434. Food Service for Special Occasions. Cr. 3. (1-6).  
Prerequisite: Foods & Nutr. 331, 334.
435. Food Demonstration. Cr. 3. (2-3).  
Prerequisite: Foods & Nutr. 331.
436. Experimental Cookery. Cr. 3. (1-6). Mrs. Michie, Mrs. Lamb.  
Prerequisite: Foods & Nutr. 331, and Elementary Chemistry.
437. Large Quantity Cookery. Cr. 3. (1-6).  
Prerequisites: Foods & Nutr. 331, and junior standing.
438. Institutional Organization and Administration. Cr. 3. (2-3).  
Prerequisite: Foods & Nutr. 437.

#### *For Graduates*

4335. Principles and Applications of Nutrition for Elementary School Teachers. Cr. 3. Mrs. Lamb.  
Enrollment limited to graduate students in elementary education.

531. Problems in Foods and Nutrition. Cr. 3. (1-6). Mrs. Michie,  
Mrs. Lamb.  
Prerequisite: Graduate standing in Foods and Nutrition.  
May be repeated for credit.
533. Readings in Nutrition. Cr. 3. Mrs. Michie, Mrs. Lamb.  
May be repeated for credit.
- 631-2. Master's Thesis. Cr. 6. Mrs. Michie, Mrs. Lamb.

## HOME ECONOMICS EDUCATION

Professor Vivian J. Adams  
Head of the Department

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

#### *For Undergraduates and Graduates*

413. Instructor Training in Home Care of the Sick. Cr. 1.  
Miss Clewell.  
Prerequisite: Senior standing in Home Economics.
414. Specific Problems in Planning and Preparing Teaching Materials  
in Home Economics. Cr. 1. Miss Nesbitt.  
Prerequisite: Senior standing in Home Economics Education, H.E. Ed. 461, or  
approval of the head of the department. May be repeated for credit.
426. Problems in Student Teaching. Cr. 2. Mrs. Adams, Miss Clewell,  
Miss Nesbitt.  
Prerequisite: H.E. Ed. 461 (Student Teaching in H.E.) or parallel.
433. Civil Defense in Home and Community. Cr. 3. Miss Clewell.  
Prerequisite: Junior standing in Home Economics Education.
435. Adult Leadership in Home Economics. Cr. 3. Miss Clewell.  
Prerequisite: H.E. Ed. 331, and senior standing in the Division of Home Economics.
461. Student Teaching in Home Economics. Cr. 6. (3-15).  
Mrs. Adams, Miss Clewell, Miss Nesbitt.  
Prerequisite: H.E. Ed. 431.

#### *For Graduates*

532. Curriculum Development in Home Economics. Cr. 3.  
Mrs. Adams, Miss Clewell.
533. Evaluation in Home Economics. Cr. 3. Miss Tinsley.
534. Techniques of Research in Home Economics. Cr. 3. Mrs. Adams.
536. Problems. Cr. 3. Mrs. Adams, Miss Nesbitt.  
May be repeated for credit.
537. Techniques of Supervision in Home Economics. Cr. 3.  
Mrs. Adams.
- 631-2. Master's Thesis. Cr. 6. Staff.  
Required for the Master of Science in Home Economics; optional for the  
Master of Education.

## HOME MANAGEMENT

Professor Willa Vaughn Tinsley  
Head of the Department

### MINORS ONLY FOR THE MASTER'S DEGREE

#### *For Undergraduates and Graduates*

411. Household Equipment Workshop. Cr. 1. Miss Drew.  
Same as Home Management 433, but organized into independent units of one  
credit each, which may be repeated for credit. Offered in Summer Sessions only.
431. Housing the Family. Cr. 3. (2-3). Miss Drew.  
Prerequisite: Junior standing in any division of the college.



## 432. Home Management Residence. Cr. 3. Miss Drew.

Prerequisite: Senior standing in home economics. At least six weeks residence in supervised application of skills in all phases of home living, including the care of an infant. Students pay a fixed fee for room and board. In lieu of residence in the home management house, married students maintaining a home in the community and mature experienced homemakers with the permission of the dean, may work on personal managerial problems under supervision.

## 433. Household Equipment. Cr. 3. (2-3). Miss Drew.

Prerequisite: Junior standing in any division of the College.

## JOURNALISM

Professor William E. Hall, Jr.

Head of the Department

## MINORS ONLY FOR THE MASTER'S DEGREE

*For Undergraduates and Graduates*

## 332. Magazine Article Writing. Cr. 3. Mrs. Allen.

## 333. Problems of the Community Newspaper. Cr. 3. Mr. Hall.

## 430. Principles of Journalism. Cr. 3. Mr. Vernon.

## 432. High School Publications. Cr. 3. Mr. Vernon.

## 434. Editorial Writing. Cr. 3. Mrs. Allen.

435. Newspaper Advertising Problems and Methods. Cr. 3.  
Mr. Hall.

## MATHEMATICS

Professor Emmett A. Hazlewood

Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE  
AND MINORS ONLY FOR THE DOCTOR'S DEGREE*For Undergraduates and Graduates*

## 331. Applications of Calculus. Cr. 3.

Prerequisite: Math. 251 or 232.

## 332. Differential Equations. Cr. 3.

Prerequisite: Math. 251 or 232.

## 333. Advanced Algebra. Cr. 3. Mr. Marsh.

Prerequisite: Math 130 or 122.

## 337. College Geometry. Cr. 3. Mr. Underwood.

Prerequisite: Math. 132.

## 339. Statistical Methods. Cr. 3. Mr. Riggs.

Prerequisite: Math. 238.

## 430. Synthetic Projective Geometry. Cr. 3. Mr. Underwood.

Prerequisite: Math. 337 or consent of the instructor.

## 431. Teaching of Secondary Mathematics. Cr. 3. Staff.

Prerequisite: 12 semester hours of college mathematics.

## 432. Advanced Differential Equations. Cr. 3. Mr. Fuller.

Prerequisite: Math. 332.

## 433. Theory of Equations. Cr. 3. Mr. Heineman.

Prerequisite: Math. 232 or 251.

## 434,5.\* Advanced Calculus. Cr. 3 each. Mr. Hazelwood.

Prerequisite: Math. 232 or 251.

436. Introduction to Finite Groups. Cr. 3. Mr. Heineman.  
Prerequisite: Math. 232 and consent of the instructor.
437. Theory of Numbers. Cr. 3. Mr. Underwood.  
Prerequisite: Math. 232 or 251.
438. Solid Analytic Geometry. Cr. 3. Mr. Hineman.  
Prerequisite: Math. 132.
439. Vector Analysis. Cr. 3. Mr. Fuller, Mr. Sparks.  
Prerequisite: Math. 232 or 251.
4311. Extended Analytic Geometry. Cr. 3. Mr. Underwood.  
Prerequisite: Math. 232 or 251.

#### *For Graduates*

533. Advanced Topics in Analysis. Cr. 3. Mr. Fuller.  
Prerequisite: Math. 332.
535. Analytic Projective Geometry. Cr. 3. Mr. Underwood.  
Prerequisite: Math. 438.
- 536,7\* Modern Algebra. Cr. 3 each. Mr. Marsh.  
Prerequisite: Math. 433.
- 5312,13.\* Functions of a Complex Variable. Cr. 3 each. Mr. Sparks.  
Prerequisite: Math. 435.
- 5314,15.\* Functions of a Real Variable. Cr. 3 each. Mr. Fuller,  
Mr. Riggs.  
Prerequisite: Math. 435.
- 631-2. Master's Thesis. Cr. 6. Staff.

## MUSIC

Professor Gene L. Hemmle  
Head of the Department

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

#### APPLIED MUSIC

##### *For Undergraduates and Graduates*

- 425, 426. Voice or Instrument. Cr. 2, each.
- 435, 436. Voice or Piano. Cr. 3, each.
- 445, 446. Voice or Piano. Cr. 4, each.

#### MUSIC EDUCATION

##### *For Undergraduates and Graduates*

433. Piano Pedagogy. Cr. 3. Mr. Colvin.  
Prerequisite: Applied Music 326 or 346 (Piano).
437. Voice Pedagogy. Cr. 3.  
Prerequisite: Applied Music 326 or 346 (Voice).
4317. Choral Conducting. Cr. 3. Mr. Hemmle.  
Prerequisite: Senior classification in Music Education.
4318. Instrumental Conducting. Cr. 3.  
Prerequisite: Senior classification in Music Education.

##### *For Graduates*

4335. Music for Children. Cr. 3. Mr. Elliott, Mr. Hemmle.  
Prerequisite: Six semester hours in Music Education or two years' experience in elementary teaching. Enrollment limited to graduate students in elementary education.

\*When two course numbers are separated by a comma, credit will be allowed for the first one by itself.

- 530, 531. Seminar in Music Education. Cr. 3, each. Mr. Hemmle.  
Prerequisite: Graduate standing and consent of the department.
532. Choral Music Workshop. Cr. 3.  
Prerequisite: 18 semester hours of music, six of which are advanced, including 327 or its equivalent.
533. Instrumental Music Workshop. Cr. 3.  
Prerequisite: 18 semester hours of music, six of which are advanced, including Music 328 or its equivalent.
- 631-2. Master's Thesis. Cr. 6.

## MUSIC LITERATURE

### *For Undergraduates and Graduates*

330. Voice Repertoire. Cr. 3.  
Prerequisite: Applied Music 226 or 236 (Voice)
332. Piano Repertoire. Cr. 3.  
Prerequisite: Applied Music 226 or 236 (Piano).
- 431, 432. History of Music. Cr. 3, each.  
Prerequisite: Junior standing.
4351. Music in General Culture. Cr. 3. Mr. Hemmle.  
Primarily for graduate students in education.

## THEORY

### *For Undergraduates and Graduates*

- 322, 323. Form and Composition. Cr. 2, each. Miss van Appledorn.  
Prerequisite: Theory 248 or its equivalent.
- 427, 428. Instrumentation. Cr. 2, each. Mr. McCarty.  
Prerequisite: Theory 323 or its equivalent.
4312. Pedagogy of Theory. Cr. 3. Miss van Appledorn.  
Prerequisite: Theory 248 or its equivalent.

## PHYSICS

Professor C. C. Schmidt  
Head of the Department

## MAJORS AND MINORS FOR THE MASTER'S DEGREE

### *For Undergraduates and Graduates*

- 312, 313. Modern Physics Laboratory. Cr. 1, each. (0-3). Mr. Gott.  
Prerequisite: Parallel enrollment in Phys. 337-8, and approval of instructor.
331. Light. Cr. 3. (2-3). Mr. Merrymon.  
Prerequisite: One year of physics and junior standing.
332. Heat and Thermodynamics. Cr. 3.  
Prerequisite: One year of physics and calculus.
336. Electricity and Magnetism. Cr. 3. Mr. Besdin.  
Prerequisite: One year of physics and calculus.
337. Introduction to Modern Physics. Cr. 3. Mr. Gott.  
Prerequisite: One year of physics and calculus.
338. Introduction to Modern Physics. Cr. 3. Mr. Gott.  
Prerequisite: One year of physics and calculus.
341. Electron Tubes and Applications to Physical Science. Cr. 4.  
(3-3).  
Prerequisite: Physics 336.
- 411-2. Physical Seminar. Cr. 1, each.  
Prerequisite: 12 hours of physics and calculus.

- 415-6. Special Projects. Cr. 1, each. (0-3).  
Prerequisite: Approval of Head of Department.
- 423-4. Electrical Measurements. Cr. 2, each. (0-6) Mr. Schmidt.  
Prerequisite: 12 hours of physics and calculus.
431. High School Physics Teaching. Cr. 3.  
Prerequisite: 12 hours of physics and calculus.
435. Mechanics. Cr. 3. Mr. Merrymon.  
Prerequisite: 12 hours of physics and calculus.
- 436-7. Individual Study in Specified Fields. Cr. 3, each. (3-0 or 0-9).  
Prerequisite: Calculus, 18 hours of physics and approval of department.

### *For Graduates*

- 531-2. Theoretical Physics. Cr. 3. Mr. Besdin.
- 533-4. Quantum Mechanics. Cr. 3, each. Mr. Besdin.  
Prerequisites: Differential Equations.
535. Nuclear Physics. Cr. 3. Mr. Besdin.
537. Electromagnetic Theory. Cr. 3. Mr. Besdin.
- 538-9. Geometrical and Physical Optics. Cr. 3, each. Mr. Merrymon.  
Prerequisite: Calculus and Physics 331.
- 631-2. Master's Thesis. Cr. 6.

## PSYCHOLOGY

Professor Sylvan J. Kaplan  
Head of the Department

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

#### *For Undergraduates and Graduates*

331. Child Psychology. Cr. 3. Miss True.  
Prerequisite: Psy. 230 or Ed. 230 and upper division classification.
332. Mental Health. Cr. 3. Miss True.  
Prerequisite: Psy. 230 or equivalent.
333. Statistical Methods. Cr. 3. Mr. Kuntz.  
Prerequisite: 6 semester hours of psychology.
334. Introduction to Military Psychology. Cr. 3. Mr. Kaplan.  
Prerequisite: Psy. 230 and upper division classification.
335. Adolescent Psychology. Cr. 3. Miss True.  
Prerequisite: Psy. 230 or Ed. 230 and upper division classification.
336. Physiological Psychology. Cr. 3. Mr. Kaplan.  
Prerequisite: 6 semester hours in psychology or Psy. 230 and 6 semester hours in the biological sciences.
338. Comparative Psychology. Cr. 3. Mr. Melching.  
Prerequisite: Psy. 230 and upper division classification.
431. Tests and Measurements. Cr. 3. (2-3). Mr. Barnett.  
Prerequisite: Psy. 333 or equivalent. Fee: \$2.00.
432. Personnel Testing. Cr. 3. (2-3). Mr. Kuntz.  
Prerequisite: Psy. 230 or equivalent and Psy. 333 or equivalent.
434. Introduction to Social Psychology. Cr. 3. Mr. Melching.  
Prerequisite: Psy. 230 or equivalent and upper division classification.
435. Abnormal Psychology. Cr. 3. Mr. Kaplan.  
Prerequisite: 6 semester hours in psychology.
436. Personality Development. Cr. 3. Mr. Melching.  
Prerequisite: 6 semester hours in psychology.
437. Experimental Psychology. Cr. 3. (2-3). Mr. Melching.  
Prerequisite: 6 semester hours in psychology and Psy. 333 or equivalent. Fee \$2.00.
438. Experimental Psychology. Cr. 3. (2-3). Mr. Melching.  
Prerequisite: Psy. 437. Fee: \$2.00.

439. Industrial Psychology. Cr. 3. Mr. Kuntz.  
Prerequisite: Psy. 330, Mgt. 334 or I.E. 321, and Psy. 333 or equivalent.
4311. Psychology of Social Change. Cr. 3. Mr. Melching.  
Prerequisite: 6 semester hours in psychology.
4312. Methods in Clinical Psychology. Cr. 3. Mr. Kaplan.  
Prerequisite: Psy. 431 or equivalent and Psy. 435.
4313. Counseling and Guidance. Cr. 3. Mr. Barnett.  
Prerequisite: 6 semester hours of psychology.
4314. The Human Element in Engineering. Cr. 3. Mr. Kuntz.  
Prerequisite: Psy. 330 and Psy. 333 or its equivalent.
4315. Advanced Statistical Methods. Cr. 3. Mr. Melching.  
Prerequisite: Psy. 333 or equivalent.
4316. History of Psychology. Cr. 3. Mr. Melching.  
Prerequisite: 6 semester hours of psychology.
4317. The Psychology of Learning. Cr. 3. Mr. Kaplan.  
Prerequisite: 6 semester hours of psychology.
4318. Industrial Training. Cr. 3. Mr. Kuntz.  
Prerequisite: Psy. 330.

### *For Graduates*

531. Introduction to Projective Techniques. Cr. 3. Mr. Kaplan.  
Prerequisite: Psy. 431.
532. Problems in Psychology. Cr. 3. Staff.  
Prerequisite: 12 advanced semester hours in psychology.
533. Experimental Child Psychology. Cr. 3. Mr. Kaplan.  
Prerequisite: Consent of the instructor.
534. Practicum in Intelligence Testing. Cr. 3. Mr. Barnett.  
Prerequisite: Psy. 431.
538. Experimental Design and Advanced Statistical Analysis. Cr. 3.  
Mr. Melching.  
Prerequisite: Psy. 437 or 438 and Psy. 4315.
539. Occupational Information. Cr. 3. Mr. Kuntz.  
Prerequisite: Psy. 4313.
5312. Practicum in Occupational Information. Cr. 3. Mr. Kuntz.  
Prerequisite: Psy. 539.
5316. Pro-seminar: Professional Aspects of Psychology. Cr. 3. Staff.  
Prerequisite: 12 advanced semester hours of psychology.
5317. Techniques of Counseling and Guidance. Cr. 3. Mr. Barnett.  
Prerequisite: Psy. 4313 and 431.
5318. Practicum in Techniques of Counseling and Guidance. Cr. 3.  
Mr. Barnett.  
Prerequisite: Psy. 5317.
5321. Functional Theories of Mind. Cr. 3. Mr. Kaplan.  
Prerequisite: Psy. 4317.
5322. Physiological Principles of Behavior. Cr. 3. Mr. Kaplan.  
Prerequisite: Psy. 336 and 6 hours in the biological sciences.
- 5331, 5332. Internship in Counseling and Guidance. Cr. 3 each.  
Mr. Barnett.  
Prerequisite: Psy. 5317 and 5318.
- 631-2. Master's Thesis. Cr. 6. Staff.
- 731, 732. Research. Cr. 3, each.  
Required of students working on the Doctor's dissertation. May be repeated for credit as many times as the advisory committee recommends.
- 831-2. Doctor's Dissertation. Cr. 6.  
Required as the final registration for the dissertation.

## SPEECH

Professor P. Merville Larson  
Head of the Department

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

#### *For Undergraduates and Graduates*

430. Advanced Public Speaking. Cr. 3. Mr. Larson.  
Prerequisite: 9 hours of speech including 3 primarily in public speaking.
431. Creative Dramatics. Cr. 3. Mr. Schulz.  
(May also be taken for Education credit.)
433. Introduction to Hearing Problems. Cr. 3.
434. Principles of Audiometry. Cr. 3.
435. Interpretative Reading. Cr. 3. Miss Thompson.  
Prerequisite: Junior classification and 12 hours of English, and preferably Speech 233 and/or 237.
436. Radio and Television Program Planning and Management. Cr. 3.  
Mr. Halvorson.  
Prerequisite: Approval of Head of Department.
437. Persuasion. Cr. 3. Mr. Larson.  
Prerequisite: 6 hours of public speaking and a course in psychology or permission of Head of Department.
438. Advanced Discussion and Conference Methods. Cr. 3.  
Mr. Larson.  
Prerequisite: Speech 235 or 338.
439. Methods in Teaching Speech. Cr. 3. Mr. Larson.  
Prerequisite: 18 hours of speech and 9 hours of education.  
(May be taken for education credit.)
4311. Stage Directing Methods. Cr. 3. Miss Thompson.  
Prerequisite: Junior classification, and 18 hours of Speech, including 231 and 232 or equivalent.  
(May be taken for education credit.)
4318. Introduction to Speech Correction. Cr. 3. Miss Lindell.  
Prerequisite: Junior classification and permission of Head of Department. (May be taken for Education credit.)
4319. Speech Correction Methods for Elementary Teachers. Cr. 3.  
Miss Lindell.  
Prerequisite: Junior classification and permission of Head of Department. (May be taken for Education credit.)
- 4321-22. Supervised Clinical Practice in Speech Correction. Cr. 3 each.  
Miss Lindell.  
35 laboratory hours per credit hour. Prerequisite: Speech 4318, concurrent registration in Speech 4319, or permission of Head of Department. Required of teachers desiring Certificate of Approval for Speech Therapy. (May be taken as 4221, 4222, 4223 for 2 credit hours each.) (May be taken for Education credit.)
4325. Directing School Speech Activities. Cr. 3. Mr. Larson,  
Mr. Schulz.  
Prerequisite: 12 hours of Speech or Education, and/or teaching experience.  
(May be taken for education credit.)
4351. History of Speech and Theater. Cr. 3. Mr. Larson, Mr. Schulz,  
*For Graduates*
4335. Basic Speech for Elementary Teachers. Cr. 3. Mr. Larson,  
Miss Pendleton.  
Enrollment limited to graduate students in elementary education.
531. Studies and Problems in Speech. Cr. 3.  
May be repeated for credit.
535. Pathology of the Hard-of-Hearing. Cr. 3.
536. Speech Pathology. Cr. 3.  
(Formerly 4314.)  
(May be taken for education credit.)
- 631-2. Master's Thesis. Cr. 6. Staff.

