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TEXAS TECHNOLOGICAL COLLEGE

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With Announcements for 1949-50

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TEXAS TECHNOLOGICAL COLLEGE
LUBBOCK, TEXAS

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CALENDAR

1949

JANUARY

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COLLEGE CALENDAR FOR 1949-50

Twenty-Fifth Annual Session

SUMMER SCHOOL 1949

1949

First Term

June 5.	Sunday. Dormitories open at noon for room occupancy. Students are requested not to report for admission to rooms before 12 o'clock noon.
June 6.	Monday. Summer school begins. Registration for first term. Breakfast served as first meal in dormitories.
July 16.	Saturday. First term ends.

Second Term

July 18.	Monday. Registration for second term.
Aug. 26.	Friday. Second term ends. Summer school closes. Commencement 8 P. M.

FALL SEMESTER

1949

Sept. 9.	Friday, 3 P. M. General faculty meeting.
Sept. 11.	Sunday, 12 Noon. Dormitory rooms open for occupancy. First meal, breakfast Monday, Sept. 12.
Sept. 12.	Monday. First semester begins.
Sept. 12.	Monday, 1:30 P. M. All entering freshmen report to college gymnasium.
Sept. 12-14.	Monday-Wednesday. Freshmen counseling program.
Sept. 14.	Wednesday. Pre-registration consultations for all students.
Sept. 15-16.	Thursday-Friday. Registration for fall semester.
Sept. 17.	Saturday, 8 A. M. Classes begin.
Sept. 19.	Monday. Late registration fee will be charged after this date.
Sept. 22.	Thursday. Last day a student may register for the first semester. Last day to add courses.
Sept. 23.	Friday. All-Church Night—Lubbock churches.
Sept. 28.	Wednseday, 10-12 A. M. Student convocation. Election of class officers for the year.

Oct. 8.	Saturday. Last day for filing with academic dean request to make up examinations missed and postponed or to remove conditions incurred during the preceding spring semester.
Oct. 15.	Saturday. Annual Homecoming.
Oct. 17.	Monday, 5 P. M., Progress reports on freshmen due in Registrar's Office.
Oct. 22.	Saturday. Date for taking examinations petitioned for on Oct. 8. Last day on which petition may be filed to drop a course without grade penalty.
Oct. 31-Nov. 3.	Monday-Thursday. Religious Emphasis week.
Nov. 24-26.	Thursday, Friday, Saturday. Thanksgiving holidays.
Dec. 3.	Saturday, 5 P. M. Mid-semester reports due in Registrar's Office.
Dec. 21.	Wednesday, 10 P. M. Classes dismissed for Christmas holidays.

1950

Jan. 2.	Monday, 8 A. M. Classes resumed after Christmas holidays.
Jan. 14-20.	Saturday-Friday. Week of restricted social activities.
Jan. 21-27.	Saturday-Friday. Final examinations first semester.
Jan. 28.	Saturday. Students without room reservations for the spring semester must vacate dormitory rooms not later than noon this date.
Jan. 30.	Monday, 8 A. M. First semester ends.

SPRING SEMESTER

Jan. 29.	Sunday, 12 Noon. Dormitory rooms open to new occupants.
Jan. 30.	Monday, 8 A. M. Second semester begins. Entering freshmen assemble in Aggie Memorial Auditorium.
Jan. 31-Feb. 1	Tuesday, Wednesday. Registration for spring semester.
Feb. 2.	Thursday, 8 A. M. Classes begin.
Feb. 3.	Friday. Late registration fee charged after this date.

Feb. 7.	Tuesday. Last day a student may register in the second semester.
Feb. 10.	Friday. All-Church night—Lubbock churches. Last day to add courses in second semester.
Feb. 25.	Saturday. Last day for filing with academic dean requests to make up examinations missed and postponed or to remove conditions incurred during the preceding fall semester.
Mar. 3.	Friday, 5 P. M., Progress reports on freshmen entering this semester due in Registrar's Office.
Mar. 6-9.	Monday-Thursday. Willson lectures.
Mar. 8.	Wednesday. Last day on which petition may be filed to drop a course without grade penalty.
Mar. 11.	Saturday. Date for taking examinations petitioned for on Feb. 25.
Mar. 15.	Wednesday. Last day for filing statement of candidacy for a degree with academic dean.
Apr. 6.	Thursday, 5 P. M., Mid-semester reports due in Registrar's Office.
Apr. 7-10.	Friday-Monday. Easter vacation.
May 6.	Saturday. Last day for submission of first draft of thesis for Master's Degree for May graduates.
May 7.	Sunday. Parent's Day. All-College Recognition Day.
May 13-19.	Saturday-Friday. Week of restricted social activities and examinations for graduating seniors.
May 19.	Friday. Last day for submission of thesis for binding (graduate students).
May 20-26.	Saturday-Friday. Final examinations second semester.
May 20.	Saturday, 10 A. M. Meeting of deans and department heads.
May 21.	Sunday, 8 P. M. Baccalaureate sermon.
May 22.	Monday, 8 P. M. Commencement.
May 26.	Friday, 5 P. M. Second semester ends.
June 1.	Thursday. Summer session begins.

BOARD OF DIRECTORS

Charles C. Thompson, Chairman ..... Colorado City
Term Expires 1951

Mark McGee, Vice Chairman ..... Fort Worth
Term Expires 1951

Chanslor E. Weymouth, Treasurer ..... Amarillo
Term Expires 1953

Leon Ince ..... Houston
Term Expires 1953

A. G. (Pat) Mayse ..... Paris
Term Expires 1951

Robert B. Price ..... El Paso
Term Expires 1949

O. B. Ratliff ..... Lubbock
Term Expires 1949

Kyle Spiller ..... Jacksboro
Term Expires 1949

Charles W. Wooldridge ..... Dallas
Term Expires 1953

W. T. Gaston, Secretary ..... Lubbock

OFFICIAL DIRECTORY

Academic Year 1948-49

Officers Of Administration

DOSSIE MARION WIGGINS, B.A., M.A., Ph.D., LL.D., President
Office, 217 Administration Building

CLIFFORD BARTLETT JONES, LL.D, President Emeritus

EDWARD NEWLON JONES, B.S., Ph.D., LL.D., Vice President
Office, 217 Administration Building

FRANK JUNELL, B.A., M.A., Assistant to the President
Office, 217 Administration Building

LUDLOW CALHOUN ADAMS, B.S., Lt Colonel, Corps of Engineers, United States Army, Professor and Head of Military Science and Tactics.
Office 1, Military Science Building

OTTO VINCENT ADAMS, B.S. in C. and I.E., M.S.E., Sc.D., Dean of Engineering
Office, 202 Engineering Building

JAMES GEORGE ALLEN, B.A., M.A., Dean of Men
Office, 114 Administration Building

WARREN PERRY CLEMENT, B.A., M.A., Registrar and Director of Admissions
Office, 112 Administration Building

MOZELLE EUGENIA CRADDOCK, B.S., M.A., Director of the Dormitory Systems
Office, Dormitory Administration Building

WILLIAM THOMAS GASTON, Business Manager and Secretary of Board of Directors
Office, 102 Administration Building

ROBERT CABANISS GOODWIN, B.A., M.A., Ph.D., Dean of Arts and Sciences
Office, 211 Administration Building

WILLIAM CURRY HOLDEN, B.A., M.A., Ph.D., Dean of Graduate Studies and Curator of West Texas Museum
Office, 209 Administration Building

JACOB HOMER MILLIKIN, B.A., M.A., Director of Extension
Office, 106 Extension Building

WENZEL LOUIS STANGEL, B.S., M.S., Dean of Agriculture
Office, 201-A Agriculture Building

LULU STINE, B.A., M.A., Acting Librarian
Office, 205 Library Building

HASKELL GRANT TAYLOR, B.B.A., M.A., Acting Dean of Business Administration
Office, 219 Administration Building

MARGARETTE WIBLE WALKER, B.M., B.M.E., Dean of Women
Office, 107 Administration Building

MARGARET WATSON WEEKS, B.S., M.S., Dean of Home Economics
Office, 104 Home Economics Building

* * * *

FLORENCE EVELYN CLEWELL, B.A., Assistant Registrar
Office, 112 Administration Building

JUNE LaVERNE HANSON, B.S. in Ed., M.A., Assistant Dean of Women
Office, 107 Administration Building

LEWIS NORTEN JONES, B.S., M.A., Assistant Dean of Men
Office, 110 Administration Building

ERNEST WALLACE, B. S., M.A., Ph.D., Assistant Dean of Arts and Sciences
Office, 211 Administration Building

FACULTY

Explanations of Symbols

• Fall Semester Only, 1948-49.

••Spring Semester Only, 1948-49.

§On leave.

First date indicates year of original appointment; second date, year of appointment to present position and rank.

DOSSIE MARION WIGGINS, President, 1948.
B.A., Simmons; M.A., Ph.D., Yale; LL.D., Hardin-Simmons.

BYRON ROBERT ABERNETHY, Associate Professor of Government, 1941, 1947.
B.A., N. Dak. State Teachers; M.A., North Dakota; Ph.D., Iowa.

§ JAMES FOOTE ADAMS, Instructor in Government, 1947.

OTTO VINCENT ADAMS, Dean of Engineering and Professor of Civil Engineering, 1927, 1932.
B.S. in C. and I.E., Colo. State; M.S.E., Michigan; D.Sc., Colo. A. & M.

LUDLOW CALHOUN ADAMS, Lt Colonel, Corps of Engineers, U. S. Army, Professor and Head of Military Science and Tactics, 1946.
B.S., Clemson.

VIVIAN JOHNSON ADAMS, Professor and Head Department of Home Economics Education, 1928, 1937.
B.S., Southwest Texas; M.A., Columbia.

BEATRICE WITTE ALEXANDER. Instructor in Foreign Languages, 1945.
B.A., T.S.C.W.; M.A., Texas.

THEODOR WALTER ALEXANDER, Instructor in Geology, 1947.
B.S., M.S., Texas Tech.

FERN ALFREY, Instructor in Secretarial Administration, 1948.
B.S., T.S.C.W.

JAMES GEORGE ALLEN, Dean of Men and Professor of English, 1927, 1940.
B.A., Southern Methodist;M.A., Harvard.

LOUISE CRAWFORD ALLEN, Assistant Professor of Journalism, 1928, 1942.
B.A., Southern Methodist; M.A., Missouri.

EMMET DOUGLAS ANDERSON, Instructor in Civil Engineering, 1947.
B.S. in C.E., Texas Tech.

HUGH ALLEN ANDERSON, Coordinator of Veterans Affairs and Associate Professor of Economics and Management, 1939, 1947.
B.A., M.A., Hardin-Simmons.

STANLEY E. ANDERSON, Instructor in Animal Husbandry, 1948.
B.S., Iowa State.

MARGARET BRASHEARS ATKINSON, Assistant Professor of Engineering Drawing, 1934, 1942.
B.S., T.S.C.W.

§ CECIL IRVY AYERS, Assistant Professor of Agronomy, 1942, 1943.
B.S., M.S., Texas Tech.

MARGUERITE SIVELLS BAILEY, Instructor in Mathematics, 1946.
B.S., Southeastern Teachers (Okla.); M.A., Texas.

ALBERT BARNETT, Professor of Education and Psychology, 1933, 1939.
B.S., M.A., Ph.D., George Peabody.

ROY BYRN BASS, Part-time Lecturer in Accounting and Finance, 1945.
B.A., LL.B., Baylor.

HAYNES MADDEN BAUMGARDNER, Captain U. S. Air Force, Assistant Professor of Military Science and Tactics, 1948.
B.S., Texas Tech.

JOHN HENRY BAUMGARDNER, Assistant Professor of Animal Husbandry, 1945.
B.S., M.S., Texas Tech.

* LEROY EDWARD BEHRENS, Master Sergeant, United States Army, Air ROTC Instructor, 1947.

ETHEL JANE BEITLER, Assistant Professor of Applied Arts, 1947.
B.S., Lowa State; M.Ed., Marquette.

§ BYRON JIRDEN BENNETT, Assistant Professor of Electrical Engineering, 1943, 1946.
B.S. in E.E., Texas Tech.

JAMES WAYLAND BENNETT, Assistant Professor of Agricultural Economics, 1948
B.S., Texas Tech.

LUCY RICHARDSON BIBB, Assistant Professor of Clothing and Textiles, 1945.
B.S., M.S., Alabama.

LOTUS BERRY BLACKWELL, Instructor in Marketing, 1948.
B.A., Hardin-Simmons.

** WILLIAM A. BLACKWELL, Instructor in Electrical Engineering, 1949.
B.S. in E.E., Texas Tech.

JULIEN PAUL BLITZ, Professor and Head Department of Music, 1934.
D. Music, Austin College.

* ADRIAN C. W. BOWDEN, Part-time Lecturer in Civil Engineering, 1942.
B.S. in C. E., Texas Tech.

WELDON LEROY BRADSHAW, Professor of Architecture, 1938, 1943.
B.S. in Arch., Texas A. & M.

JOHN P. BRAND, Lecturer in Geology, 1948.
B.A., M.A., Miami (Ohio).

JEWELL BROCK, Instructor in Chemistry, 1948.
B.S., West Texas; M.S., Texas Tech.

WOODROW WILSON BROOKS, Master Sergeant, U. S. Army, ROTC Instructor, 1947.

CHARLES VICTOR BULLEN, Professor and Head Department of Electrical Engineering, 1932.
B.S. in E.E., Texas; M.S. in E.E., M.I.T.

LAWRENCE ORR BUNTON, Lecturer in Textile Engineering, 1947.

H. RAY BURKHART, Assistant Professor of Animal Husbandry, 1948.
B.S., Colo. A. & M.; M.S., Texas A. & M.

EARL BURNETT, Assistant Profesor of Agronomy, 1948.
B.S., Texas Tech.

EDNA WALKER BUSTER, Associate Professor of Clothing and Textiles, 1927, 1937.
B.S., T.S.C.W.; M.A., Columbia.

MARTHA WASHINGTON BUTTRILL, Assistant Professor of Foods and Nutrition, 1945.
B.S., M.A., T.S.C.W.

SANNIE CALLAN, Professor and Head Department of Child Development and Family Relations, 1936, 1937.
B.S., Pittsburgh; M.A., Columbia.

CHARLOTTE BALLOW CAMP, Assistant Professor of Child Development, 1946.
B.S., M.S., Texas Tech.

EARL D. CAMP, Assistant Professor of Biology, 1945, 1948.
B.S., Texas Tech.; M.S., New Mexico.

TRUMAN WILDES CAMP, Associate Professor and Chairman Department of English, 1935, 1946.
B.A., Ph.D., Yale.

JOE T. CARDWELL, Instructor in Dairy Manufactures, 1947.
B.S., Texas Tech.

MARVIN WARLICK CARR, Part-time Instructor in Accounting and Finance, 1947.
B.A., Texas Tech.; LL.B., Texas.

OLGA MELOY CARTER, Asssistant Professor of English, 1939, 1945.
B.A., Dickinson; M.A., Chicago.

BILLIE JONES CASKEY, Instructor in Child Development, 1947.
B.S., Texas Tech.

** OWEN L. CASKEY, Instructor in Education and Psychology, 1949.
B.S., M.Ed., Texas Tech.

§ ROSALIE WHITWORTH CHAPPELL, Instructor in Speech, 1948.
B.A., Texas Tech.; M.Ed., Texas.

RAY LEON CHAPPELLE, Professor and Head Department of Agricultural Education, 1936, 1937.
B.S., Texas A. & M.; M.S., Texas Tech.

GERALDINE CLEWELL, Associate Professor of Home Economics Education, 1935, 1944.
B.S., Texas Tech.; M.S., Iowa State.

VERNON THOMAS CLOVER, Associate Professor of Economics and Management, 1947.
B.S., Kansas State (Ft. Hays); M.S., Ph.D., Colorado.

MARGARET E. COBB, Instructor in English, 1947.
B.A., Queens.

** CHARLES WENDELL COFFEE, Instructor in Mechanical Engineering, 1949 .
B.S. in M.E., Texas Tech.

POLLY IMOGENE COOK, Instructor in Biology, 1947.
B.A., Texas Tech.

LEWIS BRISCOE COOPER, Associate Professor of Education and Psychology, 1938.
B.S., North Texas; M.A., Texas; Ph.D., Cincinnati.

MOZELLE EUGENIA CRADDOCK, Dietitian and Director of Dormitories and Professor and Head of Institutional Management, 1934.
B.S., Texas; M.A., Chicago.

WILLIAM MOORE CRAIG, Professor of Chemistry, 1926.
B.A., M.A., Southwestern; M.A., Texas; Ph.D., Harvard.

JAMES CECIL CROSS, Professor and Chairman Department of Biology, 1948.
B.A., Southwestern; M.A., Ph.D., Texas.

*** JAMES HOLLIE CROSS, Assistant Professor of Physics, 1936, 1946.
B.A., M.A., Texas Tech.

BILLIE COHEA CROW, Instructor in Chemistry, 1947.
B.S., Texas Tech.

§ ALBERT BENJAMIN CUNNINGHAM, Professor of English, 1929, 1939.
B.A., Muskingum; B.D., Drew; M.A., Ph.D., New York; Litt. D., Lebanon.

WILLIAM LOUIS CURIK, Major, U. S. Air Force, Associate Professor of Military Science and Tactics, 1947, 1948.
B.S., Southern Methodist.

DEAN INGRAM DAULEY, Instructor in Government, 1948.
B.A., Texas Tech.; M.A., Vanderbilt.

*** Deceased Dec. 8, 1948.

JAMES WILLIAM DAVIS, Professor and Head Department of Government, 1938, 1944.
B.A., Texas A. & M.; M.A., Ph.D., Texas.

JAMES WENDELL DAY, Assistant Professor of Physics, 1946.
B.A., Hardin-Simmons; M.A., Texas.

CHARLES GARFIELD DECKER, Associate Professor of Civil Engineering, 1938, 1946.
B.S. in C.E., M.S. in E., Michigan.

CARL WILLIAM DENISON, JR., Instructor in Dairy Manufactures, 1943, 1944.
B.S., Texas Tech.

JOE DENNIS, Professor of Chemistry, 1938, 1947.
B.A., Austin College; M.A., Ph.D., Texas.

P. ELDON DENNIS, Lecturer in Geology, 1948.
B.A., M.A., Brigham Young.

JAMES GRAY DENTON, Part-time Lecturer in Government, 1947.
B.A., Texas Tech.; LL.B., Texas.

ROBERT KENNEL DeWEESE, Instructor in Architecture, 1948.
B.S., Ohio State; M.F.A., Iowa.

MARY WOODWARD DOAK, Professor of English and Dean of Women, Emerita, 1925, 1945.
B.A., Texas; M.A., Texas Tech.

ENCEL HUNTER DODGE, Lecturer in Chemistry, 1948.
B.S. in Ch.E., Purdue; M.S. in Ch.E., Washington.

LOLA MARIE DREW, Assistant Professor of Home Management, 1946.
B.S., T.S.C.W.; M.A., Columbia.

WILLIAM LYON DUCKER, Professor and Head Department of Petroleum Engineering, 1948.
B.S., Oklahoma.

EDNA DUDGEON, Instructor in Biology, 1948.
B.S., Southwest Texas.

GEORGE W. DUPREE, Part-time Professor of Accounting and Finance, 1943.
LL.B., Texas.

CHARLES DUDLEY EAVES, Professor of History, 1925.
B.A., Texas; M.A., Chicago; Ph.D., Texas.

LUTA PELHAM EAVES, Assistant Professor of Accounting and Finance, 1942.
B.B.A., M.B.A., Texas Tech.

§ GEORGE OLIVER ELLE, Assistant Professor of Horticulture, 1938, 1940.
B.S., Oregon State; M.S., Texas Tech.

PAUL PENN ELLIOTT, Lecturer in Physics, 1946.
B.A., Culver Stockton.

MABEL DEANE ERWIN, Professor and Head Department of Clothing and Textiles, 1926.
B.S., Purdue; M.A., Columbia.

§ NEIL CASEY FINE, Associate Professor of Animal Husbandry, 1935, 1946.
B.S., Texas Tech.; M.S., Iowa State.

** EDMOND H. FORD, Instructor in Mechanical Engineering, 1949.
B.S. in M.E., Texas Tech.

NEVA ROGERS GAHRING, Instructor in English, 1947.
B.A., M.A., Oklahoma.

RAYMOND ERNEST GARLIN, Professor and Head Department of Education and Psychology, 1927, 1943.
B.A., M.A., Ph.D., Texas.

EUNICE JOINER GATES, Professor of Foreign Languages, 1925, 1948.
B.A., M.A., Southwestern; M.A., Michigan; Ph.D., Pennsylvania.

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HERMAN FRANK WILLIAMS, Lecturer in Plant Industry, 1946, 1948.
B.S., Oklahoma A. & M.

JUDDIE JOHNSON WILLINGHAM, Professor and Acting Chairman Department of Dairy Manufactures, 1948.
B.S., Texas A. & M., M.S., Ph.D., Iowa State.

** DONALD P. WILSEY, Staff Sergeant, U. S. Air Force, Instructor in Military Science and Tactics, 1949.

RUTH DONALD WILSON, Instructor in English, 1946.
B.A., Texas Tech.; M.A., Oklahoma.

HORACE EUGENE WOODWARD, Assistant Professor of Mathematics, 1937, 1946.
B.A., M.A., Texas Tech.

GEORGIA ELLEN WRIGHT, Assistant Professor of Clothing and Textiles, 1947, 1948.
B.S., M.S., Texas.

EARL OTTO WUKASCH, Assistant Professor of Electrical Engineering, 1948.
B.S. in E.E., M.S. in E.E., Texas.

RAY JAMES YANTIS, Captain, Infantry, U. S. Army, Assistant Professor of Military Science and Tactics, 1947.
B.S. in E.E., Texas A. & M.

WARREN WATSON YOCUM, Professor of Horticulture, 1937, 1943.
B.S., Northeast Missouri; M.A., Missouri; Ph.D., Nebraska.

ARTHUR WESLEY YOUNG, Professor of Agronomy and Head Department of Plant Industry, 1935, 1938.
B.S., M.S., Ph.D., Iowa State.

STAFFS IN SPECIAL DEPARTMENTS

Student Health Service

EMBREE R. ROSE, M.D., Director of Health Service, 1947.
FRED P. KALLINA, M.D., College Physician, 1948.
DORIS CREAGER, R.N.
MARJORIE TACKETT, R. N.
FLORENCE CRAWLEY, R. N.
BESSIE FOLLER, R.N.
HELEN MARIE DAVIS, R.N.
MARGIE HELMECKE, R.N.
LOIS REEVES, R.N.
MARY EDITH THOMPSON, R.N.
BETTY COLLINGS, Medical Technician.
LUELLA KNOX, X-ray Technician and Secretary.

Library

§ AUGUSTINE SMITH GAYLORD, JR., Librarian, 1945.
B.A., Certificate of Librarianship, California.
LULU STINE, Acting Librarian, 1930, 1948.
B.A., Texas; M.A., Texas Tech.
LUCY GOODRICH BONNER Circulation Librarian, 1948.
B.S., Union; B.S. in L.S., George Peabody.
SIBYL ANNE PIRTLE, Reference Librarian, 1947.
B.S., Texas Tech; B.S. in L.S., California.
MARY CATHERINE LAUDERDALE, Order Librarian, 1948.
B.A., Baylor; B.S. in L.S., Columbia.
PAULINE BAIN BRITTAIN, Reader's Adviser, 1947.
B.A., Tulane; B.S. in L.S., Louisiana State.
PHYLLIS JOHNSON RAFFANIELLO, Cataloger, 1948.
B.S., Mississippi S.C.W.; B.A. in L.S., Michigan.

Other Employes

ARCHITECT AND CONSTRUCTION SUPERVISOR, Walter Russell Hedrick, 1943.
AUDITOR, John Ehle Bowden, 1946.
ASSISTANT AUDITOR, Virginia Tiner Snelling, 1931, 1947.
BOOKKEEPER-CASHIER, Hubert Lee Burgess, 1934.
BOOKSTORE MANAGER, William Conner Cole, 1927.
B.A., Texas.
BUILDINGS AND GROUNDS SUPERINTENDENT, George Burgess Long, 1942, 1944.
B.A., Texas Tech.
BUSINESS MANAGER, W. T. Gaston, 1929.
CASHIER, Flossie Burkholder Brown, 1933, 1937.
FARMS SUPERINTENDENT, William H. Rodgers, 1943.
PLACEMENT SERVICE, EXECUTIVE SECRETARY, Jean Ayers Jenkins, 1935, 1947.
B.A., Texas Tech.
PURCHASING AGENT, S. T. Cummings, 1927.
TECH PRESS SUPERINTENDENT, Wayne Kittley, 1945.
B.A., Texas Tech.

Applied Music

JULIEN PAUL BLITZ, D. Mus., Cello.
ESTELLE GEORGE, B.Mus., Piano.
WILLIAM MURPHY,M.Mus., Piano.
MAMIE I. NEAL, B.A., Pipe Organ.
ELTON PLOWMAN, B.A., Voice.
EMMA SLATER SCOGGIN, B.Mus., Voice.
FRANCIS WESTBROOK SHAFTER, B.S., Piano and Voice.
MYRTLE DUNN SHORT, B.Mus., Voice and Piano.
WILFORD SMITH, M.Mus., Piano.
IMOGENE WEBSTER, B.S., Piano and Organ.
DEWEY O. WILEY, B.Mus., Violin.

Biblical Literature

(Available to students but not paid from college funds.)

CECIL RAYMOND MATTHEWS, B.A., B.D., Biblical Literature, under auspices of Northwest Texas Conference of the Methodist Church.

WILLIAM FERDINAND ROGAN, B.A., Th.B., Biblical Literature, under auspices of Synods of Texas, Presbyterian Church U. S., and Presbyterian Church, U. S. A.

ROBERT CARL SPAIN, B.A., M.A., B.D., Biblical Literature, under auspices of Churches of Christ.

VESTER EUGENE WOLBER, B.A., Th.M., Biblical Literature, under auspices of Baptist General Convention of Texas.

HISTORICAL STATEMENT

Location

Texas Technological College is a state-supported coeducational college. It is located at Lubbock in the South Plains area, approximately 200 miles from the northern line of the Panhandle and 400 miles northwest of the state capital. The elevation is 3200 feet above sea level.

The city and suburbs have a permanent population of approximately 72,000. Excellent churches, schools, hotels, and shopping centers are available. Two railway systems, an interstate bus line, and three air lines operate through the city.

History

Texas Technological College was established by an act of the Thirty-Eighth Legislature of the State of Texas, passed in 1923. This act authorized establishment of a college west of the ninety-eighth meridian and north of the twenty-ninth parellel, which should be a coeducational college of a senior class.

The first buildings were erected and opened to students on Sept. 30, 1925. The first president was Paul Whitfield Horn (1925-32). He was followed by Bradford Knapp (1932-38), Clifford B. Jones (1938-44, President Emeritus 1944-), William Marvin Whyburn (1944-48), and D. M. Wiggins (1948-).

The college opened with 1379 students. Enrollment at the beginning of the 1948-49 session was 6146.

Government

The government of the college is vested in a board of nine directors appointed by the Governor and approved by the Senate for terms of six years. The immediate regulations and direction of academic affairs are delegated by the Board of Directors to the President, administrative officers, and faculty.

ORGANIZATION OF THE COLLEGE

Divisions And Departments

Agriculture

Agricultural Economics (Rural Sociology)
Agricultural Education
Animal Husbandry (Poultry Husbandry, Veterinary Science)
Dairy Manufactures
Plant Industry (Agricultural Engineering, Agronomy, Horticulture)

Arts and Sciences

Biology (Bacteriology, Botany, Zoology)
Chemistry
Economics
Education and Psychology
English
Foreign Languages, (French, German, Greek, Latin, Portuguese, Spanish)
Geology (Geography)
Government
History and Anthropology
Journalism
Mathematics (Astronomy)
Music and Band
Philosophy and Sociology
Physical and Health Education
Physics
Pre-professional courses in Medicine, Dentistry, Pharmacy, Law
Speech
Also courses in Bibical Literature

Business Administration

Accounting and Finance
Economics and Management
Marketing and Secretarial Administration

Engineering

Architecture
Chemical Engineering
Civil Engineering
Electrical Engineering
Engineering Orientation
Industrial Engineering and Engineering Drawing
Mechanical Engineering
Petroleum Engineering
Textile Engineering

Home Economics

Applied Arts
Child Development and Family Relations
Clothing and Textiles
Foods and Nutrition
Home Economics Education
Home Management
Institutional Management

Graduate

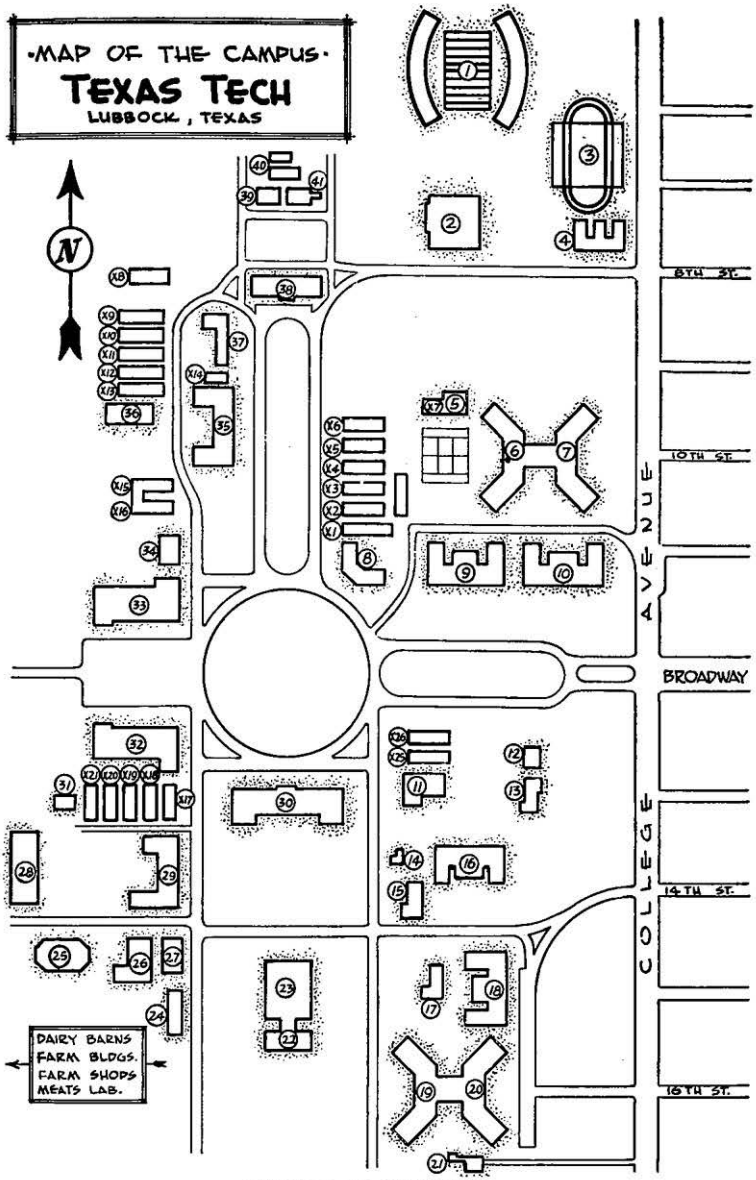
Master of Arts
Master of Business Administration
Master of Education
Professional Degrees in Engineering
Master of Science

Military Science and Tactics (ROTC)

Basic and Advanced
Air Force
Engineering
Infantry
Signal Corps

Extension

Correspondence
Extension
Lecture
Motion Picture



LEGEND OF BUILDINGS

Ad. Bldg. 30
Ag. Bldg. 29
Ag. Engr. Shop 28
Arch. Labs X1, X2
Band Bldg. 5
Bookstore 15
Cafeteria 22
Casa Linda 12
Chem. Bldg. 32
Chem. Labs ..X20, X21, X17
Classroom
Annexes .. X3-X6, X10-X13
Clay Research X8
Dispensary X15
Doak Hall 16
Drane Hall 18
Dorm Office 17
Elec. Engr. Lab. X14
Engr. Bldg. 35
Extension Bldg. 27
Greenhouse 31
Gym 2
Home Ec.
Annexes X25, X26
Home Ec. Bldg. 11
Home Management Hse. . 13
Infirmary X16
Jones Stadium 1
Library 33
Mech. Engr. Shops 41
Men's Dorm III 7
Men's Dorm IV 6
Military Science Bldg. . 37
Naval Reserve Center .. 4
Nursery 14
Pet. Engr. Bldg. 36
Power Plant 39
Practice Stadium 3
President's Home 21
Press Bldg. 34
Rec. Hall 23
ROTC Bldg. X9
Science Labs. X18, X19
Sneed Hall 10
Speech Bldg. 26
Stock Judging Pav. 25
Storage Bldgs. 40
Textile Engr. Bldg. 38
Veterans' Guid. Cen. ... 24
West Hall 9
West Texas Museum 8
Women's Dorm III 20
Women's Dorm IV 19

Library

The Library, erected in 1937, provides two large reading rooms and three special reading rooms for the use of graduate and undergraduate students. On the first floor are located the reference department, including periodicals, federal documents, and general and special reference publications, and a general reading room. The circulation desk and the reserve reading room, including the collateral reading collection, are on the second floor.

Library materials include 93,400 cataloged volumes, most of which are administered from the circulation desk; 12,500 bound periodicals, together with current subscriptions to 857 periodicals and newspapers; and 130,000 federal documents.

The growth of the collection is being directed along definitely planned lines. Files of periodicals and other continuations are being completed for the period which ante-dates the establishment of the library. The public documents collection, which is fairly complete since the Library was made a depository in 1933, is being enlarged through acquisition of important documents published before that date.

Professional staff members are on duty at the service desks from 8 A.M. to 10 P.M. to aid in the use of materials. The reader's adviser gives assistance in the use of the card catalog and other library tools and supervises the 500-volume recreational reading collection. She also collaborates with faculty members in the organization and selection of materials for courses.

In March 1948, the English department established a fund for a library in memory of Lucile Gill, for many years a member of the English faculty, to be called the Lucile Gill Memorial Collection. The scope of the plan was enlarged to admit contributions from students, former students, faculty members, and friends of the college. Miss Gill's family donated her personal library, consisting of 400 discriminatingly chosen books. The collection is to be a part of the library and administered by the library staff. The room chosen for it, on the second floor of the Library, will be open for use by September 1, 1949.

The Southwestern Collection, which is housed in a separate reading room on the first floor, was established for the acquisition and preservation of materials of particular interest in this region. It includes at present documents and manuscripts, which are, of course, unique, as well as 745 cataloged volumes, many of which are not obtainable in any other Texas library. It includes, also, among other photographic materials, a large collection of early Texas newspapers on microfilm, a gift of Mr. Lewis W. McNaughton of Dallas, Texas. The archive material includes a group of papers connected with the estate of James Bowie, given to the library by the late Sen. Arthur P. Duggan of Littlefield, Texas;

a collection of records of the Matador Land and Cattle Company, the 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, a file of the *Texas Spur* from 1909-40 has been secured for the collection. With the cooperation of the research department a microfilm reproduction of this file has been made. These manuscripts and books are excellent source material for thesis research, not only in history but also in any subject the locale of which is the Southwest.

The library is equipped for certain special services to those engaged in research. Nine study rooms in the tower of the Library are available for assignment to individual members of the faculty and students engaged in special projects. Carrels in the stacks, adjacent to books in the subject field of the student's interest, can be obtained on application to the circulation head. A microfilm reader and film collection are housed and administered in the reference department.

The facilities of the library are available to students, faculty members, and all full-time employees of the college. By arrangement with the head of the circulation department, citizens of the State of Texas may obtain borrowing privileges.

Library hours are: 8 A.M. to 10 P.M., Monday through Friday; 8 A.M. to 5 P.M. Saturday, with the exception of certain legal holidays.

West Texas Museum Association

The Plains Museum Society which was originated in 1929, was changed to the West Texas Museum Association in 1936. The object of this association is to foster, increase, and diffuse among the people of this section and of the state a knowledge and appreciation of history, science, and art. Membership is open to any person actively interested in the work of the association.

The ground floor unit of West Texas Museum was constructed from State Centennial funds in 1936. In November 1948, contracts were let for completion of the building. When finished the structure will consist of three stories, and will have 24,000 square feet of exhibition space and 8,000 square feet of storage facilities in the attic. The building and equipment will represent a valuation of $400,000.

A good beginning has been made in collecting objects of scientific, historic, and artistic value. These collections will be exhibited for the benefit of the public as soon as the building is completed. The facilities of the museum are open for the use of students, faculty, school children of the area, women's clubs, civic organizations, and all other persons and groups interested in the cultural history of the region.

Art Institute

The Texas Technological College Art Institute was originated during 1932 and is an organization composed of students, faculty members, and people of the community who are interested in sponsoring an active art program. The art institute sponsors traveling exhibitions of works of art and lectures on art. It sponsors local adult and children's art exhibitions. It has acquired a permanent collection of original oils, watercolors, and prints valued at $25,000.

The College Bookstore

The College Bookstore, situated on the campus, is a self-supporting enterprise owned and operated by the college. It is maintained to enable students to purchase textbooks, books for extension courses, supplies, and other equipment needed for laboratory and class work. The bookstore handles secondhand books, purchasing them at the end of the year from students who desire to dispose of such books.

The Placement Service

The Placement Service is a central agency which brings together employers, students, and faculty. Its facilities are at the disposal of all students of the college, regardless of major field of study or professional interest. It offers placement service to alumni and ex-students.

Graduating students will be expected to complete personnel information forms for filing with the Placement Office prior to receipt of degrees.

Employers, representing schools or business and industry, should file requests with the Placement Office for needed personnel. All correspondence should be addrssed to that office.

Further details and coverage offered may be received from the Secretary to the Placement Committee, Room 205, Administration Building.

ADMISSION

Application and Credentials

The Registrar is the director of admissions and has charge of all matters pertaining to admission into any division of the college. Each new student is required to file an application for admission on a blank which may be secured from the admissions office. In addition, he must have his credentials (transcripts) sent direct from the high school or the college previously attended. If the high school does not have a form for submitting the high school record, forms may be obtained by communicating with the admissions office. If the student has attended more than one college, he must present an original transcript from each college attended.

The new student is urged to send in credentials immediately following the close of the last semester in high school or another college. No advantage will be gained by sending partial or incomplete records. Transcripts submitted after Sept. 1 of the fall semester or June 1 of the summer session will likely result in delay in registration. Credentials brought by the student on registration day will be accepted if in order but the student will have to stand in long lines and wait for necessary admission papers.

Freshmen Early Registration Orientation. Each student entering the freshman class of any division of the college is subject to the general college requirement of early registration orientation. All freshmen are required to assemble at the college a few days in advance for a period of guidance and counseling and early registration (see College Calendar). Analyses and tests of training and aptitudes will be conducted with a view to assisting the student in his selection of a study program and to aiding the faculty and administration in the guidance of the individual student. The tests which are given are not to be used as a basis for admission except in extreme cases of deficiencies in fields of study which are prerequisite to success in a given curriculum. The student deficient in a given field may be directed to take certain preparatory courses to correct such weaknesses. Failure on the part of the freshman student to participate in the early registration program will result in delay in registration.

Smallpox Vaccination Certificates. All entering students are required to file in the Registrar's Office a certificate of a successful smallpox vaccination. Veterans of World War II are exempt from this requirement.

Uniform Requirements for Admission

Admission by High School Certificate. Graduation from an accredited high school with a minimum of 15 units is required

for admission. No credit may be obtained without graduation. The following units are the uniform minimum requirements for admission to any division.

1. *English*	3
2. *Mathematics* (Algebra, Geometry, Trigonometry)	2
3. Two units each from any two of the following groups	4
Laboratory Sciences (Biology, Chemistry, Physics, Zoology, Botany)	
Social Sciences (History, Civics, Economics, Contemporary Social and Economic Problems, Sociology).	
Foreign Languages (If two units of foreign language are offered, they must be from the same field. One unit of foreign language may be offered for elective credit).	
Vocational Home Economics, or Vocational Agriculture	
4. *Electives* (From the subject groups 1, 2, and 3 above, and from other subjects in which an accredited high school gives credit. Not more than four units may be offered from one subject group or from vocational subjects).	6
Total	15

Specific Requirements For Particular Curricula. The student with the above minimum will be admitted to the Division of Engineering with conditions. The study of engineering requires a thorough background of high school preparation in mathematics and physics. A prospective engineering student is strongly urged, therefore, to present three units in mathematics, not including general mathematics or arithmetic. Likewise he should present at least two units in science, one of which should be physics. The student lacking one unit in algebra or geometry will be required to remove this deficiency by completing the course through such agencies as the Division of Extension at Texas Technological College, by the end of his first semester's work in college. The student deficient in high school physics will be required to remove the condition by satisfactory completion of Physics 131 and 132 during the first long session, or its equivalent. Physics is not required for admission for majors in commercial art or architecture, design option.

An applicant for admission to the Division of Agriculture, Arts and Sciences, or Home Economics who is able to present a certificate of high school graduation with 15 units which do not fit the pattern as outlined above, may be admitted with conditions.

Such a student may be required to do additional work in college to make up for the subject matter shortage in high school preparation. A condition in high school English will not be permitted. A conditioned student may remove these conditions by making a grade average of "C" in the first 30 semester hours of his chosen curriculum. If this grade average is not made, the student must remove the conditions: (1) by correspondence work taken in the Division of Extension; or (2) by transferring work done in college to high school credit. In such case, 4 semester hours of college credit will be regarded as equivalent to one unit of high school work.

For admission to the Division of Business Administration the student must show successful completion of not less than 30 semester hours credit. The business administration student, therefore, may enroll for the freshman year in the Division of Arts and Sciences and pursue the prescribed freshman curriculum. At the beginning of the sophomore year he may transfer to the Division of Business Administration.

Quality Provisions for Admission. Quality is more important than quantity in the matter of high school preparation for college. Therefore, an applicant ranking in the upper quarter of his high school graduating class may enter without condition, provided he presents the required units in English for all divisions, and the required units in mathematics and physics for engineering.

Applicants of Low Rank. As a rule students who do poor work in high school likewise do poor work in college. Therefore, a student ranking in the lower quarter of his high school graduating class is strongly urged to complete an additional year of high school work with high quality grades before applying for admission to college. If, however, he and his parents still wish him to enter, he may be admitted on probation with a reduced load and placed under special observation of the dean of the division.

Admission from Other Colleges or Universities. Applicants who have attended another recognized college or university may be admitted on presentation of an official transcript showing a grade-point average of not less than 1.00 (C average) in (1) all courses for which he has been enrolled or (2) the last two full semesters or their equivalent. Students who, for any reason, are ineligible to continue in the college or university formerly attended cannot be admitted. Transfers from other colleges will not be permitted to register until an official transcript is on file and students are urged to send their records well in advance of registration date.

Any transfer student who expects to be graduated from Texas Technological College must meet the regular catalog requirements for graduation in his chosen curriculum, and must complete a minimum of 30 semester hours in residence in this college.

Those 30 hours must include a minimum of 6 semester hours in the major subject. This may be increased to 10 hours at the descretion of the academic dean.

Since the college offers a number of degrees which require the fulfillment of widely differing curricula, the acceptance of credits from another college by the Registrar does not guarantee the use of all these credits in a given curriculum. The usefulness of transferred credit is determined by whether or not the work is equivalent to required work in the curriculum, or as permissible electives. After admission and acceptance of transferred credit by the Registrar, the student should consult the dean of the division in which he plans to enroll.

Admission of Graduate Students. An applicant for admission to the Division of Graduate Studies must hold a Bachelor's Degree from a recognized college or university and must present an official transcript before registration date. In case of insufficient undergraduate preparation the Dean of the Graduate Division may direct the applicant in the choice of undergraduate levelling courses.

Admission of Mature Students on Condition. On recommendation of the Registrar and with the approval of the dean of the particular division, a mature student (21 years of age and over) may be admitted as a freshman on condition without having met the formal admission requirements. A request for such admission must be accompanied by credentials including a transcript of all one's high school record. The applicant should first apply for an interview at the Registrar's Office before the opening of the semester and he then may be directed to the dean of the particular division in which he wishes to enroll. On advice of this dean, thé applicant will be asked to take certain tests which will determine his suitability for admission. Admission in this manner is allowed only in the case of an applicant who shows that he is above average in his ability and has not recently attended high school.

Any veteran of World War II who was deprived of high school graduation by entrance into the armed forces may be admitted as a mature student on condition without regard to the age requirement. Such admission will be according to the plan outlined above.

Admission of a mature student on condition does not confer special privileges, but on the contrary, puts the applicant under special obligation. Neglect of work or other evidence of lack of serious purpose on the part of the student thus admitted is sufficient cause for withdrawal of approval of his continuing as a student. The student admitted as a mature student on condition will be assigned to his chosen curriculum. A grade-point average of at least a C (1.00) on the first 30 semester hours work will absolve all admission requirements for that curriculum.

Specific conditions in mathematics and physics for students

in the Division of Engineering must be removed as indicated previously.

Credit for Educational Achievements During Military Service. A limited amount of credit may be obtained on military programs. A student who has attended a training program conducted on a college campus such as College Training Detachment (air crew), Navy V-5, Navy V-12, ASTP, or ASTRP, should request an official transcript of such record. This transcript, with civilian high school or college record, should be filed as a part of his application for admission.

A former commissioned officer will receive credit for 12 semester hours in advanced military science. These may be used as elective credits so far as such electives are appropriate to a given curriculum.

Any student who has been honorably dismissed from any branch of the armed forces with a minimum of 90 days service will receive credit for 2 semester hours of physical education normally required as a part of his curriculum. With not less than one year of active service he will receive credit for 4 semester hours in physical education normally required.

EXPENSES

The question of expense while attending college is of importance to every student. In a student body of over 6,000 members there are so many different tastes, as well as such a wide range of financial resources, that each student must determine his own budget in keeping with his own needs and financial condition. It is possible to live simply and to participate moderately in the life of the college community on a modest budget. The best help the college authorities can offer the student in planning his budget is to furnish information on certain definite items of expense and acquaint him with others for which he, in all probability, will have to make provision.

Payment of Fees. All fees are payable in full at the time of registration. Payment may be made in check, or in money order payable to Texas Technological College. All checks, money orders, and drafts are accepted subject to final payment.

Registration Fee. For each student enrolled for 12 or more semester credit hours the registration fee is $25 per semester for legal residents of the State of Texas. For those enrolled for less than 12 semester hours there is a reduction in the amount of the fee charged, as follows:

For 11 semester hours - $23.50
10 semester hours - 21.50
9 semester hours - 19.50
8 semester hours - 17.50
7 semester hours - 15.50

6 semester hours - 13.50
5 semester hours - 11:50
4 semester hours - 9.50
3 semester hours - 7.50

Registration Fee for Non-Resident Students. Each non-resident student* is required to pay a non-resident registration fee of $150 per semester or $300 for the nine-month session. For the non-resident student enrolled in the long session for less than 12 semester hours, the registration fee is $12.50 per semester hour for which the student is enrolled.

It shall be the responsibility of the student to pay all non-resident fees at the beginning of each semester or term he may be enrolled. For failure to pay these fees, a penalty may be assessed, not to exceed $5 per semester.

Visitor's Fee. A fee of $5 for each course is required for the privilege of visiting any course. No credit may be obtained for auditing courses in this manner.

Student Health and Activity Fee. Pursuant to an act of the Texas Legislature** each student is required to pay a student health and activity fee of $30 per year, payable $15 per semester. This fee covers recreational activities, health and infirmary service (see Health Service), student publications, admission to intercollegiate athletic contests, and admission to the Artists Course numbers.

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* *Definition of Residence*

1. A non-resident is hereby defined to be a student of less than 21 years of age, living away from his family and whose family resides in another state, or whose family has not resided in Texas for the 12 months immediately preceding the date of registration; or a student of 21 years of age or over who resides out of the state or who has not been a resident of the state 12 months subsequent to his twenty-first birthday and for the 12 months immediately preceding the date of registration.
2. All individuals are classified as non-resident students who have come from without the State of Texas and who are within the state primarily for educational purposes as evidenced by registration in this institution.
3. No one shall be deemed a resident of Texas for the purpose of registering in this institution unless he has resided in this state for 12 months immediately preceding the date of his enrollment.
4. The residence of a minor shall be that of the parent or guardian except where guardianship has been established in this state obviously for the purpose of evading the non-resident fee. In no event shall the resident fee become effective until the expiration of one year from date of appointment.
5. A parent or guardian may not claim residence in this state for school purposes until residence of at least 12 months has been continuously maintained. It shall be the responsibility of the student to submit legal evidence of any change in residence status.
6. All aliens shall be classified as non-resident students. An alien who has applied for naturalization in the United States and who has received his first citizenship papers shall have the same privileges of qualifying for resident status for fee purposes as has a citizen of the United States.
7. The residence status of a student is determined at the time of his first registration in the college and his residence is not changed by his sojourn at Texas Technological College as a student except as provided by law. This policy shall apply to both graduate and undergraduate students regardless of any fellowships, scholarships, student assistantships, or graduate assistantships that may be granted to any student.
8. A student who claims that he has no permanent residence but who has not been a bonafide resident of the State of Texas for at least one year immediately preceding the date of his original or subsequent enrollment in the college may not claim exemption from the non-resident fee.

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

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.

Property Deposit. Each student enrolled in the college must make a property deposit of $7. This deposit is subject to charges for property loss or damages or breakage or violation of rules in library or laboratories. If the charges incurred for any semester reduce the deposit by 50 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. This deposit, less charges, will be returned to the student at the termination of his career here as a student.

Laboratory Fees. For all courses in which the combined credit of lecture and laboratory is from 1 to 3 semester hours, a laboratory fee of $1 is charged for each semester. For courses in which the semester credit is 4 semester hours or more, the laboratory fee is $2 per semester. A laboratory fee of $2 is charged for each freshman student participating in the early registration counseling and testing program to cover laboratory materials and supplies.

Miscellaneous Special Laboratory Fees

Modeling fee for Applied Arts 327 - Life Drawing - $5.00
Typewriter rental - Secretarial Administration 113 - 4.00
Typewriter rental - Secretarial Administration 114 - 4.00
Machine service - Secretarial Administration 223 - 4.00
Machine service - Secretarial Administration 321 - 4.00
Machine service - Secretarial Administration 421 - 4.00
Machine service - Secretarial Administration 434 - 4.00

Music Fees for Private Instruction. Private instruction in voice and in instruments is available for members of the music staff. The following costs are not covered by the college registration fee. They are payable to the teacher in advance or one-half in advance and the remainder at mid-semester.

		Two Lessons Per Week Semester Terms
Julien Paul Blitz	Cello or Violin	$90.00
Mrs. Myrtle Dunn Short	Piano or Voice	54.00
Mrs. E. F. George	Piano	54.00
Mrs. Carl Scoggin	Voice	45.00
	Piano	50.00
D. O. Wiley	Violin	54.00
Mrs. Mamie I. Neal	Pipe Organ	54.00
	Piano	36.00
Miss Imogene Webster	Piano or Organ	50.00
Elton Plowman	Voice	54.00
Mrs. Stewart Shafter	Piano or Voice	50.00
J. H. Penn	Voice	40.00
Wilford Smith	Piano	54.00
William Murphy	Piano	54.00

Practice studio and piano rental payable at the College Business Office:

One hour per day per semester	5.00
Each additional hour	2.50

For orchestra instruments—Inquire of Head of Department
For band instruments—Inquire of Director of Band.

Consumable Supplies Fee in Photography Courses. The various courses in photography require the use of a considerable amount of consumable supplies such as developing and fixing solutions, films, photographic paper, flash bulbs, etc. The fee per semester for each course is:

Journalism 3312, Basic Photography	$15
Journalism 3313, Press Photography	20
Journalism 3314, Advanced Press Photography	25
Journalism 3315, Advanced Press Photography	30

Refund of Fees. Any student withdrawing officially during either semester will receive a refund of registration, health and activity fees according to the following schedule:

1. During the first two weeks of the semester, 80 per cent.
2. During the third week of the semester, 60 per cent.
3. During the fourth week of the semester, 40 per cent.
4. During the fifth week of the semester, 20 per cent.
5. During the sixth week of the semester or thereafter, nothing.

The official college calendar near the front of this catalog indicates the official date of the beginning of each semester.

In the summer session any student withdrawing officially during the first week of either term will receive a refund of 60 per cent of any registration, health and activity fees paid, and during the second week 20 per cent. A student who withdraws during the third week and thereafter of either term will receive no refund.

No refund on unused balance of deposits will be made until at least 10 days after the student withdraws from the college during the semester, or at least 10 days after the end of the semester. In the latter case, refund is made without application from the student.

In no case will fees be refunded to a student suspended from college by college authorities.

Summary Of Registration Expenses

Each student should have available at the time of his first enrollment approximately $150 in traveler's checks, cashier's checks, or money order.

All registration expenses must be paid in full at the time of registration. Room and board may be paid by partial payments made from the first to the fifth of each month.

To enable the student to approximate his expense at the time of entering college, the following estimates are offered:

Fall Semester

Registration Fee	$ 25.00
Health and Activity Fee	15.00
Property Deposit	7.00
Books and Incidentals (approximate average)	33.00
First payment of room and board in the college dormitory	38.00
TOTAL (estimated)	$118.00

Spring Semester

Registration Fee	$ 25.00
Health and Activity Fee	15.00
Property Deposit (new student)	7.00
Books and Incidentals (approximate average)	20.00
First payment of room and board in the college dormitory	60.00
TOTAL (estimated)	$127.00

The cost of books and supplies will vary with the different curricula of the college from a minimum of $29 to a maximum of $36. Engineering students are required to purchase their own drawing equipment, slide rule, etc., which, plus books, cost approximately $65 per year, or an average of $32.50 per semester.

Estimate of Annual Cost. An estimate of the annual expense by semesters for one long session is as follows:

Registration Fee	$ 25.00	$ 25.00
Health and Activity Fees	15.00	15.00
Property Deposit	7.00	
Books and Incidentals	33.00	20.00
Room and Board in College Dormitory	260.00	232.00
TOTAL (estimated)	$340.00	$292.00

Charges for Room and Board in College Dormitories. All prices indicated below are subject to change without notice prior to registration date and with 10 days notice thereafter. It is hoped that the following prices will provide for dormitory service during the 1949-50 year.

Charges for room and board and supervision in college dormitories will be $492 per nine-month period for the regular double rooms occupied by two students. The payments will be as follows:

September	$38.00	February	$60.00
October	60.00	March	60.00
November	60.00	April	60.00
December	42.00	May	52.00
January	60.00		

Students wishing to do so may room three in a room at a monthly reduction of $3.

In each dormitory, there are a few rooms with private bath

for which there will be an additional charge of $7.50 per month per person. Corner rooms will be $1.50 per person per month additional.

Room and board payments are due on the first day of each month after registration, and there will be a penalty of 25 cents per day if the payment is made later than the fifth of each month.

Dormitory Reservations. Applications for dormitory reservations will be made to Mr. H. L. Burgess, Office of Dormitory Reservations. A check for $5 should accompany the request. This will serve as a reservation fee and will be held as a dormitory property deposit and will be refundable, less any breakage charges, at the end of the year.

Should a student find it impossible to enroll in the college, he may apply for a refund of his reservation fee not later than May 15 for the summer session, Aug. 15 for the fall semester, and Jan. 15 for the spring semester.

All arrangements for housing accommodations in private dormitories and residences off the campus should be made through the office of the Dean of Men or the Dean of Women.

Casa Linda, Cooperative House. The cooperative house is completely furnished except for bedding and linens which the students are expected to furnish. This house cares for 18 women students under the direction of a senior or graduate student. The work is done by the students themselves. The charge made covers the actual cost of operation. It varies with rising prices, but is in line with a carefully worked out budget. This cooperative house furnishes a fine opportunity for cooperative living in a dignified and pleasant environment. Application for residence in the cooperative house must be made through the Office of the Dean of Women.

Flight Training. The charges for Eco. 233, Aviation, are based upon a maximum of 100 hours of *ground training,* 20 hours *dual,* and 25 hours *solo* flight practice. Complete cost for the course is $450, payable $250 at beginning of course and balance of $200 at completion of one-half of requirements. A prorated refund will be made for unused hours upon withdrawal or for hours less than the maximum numbers quoted above upon completion of course.

Exemption From Fees By Honorable Discharge From The Armed Forces. Men and women who have been legal residents of Texas for a period of not less than 12 months immediately preceding registration in the college and who hold honorable discharge from the armed forces during the Spanish American War, World War I, and/or World War II are by state law exempt from the payment of all fees, except library or laboratory or similar deposits and fees or charges for room and board. 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

and inure to the benefit of the children of members of the United States Armed Forces where such members were killed in action or died while in the service. Members of the armed forces or other persons above named who were discharged from the service because of being over the age of 38 years or because of a personal request are not eligible to the benefits of this act.

Discharge papers must be presented by the student to the Coordinator of Veterans' Affairs who will in turn certify his 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

Each student currently enrolled in the college is entitled to the medical services given in the out-patient clinic and to admission to the Infirmary within its maximum capacity of 20 beds. The out-patient clinic is open during the day to students in need of consultation and treatment by the College Physician and nurses on the health service staff. Students judged to be in need of infirmary care by the College Physician may be admitted to the Infirmary where they are under the constant supervision of the physician and a registered nurse. Under the present plan, no charge is made for infirmary care up to a maximum of seven days in each semester; a minimum fee to cover the cost of food, drugs, and supplies is charged the student for each additional day in the Infirmary. In case the Infirmary is filled to capacity, the college is not under obligation to provide students with hospital service elsewhere.

Students who become acutely ill or are injured when the out-patient clinic is closed may receive emergency treatment by reporting to the nurse on duty in the Infirmary which is open day and night. The infirmary nurse cannot give routine clinical treatments and students are urged to come to the out-patient service during the regular clinic hours, except in cases of emergency.

The health service is staffed and equipped for treating the acute illnesses and minor injuries which commonly occur while the student is in residence at the college. It is not organized, however, to provide for the care of students requiring the services of specialists or treatment in a general hospital. Every effort will be made to notify the parents, guardian or nearest relative when a patient is believed to be threatened with a serious illness or is believed to be in need of an emergency surgical operation. The service will provide such cases with emergency treatment and assist as far as it can by arranging for the patient to be transferred to the general hospital of the patient's choice.

The college cannot assume the responsibility for the continued medical care of students suffering from chronic diseases such as epilepsy, heart disease, severe asthma, rheumatic fever, dia-

betes, nephritis, peptic ulcer, etc. It advises that such students make arrangements to be under supervision of a private physician as soon as they arrive in Lubbock. The College Physician will be glad to recommend competent doctors and specialists to those students who are in need of special care and who are unacquainted with the physicians in Lubbock.

The health service physician and nurses are not at liberty to make calls outside the service or to treat students in their rooms or homes where the facilities for proper treatment are usually inadequate. Students when ill should report immediately to the health service where they will be under the supervision of those especially trained for the care of illness.

It is the aim of the health service to screen out all students who have communicable diseases and to control such diseases on the campus. Students may be required to have a chest x-ray and skin tests before registration. The college requires that all students with communicable diseases be isolated until the danger of transmission has passed. Students are expected to obey the laws of the sanitary code of the city and state and the college physician may recommend the dismissal of any student who refuses medical advice or who willfully exposes his associates to a contagious disease.

The health service strives to prevent illness and accordingly is most willing to immunize students against small-pox, typhoid fever, diphtheria, tatanus, and influenza.

The college is not responsible for the care of students during vacation periods and the health service will be closed during the time the college dormitories are closed. Special arrangements will be made for the continued care of students who were sick before the vacation period began.

Fellowships, Scholarships, Awards, and Loans

All fellowships, scholarships, and awards are administered by the college through its faculty Committee on Scholarships and Awards with the assistance of other designated faculty members or organizations. Correspondence concerning a particular fellowship, scholarship, or award should be addressed as directed in each case.

Fellowships and Scholarhips

All fellowships and scholarships offered for work done in the college are supported by funds paid to the college for that purpose. Unless a different method of payment is specified under a particular fellowship or scholarship, the stipend will be paid to the recipient at the rate of 50 per cent for the first semester and 50 per cent for the second semester. Fellowships or scholarships which are inactive due to resignation or non-attendance of the holder will be regarded as vacated and may be filled in the usual manner.

Scholarships for Honor Graduates of Texas High Schools. The Legislature of the State of Texas has granted a scholarship for the one highest honor graduate of each accredited high school of the state. This scholarship is awarded to the high school to be presented to the highest ranking graduate for the entire year. The scholarship is not transferable. The name of the scholarship holder must be filed by the superintendent or high school principal direct with the State Department of Education at Austin, and an official list of high school scholarship holders is furnished by the State Department of Education to each of the state-supported colleges. The student may attend the college of his choice and claim the scholarship. The scholarship must be used during the long session immediately following graduation and is worth $50 in the remission of tuition charges for the year.

Correspondence regarding the scholarship should be addressed to the Registrar.

Dunlap Stores Scholarships. The Dunlap Department Store of Lubbock has given to the college a sum of money to be used for scholarships for one high-ranking graduate of each high school in Lubbock, Crosby, Floyd, Hale, Lamb, Hockley, Terry, Lynn and Garza counties which regularly graduates 20 or more seniors. Applications should be addressed to the Dean of Men.

The LaVerne Noyes Scholarships. The La Verne Noyes Foundation has approved Texas Technological College to participate in the funds of a foundation created by the late LaVerne Noyes of Chicago. The income allotted to the college may be used for payment of tuition of veterans of World War I, or the sons or daughters of such veterans, provided need of assistance can be established.

Only a limited number of scholarships are available. These are awarded on the basis of scholarship and are open to high school students in the first quartile of their graduating class. If the applicant is a college student, he shall have a grade-point average of at least 1.50. Scholarships, once awarded, are good for four years, provided funds are available and provided the holder of the scholarship maintains a satisfactory scholastic and citizenship record; but they must be renewed by application each semester.

Applications should be addressed to the Chairman of the Committee on Scholarships and Awards.

Mr. and Mrs. Hiram Parks Scholarships. Through the generosity of Mr. and Mrs. Hiram Parks of Lubbock, Texas, four scholarships of $350 each are available for students of Mexican descent. One scholar is chosen each year from graduates of high schools in the Panhandle and South Plains areas of Texas. Scholarships, once awarded, are good for four years provided funds are available and provided the scholar maintains a satisfactory scholastic and citizenship record. Inquiries should be addressed to the Head of the Department of Foreign Languages.

Texas Technological College Foreign Student Scholarships. Texas Technological College recognizes that friendly relations among the nations of the world are greatly desired, and that the knowledge of the customs, ideas, and ideals of other nations tends to encourage mutual respect and understanding. Consequently, believing that by extending the facilities of the higher institutions of this country to students of other nations, a mutual respect and understanding of the people of this country and of other nations will be fostered, the Board of Directors has made available five scholarships of $100 each per semester beginning with the academic year 1947-48. These scholarships may be used for tuition only. The applicant must have previously attended Texas Technological College a minimum of one semester and must have established a grade-point average of 1.50, which average he must maintain if the scholarship is renewed. The scholarship must be renewed by application each year.

Applications should be made to the Committee on Scholarships and Awards.

Scholarships for Quaified Citizens of Latin-American Countries and Possessions of the United States. By action of the Board of Directors, scholarships are made available to qualified citizens of Latin-American countries and possessions of the United States, effective Jan. 31, 1949. Each scholarship provides funds not to exceed $125 per semester of the long session and not to exceed $35 per six-week term of the summer session. The income from these scholarships must be applied on the registration fee.

To be eligible for a Latin-American - United States Possessions Scholarship a student must:

1. Be a graduate of a secondary school equivalent to the high school in the states.

2. Be able to speak, read, and write English sufficiently well to permit successful pursuit of regular college courses. In case of doubt, the student must pass oral and written examinations prescribed by the Latin-American - U. S. Possessions Scholarship Committee.

3. Satisfy the same committee that sufficient progress is being made to justify continuance of the scholarship into the second semester of the first year in residence, should the grade average of the first semester fall below a C.

4. Make a C average on a minimum course load of 12 semester hours during the second semester of the first year in residence and during each semester thereafter to receive the scholarship in the semester immediately following.

For further information or to make application for a scholarship, write to the Dean of Men, Chairman of the Latin-American - U. S. Possessions Scholarship Committee.

Ex-Students' Association Scholarships. An annual scholarship of $200 is available to a regularly enrolled undergraduate

student in each division with the highest scholastic average, provided the grade-point average is not less than 1.50. Furthermore, the applicant must have completed at least 30 semester hours in regular residence, and his father or mother must have completed a minimum of 15 semester hours in regular residence during a long session in Texas Technological College.

This scholarship is awarded only upon application, and the recipient is ineligible to hold another college scholarship simultaneously. The award may be withheld whenever conditions seem inappropriate. Applications should be made to the Chairman of the Committee on Scholarships and Awards.

David C. Storey Memorial Scholarship. Mr. and Mrs. W. D. T. Storey of Littlefield, Texas, have awarded an annual scholarship of $50 each semester to the young man of junior or senior standing who has qualified in scholarship and student leadership and who has been awarded a varsity letter in tennis by the college. This scholarship is in memory of David C. Storey (1943). Applicants should be made to the Dean of Men.

Clarence Malone Soil and Water Conservation Scholarship. Mr. John McKee, president of the Continental Bank and Trust Company, in honor of Mr. Clarence Malone of Houston, in 1947, gave the college the sum of $500 for promoting the study of soil conservation. The scholarship will extend over a period of two years and will be paid on a monthly basis. It is open to junior, senior, and graduate students. Applications should be made to the Dean of Agriculture.

William L. Ellwood Fellowship. This fellowship consists of the income from $10,000, established in 1943 by Mrs. F. H. Chappell, New London, Conn., and Mrs. Harriett E. Kenney, Sommerville, Conn., in memory of their father, the late William L. Ellwood. It is to be awarded, when sufficient funds are available, to a graduate student majoring in animal husbandry. Applications should be addressed to the Head of the Department of Animal Husbandry.

The Texas Cottonseed Crushers' Graduate Fellowship. This research fellowship of $500 was established in 1937, and is awarded to a graduate student majoring in animal husbandry. Applications should be addressed to the Head of the Department of Animal Husbandry.

Sears - Roebuck Foundation Scholarships. Sears - Roebuck Foundation has approved Texas Technological College to receive certain scholarships for the benefit of students in the Division of Agriculture. A graduate scholarship is also available to a graduate student majoring in vocational agriculture who has a high scholastic average and a minimum of one year's successful experience as a teacher of vocational agriculture. The scholarships are awarded for the long session, being renewed for the second semester provided the holder of the scholarship maintains a

satisfactory record. Applications should be made to the Head of the Department of Agricultural Education.

The Borden Company Foundation Scholarship in Agriculture. The Borden Company Foundation, in a desire to stimulate and recognize scholastic achievement by undergraduate students of agriculture, has established an annual scholarship of $300. The award is to be made in the fall to the senior student of agriculture who has achieved the highest average grade in all college work preceding the senior year. Eligibility for consideration requires the successful completion of two or more dairy subjects. This award may be withheld if the year's conditions are inappropriate. Correspondence concerning this scholarship should be addressed to the Dean of Agriculture.

The Robert B. Price Dairy Production Scholarships. Mr. Robert B. Price of El Paso, Texas, because of his interest in dairy production, established four $100 scholarships to be awarded annually as follows:

(1) To the freshman student majoring in animal husbandry or dairy manufactures who completes a minimum of 18 semester hours in the fall semester with the highest scholastic average; (2) the sophomore student majoring in animal husbandry or dairy manufactures having the highest scholastic average; (3) the junior student majoring in animal husbandry with a dairy husbandry option having the highest scholastic average; and (4) the senior student majoring in animal husbandry with a dairy husbandry option having the highest scholastic average. The scholarships are awarded in the fall for the long semester, except the freshman which is awarded about March 1. The awards may be withheld whenever conditions are inappropriate.

These awards will be made upon recommendation of the Dean of Agriculture.

The Block and Bridle Scholarships. The Block and Bridle Club of Texas Technological College has made available to the college the income from a special trust fund for scholarships to be awarded annually to senior and graduate students majoring in animal husbandry. The recipient of either must have and must maintain not less than a 2.00 grade average, and is ineligible for any other similar scholarship during the same academic year. For further information, inquire of the Head of the Department of Animal Husbandry.

Freshmen Textile Engineering Scholarships. Beginning in the fall of 1944 there were made available to men and women several freshmen textile engineering scholarships. Correspondence concerning these scholarships should be addressed to the Head of the Department of Textile Engineering.

Elsie M. Adams Memorial Scholarship in Textile Engineering. A $200 scholarship to be awarded for 1949-50 to the sophomore student in textile engineering with the highest standing in the

entire work of the freshman year. Correspondence concerning this scholarship should be addressed to the Head of the Department of Textile Engineering.

The Borden Company Foundation Scholarship in Home Economics. The Borden Company Foundation, in a desire to stimulate and recognize scholastic achievement by undergraduate students of home economics, has established an annual scholarship of $300. All senior students majoring in home economics in Texas Technological College who have included in their curricula two or more courses in foods and nutrition shall be eligible for the award. The award shall be presented to that eligible student who has achieved the highest average grade of all other similarly eligible students in all college work preceding their senior year. This award may be withheld any year whenever conditions are inappropriate, but in such a case only one award shall be made in the succeeding year. Correspondence concerning this scholarship should be addressed to the Dean of Home Economics.

Lubbock Panhellenic Society Scholarship. Approximately $50 will be awarded to the freshman student in the Division of Home Economics making the highest grades in all her work for the year. Correspondence concerning this scholarship should be addressed to the Dean of Home Economics.

Roscoe Wilson Memorial Scholarship in Foreign Languages. A stipend of $30 a month for nine months each year from the estate of the late Roscoe Wilson, member of the Board of Directors of Texas Technological College, has been made available by his widow to a student majoring in foreign languages. Applications should be addressed to the Head of the Department of Foreign Languages.

Avalanche-Journal Scholarship. The sum of $50 will be awarded annually to the student of junior standing majoring in journalism who does the best work in reporting in the first semester. This scholarship is given by the Avalanche-Journal Publishing Company, Lubbock, Texas.

Wilbur C. Hawk Memorial Scholarship. The sum of $50 will be awarded annually to the student of junior standing majoring in journalism who does the best work in reporting in the second semester. This scholarship is given by the News-Globe Publishing Company, Amarillo, Texas.

C. N. Hilton Scholarships. Mr. C. N. Hilton, president of Hilton Hotels, Incorporated, has made available to the students in business administration four scholarships of $100 each, to be awarded annually to the freshman, sophomore, junior, and senior student in that division with the highest scholastic average. The freshman award will be made to the student who has done his work in this college and has completed one semester of sophomore work in the Division of Business Administration with the highest scholastic average at the end of his freshman year. The senior

will receive the award on the basis of his scholastic record during the last semester as a junior and the first semester as a senior. Payments, other than the senior award, will be made during the following long session provided the recipient is regularly enrolled. A recipient of the Hilton scholarship shall not be eligible for any other similar award. Correspondence concerning these scholarships should be addressed to the Dean of Business Administration.

Business and Professional Women's Club Scholarship. The sum of $50 will be awarded annually to the outstanding junior girl majoring in business administration. Correspondence concerning this scholarship should be addressed to the Dean of Business Administration.

The Lubbock Chapter of the National Secretaries Association Scholarship. The sum of $50 will be awarded to the outstanding junior girl majoring in secretarial administration during the 1948-49 school year. Correspondence concerning this award should be addressed to the Head of the Department of Secretarial Administration.

RECOGNITION OF SCHOLARSHIP

All-College Recognition Service

Recognition Service honors those college students who have shown scholarship of outstanding merit, who have received official awards and honors from the college, and who have demonstrated their leadership and citizenship in a way significant to the student body and the college during the year. Recognition Service is sponsored by the Convocation Committee in cooperation with the Honors and Awards Committee.

Honors

Honor Roll. At the close of each semester the Registrar's Office issues an honor roll which includes the names of all students who, during the semester, have been registered for not less than 12 semester hours of work and who have ranked in the upper 5 per cent of the student body in the quality of grades made in such work, without having received any failing or incomplete grades.

Graduation With Honors: Those members of the graduating class who complete their work with a grade-point average of 2.80 or above are graduated with High Honors and those who complete their work with a grade-point average of 2.50 or above but less than 2.80 are graduated with Honors. Appropriate designation of this distinction is made on the diploma and the commencement program. No person shall be considered for honors unless at least one-half of the work is done at this institution, and the

half shall include the senior year. Only the grades earned in this college will be counted.

Awards

The following awards are offered annually:

Faculty of the Department of Architecture and Allied Arts Prize to the student doing the best work in architecture.

Texas Society of Architects Prize. The Lubbock and Amarillo sections of the Texas Society of Architects awards to the architectural design student, judged the winner of the special design problem, $25 in books on architecture and allied arts to be selected by the winner.

The National Block and Bridle Club awards a properly engraved plaque to the senior student who has contributed the greatest achievement to the local chapter of The Block and Bridle Club. The club also awards a gold medal to the junior student who ranks as high individual in the junior livestock judging contests, held annually at the college.

The Local Chapter of the National Block and Bridle Club awards gold medals to the six members of the international livestock judging team and to the four members of the national dairy cattle judging team. Awards are made also to winners in the freshman, sophomore, and junior livestock judging contests, and to winners fitting and exhibiting livestock in the Block and Bridle "Little International" livestock show.

National Association of Cotton Manufacturers annual award to the highest ranking senior student in textile engineering.

Mary Overton Craig Prize in Chemistry given by Dr. and Mrs. William M. Craig in memory of Mary Overton Craig to the young man of the sophomore class who shows the greatest promise as a future chemist. Correspondence concerning this award should be addressed to the Head of the Department of Chemistry.

The Dairy Manufactures Club annually awards individual gold medals to the members of the senior dairy products judging teams who participate in the international collegiate dairy products judging contest. Awards are also made by the Dairy Manufactures Club to high ranking individuals in the annual collegiate dairy products judging contest which is held on the campus each year.

Forum annually awards a medal to the girl making the highest grade in her freshman year.

Gargoyle Club Prize to the freshman student doing the best work either in architecture or commercial art.

TEXAS TECHNOLOGICAL COLLEGE LIBRARY
LUBBOCK, TEXAS

Mrs. J. T. Hutchinson Award. The sum of $100 will be given annually for the purchase of newspapers, magazines, and books for use in the journalism reading room. This amount is given by Mrs. J. T. Hutchinson, Lubbock, Texas.

American Society of Mechanical Engineers Award of a book presented to the most valuable member of the local branch of the American Society of Mechanical Engineers for the past year's activities.

The Plant Industry Club annually awards individual gold medals to all members of the senior judging teams participating in international and national judging contests in crops, floriculure, and fruits. Awards are also made by this club to winners in the freshman-sophomore and advanced contests in horticulture and agronomy which are held each spring.

Standefer-Canon Trophy to the student among the varsity football lettermen making the highest scholastic standing for the year. That student's name is to be inscribed on the bronze football plaque in the athletic trophy room. In addition, he is to receive a gold football properly inscribed.

LOAN FUNDS

Texas Technological College has a number of funds from which loans may be made to worthy students to assist in paying their expenses at this college. Some of the funds are small and are available only to certain groups of students. In case of others, the principal sum is invested, and only the income from the fund is available for loans to students.

Loan Funds Administered by the College

Freshman Loan Fund is a fund available to freshmen. It is made up from a portion of the proceeds of the sale of freshman caps each year by Hemphill-Wells Company. Application should be made to the Dean of Men.

Dr. R. J. Hall Loan Fund was established by bequest of the late Dr. R. J. Hall of Lubbock. Application should be made to the Business Manager.

Will C. Hogg Loan Fund of $25,000 was made available to the college by the will of the late Will C. Hogg of Houston, Texas. It is administered by the Board of Directors appointed in accordance with the directions of the will of Mr. Hogg. Application should be made to President's Office.

Olive Holden Memorial Fund. This fund, established by the Ko Shari Social Club, is available to any non-social club senior woman who has at least a B-minus average in all college work. Applicants may secure information at the Office of the Dean of Women.

George T. Morrow Loan Fund of $20,000 was left to the college by the late George T. Morrow, prominent businessman of Lubbock for a number of years. Application should be made to the Business Manager.

Twentieth Century Club Loan Fund. Loans are made either to men or to women with preference being given to upper-classmen. Applications should be filed in the President's Office.

Spencer A. Wells Fund is a fund available to women students and for women's work on the campus. It is made up from a portion of the proceeds of the sale of freshman hats to women students. The fund is administered by a committee of students and faculty members through the Office of the Dean of Women.

Loan Funds Not Administered by the College

Agricultural Club Loan Fund. The Agricultural Club has established a loan fund to aid agricultural students in emergencies. Applications for loans should be made to the Agricultural Club Sponsor.

Robert K. Allen Loan Fund. This fund was established in 1946 by Mr. Robert K. Allen, an alumnus of the college, and loans are available to students of the Division of Agriculture. Applications should be made to the Dean of Agriculture.

Athenaeum Club Loan Fund. This fund was started in 1926. It is available to any worthy woman student. Application should be made to Mrs. T. C. Delaney, 2801 Twenty-third Street, Lubbock, Texas.

The City Federation Loan Fund. This loan fund was established by the Federation of Women's Clubs of Lubbock. Application should be made to the Dean of Women.

Dairy Club Loan Fund. The Dairy Club maintains a loan fund, the principal of which is approximately $200, available to junior and senior members majoring in dairy manufactures. Application should be made to Head of Department of Dairy Manufactures.

Engineering Society Loan Fund. The Engineering Society maintains a loan fund which is available to advanced engineering students. Application should be made to Prof. J. H. Murdough.

Anne Johnston Ford Student Loan Fund of the Nancy Anderson Chapter of the Daughters of the American Revolution is a small fund available to junior and senior students who meet requirements, preference being given to women students. Applications should be made to Mrs. R. T. Bucy, 2219 Seventeenth Street, Lubbock, Texas.

Home Economics Club Loan Fund. This fund, known as the

Margaret W. Weeks Loan Fund, was established during the first year of the college by the Home Economics Club. This fund is open to home economics students. Application should be made to the Dean of Home Economics.

The Paul Whitfield Horn Memorial Fund, established by the Quarterly Club, the Council of Women Graduates, and Las Leales Club—is a loan fund available only to graduate women. Applications should be filed with the Dean of Women.

The Houston City Panhellenic Association Loan Fund. This association has an available fund from which loans may be made to junior or senior women students who are residents of Harris County. Students interested in applying for a loan should see the Dean of Women.

Lending Library for Women Students. A textbook loan service for women students has been established. By means of this service, a limited number of textbooks is available to women students needing financial assistance. A fee of 25 cents a semester is charged for use of the books, which have been placed in the Office of the Dean of Women by members of women's social clubs.

Kenneth M. Renner Memorial Loan Fund. This fund was established by donations from alumni, former students and industry friends of Professor Renner, and funds from the Dairy Manufactures Club. This fund is available to junior and senior students majoring in dairy manufactures. Application should be made to the Head of the Department of Dairy Manufactures.

Rotary Loan Fund. This fund was established by contributions of members of the Rotary Club of Lubbock. Loans may be made in small amounts to upperclassmen who have attended the college a year or more. Application should be made to Rotary Loan Fund Committee, care of Dean of Men.

The X Loan Fund. This small loan fund, the donor of which desires to remain anonymous, is handled through the Office of the Dean of Women for deserving women students of the college.

Vocational Rehabilitation Aid

The State Board for Vocational Education through the Vocational Rehabilitation Division offers assistance for tuition and fees to students in Texas colleges who have certain physical disabilities. Application for services of this division should be made to the nearest Office for Vocational Rehabilitation under the State Department of Education. The local office is located on the fourth floor of the Lubbock County Courthouse.

Assistance for this phase of the program of vocational rehabilitation is based on physical disabilities resulting in a vocational handicap and not on the financial need of the individual concerned.

Opportunities for Self-Support

Many students attendng Texas Technological College find it possible to supplement their funds with earnings from part-time employment. The college offers students in need of part-time employment assistance in finding employment, young men through the Office of the Dean of Men, and young women through the Office of the Dean of Women. In addition to offering assistance in finding employment, the college is pleased to work out problems relative to scheduling, to the apportioning of scholastic load to employment, and in other matters which become a part of a constructive plan for part-time employment for college students.

Student Handbook

At a later date, a Student Handbook will be published, covering regulations affecting student life, housing regulations for students not living on the campus, dormitory regulations, regulations against hazing, and other similar matters touching on student life.

ACADEMIC REGULATIONS

The divisions of the college are: Agriculture, Arts and Sciences, Business Administration, Engineering, Home Economics and Graduate.

The deans of these divisions are in charge of matters pertaining to the student's academic work and program.

When desirable, the student is referred to the Dean of Women or to the Dean of Men or to advisers, but in all matters pertaining to academic work, the student reports to his academic dean.

Special Academic Regulations

Matters requiring the dean's approval include the following:
Absence from class.
Honorable dismissal.
Withdrawal from college.
Scholarship requirements.
Scholarship reports.
Scholarship probation.
Change in schedule.
Dropping and adding courses.
Approval of registration and assignment to classes.
Student load.
Curriculum requirements.
Guidance programs and assignment to advisers.
Graduation requirements and candidacy for degree.

Absence From Classes

1. Students are required to be regular in their class attendance. Those who fail to meet these requirements will be requested to withdraw from the college.

2. Students are urged to attend all meetings and examinations of courses for which they are registered. For each 18 absences per semester in any or all subjects, the student will be required to complete 1 extra credit hour for graduation. The grade-point rule is to apply to extra hours thus required. (Cuts are counted pro rata in the summer session).

3. Absences are excusable subject to the following conditions:

   a. Absences on field trips, with debating teams, judging teams, intercollegiate athletic teams, or other organizations which leave the college on official work; absences of individuals who are permitted by the President or by the deans to leave the college on official business pertaining to the college or some organizations thereof, provided the coach, manager, or other person in charge files with the student's dean at least 24 hours before the student leaves the college a list giving the name of each student who proposes to make the trip, and provided the student is approved for the trip by the dean of the division in which he is enrolled.

   b. Absences of one day or more:

      1. Due to illness of the student provided such illness has been reported to the Dean of Men or Dean of Women by the person in charge of the student's domicile.

      2. Due to illness or death in the student's family.

4. Students whose absences fall in any of the above classifications may have their absences excused only by applying at the office of the dean of their division for an excused absence card and returning same properly signed to the dean's office within one week of the last date of absence. Each absence on the two days preceding or the two days following any school holiday counts double except when excused.

5. Persistent unexcused absence from class may result in the student's being dropped from the rolls of the college at the request of his dean. When dropped for such reason, the rules pertaining to suspension from college shall apply.

Adding a Course

After the regular registration period a student may add a course only with the approval of his dean and the instructor concerned. Only under extraordinary conditions can a course be added after one week of class work in either semester of the long session or after a comparable length of time in either summer term. Adding a course must be attended to in person and obtained from the dean's office. If a fee is required, the charge is made by the Business Office. No add is official until all of the procedure is completed.

Dropping a Course

A student may drop a course only with the consent of his dean. If the course is dropped within five weeks of the beginning of either semester, the grade of W is received; otherwise, the grade of W or F will be given as provided in the paragraph entitled Grades.

A student who persistently absents himself from class may be dropped from college by the Registrar on recommendations of the dean. Dropping of a course must be done by the student in person and not by a friend or by mail. The student must complete all details necessary for dropping a course in order for the drop to be official.

Changing the Section of a Course

After completion of his registration a student may change from one section of a course to another only with the approval of the dean of the division and the instructors concerned. The request for this action is not granted if made later than five weeks after date of registration in either semester, or after a comparable length of time in either summer term. Section changes must be attended to in person and not by mail or by a friend. Change in registration cards made in duplicate (made in triplicate for veterans) should be obtained from the dean's office. No change is official until all of the procedure is completed.

Classification of Students

Students are classified as freshmen, sophomores, juniors, seniors and graduate students.

For the purpose of determining eligibility to hold certain offices and for other similar reasons, students are classified as follows:

Freshman: A regularly enrolled student with all entrance requirements met, who has completed fewer than 30 semester hours.

Sophomores: A regularly enrolled student who has completed a minimum of 30 hours and 30 grade points.

Junior: A regularly enrolled student who has completed not less than 60 semester hours, with 60 grade points.

Senior: A regularly enrolled student who has completed not less than 90 semester hours, including four semesters of required physical education or military science, with 90 grade points.

For "Standing," and classification as affecting prerequisites, please see *Curricula and Courses of Study.*

Semester Hour

The unit of measure for instructional purposes is the course. Most courses meet three hours a week, having a credit value of 3 hours for one semester or 6 hours for both semesters.

The unit of measure for credit purposes is the *semester hour,* which means one hour of recitation (or equivalent in shop or laboratory work) per week for one semester of 18 weeks. For each classroom hour, two hours of preparation are expected. Three hours of shop or laboratory work are counted equivalent to one classroom hour with its preparation.

Number of Semester Hours Allowed

The number of semester hours which may be carried by a student is regulated by his academic dean. The scholastic standing of the student and the amount and character of outside work are the primary factors considered by the dean. A student who has demonstrated his ability will be allowed a heavier load. Conversely, a student of low scholastic standing will have his load decreased. In general a student whose outside duties demand as much as three hours per day will not be allowed to carry more than 12 semester hours.

All students who are working any portion of their time for support while they are in college must report to the Dean of Men or the Dean of Women, and through them to the dean of the division, the number of hours which they are working, and other such data regarding the employment as may be required by the deans. This report must be supplemented as changes occur. Intentional misstatemets may lead to deprivation of privileges.

A student may not receive credit in any course in which he is not regularly enrolled and sectionalized or to which he has not been officially assigned.

Auditing Courses

There are two ways of auditing courses without credit when permission is granted:

Visiting the Course. The first method, that of visiting the course, is open to persons not regularly enrolled in the college and consists of the privilege of hearing or observing only, and not of handing in papers, taking part in class discussions, in lab-

oratory or field work, or of receiving credit for the course. This permission is not granted during the summer session or for extension classes. A visitor's permit to attend any class may be denied to any person in case the class is already overcrowded.

Any person desiring to visit a course should first secure the necessary forms from his academic dean. When these forms have been completely filled out and approved, he pays a fee of $5 per course and receives a permit to visit the course.

Enrolling for No Grade. The other method is for students regularly enrolled in the college either in the summer session or in the long session and entitles them to register for residence courses for no grade. Such registrations are to be considered on the same basis as registrations in credit courses in making the student's schedule, both in the payment of fees and in the consideration of the amount of work to be carried. Class cards for such sudents shall be indicated by the Registrar as "no-grade"; such registrations shall not be changed to carry a grade after the designation date for adding or dropping courses. A student registered in a course for no grade shall have the privilege of taking part in class discussions, submitting class exercises, and taking quizzes and examinations if he desires.

Grades

The standing of a student in his work is expressed by the grades made up from class work and examinations. The grades used with their numerical equivalent are: A, 90-100; B, 80-90; C, 70-80; D, 60-70; Inc., Incomplete; W, withdrawal from the course during the first five weeks; WP, withdrawal after the first five weeks, passing; WF, withdrawal after the first five weeks, failing; F, failure.

Transfer grades from other colleges are accepted according to the letter of the grade recorded rather than the numerical equivalent.

Grades are given by semesters, but where the student's published curriculum requires the completion of a two-semester course, one semester of a course will not count for a degree until credit has been received for the entire required course.

Semester grades are recorded by instructors on grade cards and on grade sheets and are filed with the Registrar. The Registrar reports all grades to the student's parent or guardian, to the student and to the student's dean. All students regularly enrolled in any given course must receive a grade at the end of the semester. No grade may be given to a student not regularly enrolled in a course during the semester covered. No grade may be corrected or changed without inquiry as to the reason and necessity for the change, except the grade Inc., for the changing of which definite regulations are provided. A student may not receive a passing grade in a course unless he is regularly enrolled in that course at the end of the semester or term.

Grade of Inc.

The grade Incomplete (Inc.) may be given by the instructor whenever the student's work in the course indicates a major deficiency in quantity though sufficient in quality, provided the deficiency has been occasioned by causes beyond the student's control.

Completion of the work: Within four weeks after the beginning of the next regular semester of residence after the grade of Inc. is given, the student shall initiate a petition to the dean of the division in which he is enrolled for permission to complete the work reported incomplete. The dean and the instructor in joint conference shall decide whether the work may be completed or the grade become F. The dean may extend the time for initiating the petition. The student who fails to initiate his petition within the time limit stated (unless the time is extended by the dean) shall forfeit all privileges of completing the work, and the grade becomes F. Upon receiving permission the student shall complete the work in whatever manner and within whatever time the instructor specifies, provided that the time shall not exceed one year from the giving of Inc.

Record of Inc.: The instructor shall note on the reverse side of the grade card the reason Inc. was given, the quality of the work done, and the time allowed for doing the work. The instructor shall transmit the new grade via the dean to the Registrar who, in recording the new grade, shall supplement the original grade with the one last recorded.

When an Inc. stands for one year without action, it becomes F, except that at mid-semester before graduation, any grade of Inc. then standing without action becomes F. The foregoing does not apply to grade for thesis.

The responsibility of seeing the record cleared of Inc. rests upon the student.

Grade of W

A student who withdraws from a course or from college within five weeks from the beginning of either semester, or an equivalent time in summer school, in a manner prescribed by college regulations receives a grade of W and his name and grade will be entered on the final grade sheet.

A student who withdraws from a course after five weeks from the beginning of either semester receives a grade of WP if his work is a passing grade; otherwise, the grade is WF.

A student who transfers from one section to another receives no grade in the original section, and his name is not entered on the final grade sheet for that section.

Grade of F

The grade of F is given when a student fails in a course, also

when the student withdraws from the course in a manner prescribed by college regulations after five weeks from the beginning of either semester and is not then passing in the course.

Grade Points

In order to encourage students to do the best work of which they are capable, the college considers not only the number of credit hours taken by students but also the grades received in the various subjects and gives a definite number of grade points for each grade. For the grade of A, the student is entitled to 3 grade points for each credit hour; for the grade of B, 2 grade points for each credit hour; for the grade of C, 1 grade point for each credit hour. The grade of D is a mere passing grade and does not entitle the student to any grade points whatever. The grade of F, or failure, not only does not entitle the student to any grade points but will reduce the grade-point average, since such work must be repeated. In order for a student to graduate from Texas Technological College, the total number of grade points must equal or exceed the total sum of the semester hours required for graduation.

No grade points are required or allowed for credit from other institutions. A student who has the number of semester credit hours required for graduation, but not the corresponding number of grade points, may satisfy the requirements by completing additional courses until the grade-point requirements have been met. Courses used to meet these requirements must have the approval of the student's dean. In the case of a student transferring credits from other institutions, the number of credit hours in this college required for graduation is the required total in his curriculum less the transferred hours accepted in that curriculum; the number of grade points required is the same as the number of credit hours required in this college in his curriculum.

The grade point average is determined by multiplying the grade points by the number of hours in each subject as shown by the grades. The total of all grade points is then divided by the total of all hours in which the student has received grades of A, B, C, D, F,—and including in the total, the grade of F for each re-registration in the same course. This grade-point average is then interpreted in terms of the corresponding grade.

It is contemplated that effective for all entering students (freshmen and transfers) in September 1950 and thereafter the minimum average required for graduation will be 1.00 grade points, which is equivalent to a C average.

Physical Education Required

Physical education is a required course for all freshmen and sophomores, both men and women. Four semesters of physical

education constitute part of the requirements for all degrees unless one of the following conditions prevail:

1. When approved by the dean, band may be substituted for physical education.
2. Military science, the basic course, may be taken in place of physical education by any qualified male student. Once entered upon, the satisfactory completion of this basic course, two years, becomes a requirement for graduation, unless specifically excused by the Professor of Military Science and Tactics.
3. Veterans of World War II may receive credit for this required work on time spent in military service. See Credit for Educational Achievements During Military Service.
4. A student may be excused from physical education upon recommendation of a physician and a student over 25 years of age may of his own volition prefer not to take physical education. In either case, 3 semester hours, preferably Physical Education 3310, must be completed by the student.

SCHOLARSHIP REGULATIONS

Scholarship Probation

It is contemplated that effective with the Fall Semester of 1950-51 for work done during that semester a revision of the regulations governing scholarship probation will be made which will emphasize attainment of quality, as reflected by grade points, more than do the present regulations.

A. The following types of students shall be on scholarship probation:
   1. The student who makes passing grades in 6 hours but fails to pass in 10 hours out of a regular load in any semester.
   2. The student who, on account of employment or for similar reasons, is required to register for less than 15 hours and who fails more than one course which carries 3 or more hours credit, provided 6 semester hours are completed with passing grades.
   3. The student who attends both terms of summer school and fails to pass in two-thirds of his work.
   4. The freshman student who was in the lowest quartile of his high school class.

B. This probation status shall mean that:
   1. The student may not register for more than four courses, approximately 12 hours, except upon the advice of the dean.

2. In order to allow more time for his studies, he shall not be permitted to represent the college in any intercollegiate contest, hold any collegiate office or elective collegiate position during his period of probation and he shall not be permitted to be absent from the college for any cause except illness.
3. Lack of interest in his studies as evidenced by unnecessary absences will result in his being dropped from the rolls of the college by the Registrar at the request of his dean.
4. The student may not effect an intramural transfer until he has removed his probation status.
5. The probation status may not be removed during the semester. A student who withdraws from college while on scholarship probation will not be considered to have met the minimum work requirement.
6. The student on scholarship probation who fails to pass in 10 hours in that semester or two-thirds of his work in a 12-week summer session will not be allowed to re-enter college, except that the failure of one course carrying 3 or more hours credit in the long session shall not cause him to be dropped. He shall, however, be registered on scholarship probation.
7. A student on probation may be dropped at mid-semester at request of his dean if he is not passing in 10 semester hours. This period shall extend until the beginning of the second long session semester thereafter.
8. Any student who would otherwise be placed on scholarship probation for the third time will not be again allowed to register in college.

C. To remove probation a student must make passing grades in 10 semester hours in a given semester or two-thirds of a regular load in a 12-week summer session. Scholarship probation may not be removed by attendance at another college.

Six Hour Rule

A student who fails to pass in 6 hours of resident work in any semester or 4 hours in a 12-week summer session will not be allowed to re-enter until after a lapse of a period of one semester, except that when he has been allowed to register for less than 6 hours, he may enroll if he passes in all his work.

Readmission Of Students Who Have Been Dropped

A person dropped under the 6-hour rule; or for any reason

set forth in the paragraph on Scholarship Probation; or for failure to attend classes, and who after one semester or more wishes to return to college should consult his dean. If the dean is willing the applicant may then petition the President of the College for readmission.

In order for the petition to receive prompt attention it should be brought or mailed to the President's office at least 10 days before the opening of the semester or summer term.

Freshmen Progress Reports

All entering freshmen will receive a grade report at the end of four weeks in each semester. An entering freshman who is not passing in 9 semester hours may withdraw as of that date with the privilege of re-entering for the next semester. If he elects to remain in college and is not passing in the 9 hours at mid-semester he may be dropped from the rolls of the college. In case the student is dropped or if he withdraws under these conditions, he will not be allowed to re-enter until after the lapse of one entire semester.

Mid-Semester Reports

The Registrar's Office will mail to all students a mid-semester grade report. This is an informatory report and does not become a part of the student's permanent record. Parents will likewise receive a copy of this report.

Withdrawal From College

A student who finds it necessary to withdraw from the college before the close of the semester should apply to the dean of the division in which he is registered for permission to withdraw with honorable dismissal. A student under 21 years of age should first consult his parents and should bring with him a written statement showing that he has the permission of his parents to withdraw. If the dean is convinced that withdrawal is necessary, the student will be given honorable dismissal from the college, and his parents will be notified. Such withdrawal protects the student's record in case he desires to return to the institution or transfer to another institution at some future time. The grades recorded are given in accordance with the grade requirements in the preceding paragraphs, and the grades, whether W or F, will be based on the student's standing on the last day of attendance in each of the specific courses in which he is assigned. The fact that the student may have withdrawn does not alter the scholarship probation requirements.

A student who withdraws from a residence course with a grade of W may complete the course by correspondence provided the work is given by the same instructor who taught the residence

course and provided also that the course is regularly taught by correspondence. The credit recorded will be correspondence credit.

Intramural Transfers

The college encourages students to develop interest and knowledge in specialized fields of learning. Frequently it is necessary that opportunity for a change of major must be provided, and to this end transfers between the main divisions of the college are encouraged whenever such seems advisable for the best interest of the student. A student desiring to transfer from one division of the college to another must apply to his dean before the close of any registration period.

Transfers are made in writing from the dean to the Registrar. If a student has failed to pass in the number of hours required under the scholarship probation regulations, he will not be transferred to, or enrolled in, another division of the college until the provisions of the probation regulations have been met.

Eligibility For Extra-Curricular Activities

An extra-curricular activity is understood to be in general the representing by a student of the student body or any organization, department, or activity in the college, or the holding of any elective or appointive position or office. In particular such activity may be acting in the capacity of a college or class officer, or representative, or representative or officer of a social, departmental, divisional or common-interest club or organization; holding an office or named-post on any student publication; or being a member of an athletic, academic, or departmental team, squad, or committee for intercollegiate or open competition.

Any undergraduate student not on scholarship or disciplinary probation who is regularly registered for 12 or more semester credit hours is eligible to become a candidate for or to hold student office, or may represent the college in any extra-curricular activity, provided such student has a grade-point average of at least 1.00 for both the whole of his college work and that of the preceding semester on the complete scholastic load*. Also no student shall make a public appearance in any extra-curricular activity or be nominated to, hold, or be recommended for a student office unless he has been certified as eligible by the Registrar, the dean of the division in which he is registered and the Dean of Men or the Dean of Women. The responsibility for securing certification shall rest with the student concerned and the supervisor of the activity in question. Eligibility for extra-curricular activity must

* The average grade is determined by multiplying the grade points by the number of hours in each subject as shown by the grades; the total of all grade points is then divided by the total of all the hours in which the student has received grades of A, B, C, D, and F and including repeatedly each re-registration in the same course with a grade of F in the total. The average grade of a transfer student shall be made on the whole of his college academic record, on both that which he brings by transcripts and that which he makes in this college.

be satisfied each semester. A student who does not meet these regulations shall not represent the college.

Eligibility for Intercollegiate Athletics

An undergraduate student not on scholarship or disciplinary probation, who is regularly registered, may compete in intercollegiate athletics. Participation in intercollegiate athletics is governed by the athletic conference rules followed by the college and administered by the Athletic Council. No student shall make a public appearance in an intercollegiate athletic activity unless he has been certified by the Faculty Committee of the Athletic Council. The responsibility for securing this certification shall rest with the student concerned and with the Faculty Committee of the Athletic Council.

REQUIREMENTS FOR GRADUATION

Undergraduate Degrees

To receive any undergraduate degree in Texas Technological College, the student must have met certain uniform requirements together with certain other requirements that may vary with the different divisions of the college.

1. Each student is required to do work in actual residence in this college of at least two long session semesters, five summer session terms, or one long session semester and two summer session terms, and must complete in residence a minimum of 30 semester hours of work counting toward a degree. At least 24 of the last 30 semester hours offered for the undergraduate degree must be taken in this college. A maximum of 6 hours of the final semester's hours required for a degree may be completed by correspondence,* provided the courses are offered by correspondence, and provided further the courses taken by correspondence do not constitute a part of the major or minor requirements for the degree.

The student must make, before graduation, a total number of grade points at least equal to the number of credit hours required for graduation, as provided for in the paragraph on grade points in this catalogue.

It is contemplated that effective in September 1950, for all entering students (freshmen and transfers) a grade-point average of 1.00 will be required on the total number of courses required in meeting the requirements for a degree, including each reregistration in a course with a grade of F.

* A candidate who is completing degree requirements by correspondence courses during the spring semester must file a statement with the dean of his division by March 15 stating his intention of completing the correspondence courses and becoming a candidate for a degree. If the statement is not filed the student will not be considered a June candidate and his name will not appear on the June graduating list for that year.

2. The candidate for any degree must file his application for the degree with his dean not less than two semesters in advance of graduation.

3. Any work taken through the Division of Extension of Texas Technological College or other approved colleges will not be counted as residence work required for a degree in this college.

4. The completion of all requirements of the course of study as outlined in the college announcement or its equivalent as determined by the faculty of the division offering the course must be certified to by the Registrar and by the dean. The curriculum requirements will be found in the appropriate divisions of the catalogs and announcements issued from time to time. At the option of the head of the department concerned, no grade lower than C in the major subject will be accepted for satisfaction of requirements for graduation. This requirement is to apply to all divisions of the college.

Students who enter state-supported colleges in Texas after Sept. 1, 1937, will be required to complete satisfactorily a course in government covering the Federal and Texas Constitutions. This applies to all detailed statements of curricula published in this catalog.

5. No second Bachelor's Degree will be conferred until the candidate has completed at least 24 semester hours in addition to courses counted toward the first Bachelor's Degree.

6. Diplomas are awarded at the regular commencement in June and again at the end of the summer session. Students completing requirements for a degree at the end of the fall semester will be awarded diplomas at the following June commencement.

7. Students who find it impossible to attend commencement exercises may apply for the privilege of graduating in absentia by filing a written request with the dean of the division.

A candidate for a degree will be held to the graduation requirements as stated in the catalog and announcements for the year in which he entered the college; but he may meet the graduation requirements in the catalog of the year in which he graduates. A student may graduate under the provisions of the catalog of the year in which he enters provided he receives his degree within seven years of that date. This does not mean that if a student fails to complete the requirements within seven years he loses credit for the work done, but that he must choose the next later catalog and fulfill the requirements as set down in it in accordance with the first sentence in this paragraph. In case a candidate for a degree has perfected an intramural transfer, he will be held to the requirements in the catalog which would normally govern him in keeping with the classification he assumes under the transfer.

Admission To Candidacy For Graduation

Any student who enters the semester or summer session at the end of which all work for the degree will be completed, with less than the entire number of grade points required for the degree for which he is a candidate, shall be admitted to *qualified candidacy only*. Since under these conditions failure to graduate may result, ordering the diploma and making other plans for graduation may be done by the student entirely on his responsibility.

Graduate Degrees

For requirements for master's degrees, see either the *Division of Graduate Studies* in this catalog or the separate Graduate Bulletin.

STUDENT ACTIVITIES

Student Council

The Student Council is the official body of students at Texas Technological College. Its members, elected by student vote, represent the students enrolled in the five academic divisions of the college.

The Student Council allocates the funds it receives from the activities fee to worthy student enterprises and organizations, supervises elections, is represented on several committees, directs and supervises deserving student activities, and in every way cooperates with the college officials in the administration of student affairs.

CAMPUS-WIDE ACTIVITIES

Publications

The Toreador, the college newspaper, is published twice weekly by officers elected by the student body. *La Ventana*, the college yearbook, is a student-published record of the events and activities of the year. These two college publications afford valuable training in reporting, editing, and business management.

Artists Course

The Artists Course Committee, made up of students and faculty, present to the student body each year a series of attractions sponsored by the college. The student health and activity fee covers these attractions.

Such artists and organizations as Ballet Russe de Monte Carlo, James Melton, Richard Crooks, Albert Spalding, Charles

Kullman, Igor Gorin, Eleanor Steber, Mia Slavenska, Patricia Travers, William Kapell, Nino Martini, Nadine Conner, Zino Francescatti, Jussi Bjoerling, Christopher Lynch, Vronsky and Babin, Rise Stevens, Bidu Sayao, Ginette Neveu, Eileen Farrell, and Eugene List have appeared under sponsorship of this committee.

Willson Lectures

With the income from an endowment set up by Mr. and Mrs. J. M. Willson of Floydada, Texas, a lecturer of national distinction in the fields of science and religion is brought to Texas Technological College each year for a series of four lectures. These lectures highlight Religious Emphasis Week during the spring semester.

Recreation Hall Program

Each semester a program made up of lectures, entertainment, dances, and "fun nights" is available for the students of the college in the Recreation Hall. The objective of this program is to provide wholesome and varied recreation to the students of the college.

Religious Emphasis Weeks

During both the fall and the spring semesters one week is designated as Religious Emphasis Week, during which period the Student Religious Council, made up of representatives of the student religious organizations, directs a campus-wide religious program.

Debate

The college regularly participates in a program of intercollegiate debate. Any student meeting eligibility requirements for representing the college may become a candidate for the debate team.

Band And Glee Club

The Matador Band, made up of students who are qualified musicians, performs regular concerts, and plays at student convocations, athletic events, and other college activities. The Men's Glee Club is an all-male chorus which offers a young man enrolled in the college an opportunity for choral training.

Varsity Show

Each spring the Student Council sponsors a student-written,-directed,-performed, and -produced musical review. The income from this production is regularly set aside for the Student Union Fund.

Engineers' Show—Home Economics Open House

Each spring the Engineering Society sponsors a two-day showing of engineering exhibits to the public. On the same week-end the Home Economics Club holds open house for all visitors to the campus, with demonstrations in the field of home economics.

CLUBS AND SOCIETIES

Recognition of student clubs and societies and the plan under which they function is the assignment of the Social Activities Committee, a faculty committee appointed by the President of the college. Recognition of a student organization automatically gives it the right to schedule on the College Social Calendar, and entitles it to the assistance of college faculty and administration and to the use of such college facilities as may be designated for that purpose. Such organizations group themselves in the classifications of honorary and professional, divisional and departmental, social (all local, since a policy of the Board of Directors of the college does not permit Greek letter fraternities), religious, service, and common interest.

National Honorary And Professional Organizations

Alpha Chi (Scholarship)
Alpha Epsilon Delta (Pre-medicine)
Alpha Lambda Delta (Freshmen Women)
Alpha Psi Omega (Dramatics)
American Chemical Society
American Dairy Science Association (Student Branch)
American Institute of Chemical Engineers (Student Branch)
American Institute of Electrical Engineers (Student Branch)
American Institute of Industrial Engineers (Student Branch)
American Society of Agronomy (Student Branch)
American Society of Civil Engineers (Student Branch)
American Society of Mechanical Engineers (Student Branch)
Block and Bridle (Agriculture)
Delta Sigma Pi (Business Administration)
Kappa Alpha Mu (Photography)
Kappa Mu Epsilon (Mathematics)
Kappa Kappa Psi (Band)
Phi Eta Sigma (Freshmen Men)
Phi Gamma Nu (Business Administration Women)
Phi Psi (Textile Engineering)
Phi Upsilon Omicron (Home Economics Scholarship)
Pi Sigma Alpha (Government)
Sigma Delta Pi (Spanish)
Sigma Gamma Epsilon (Geology)

Sigma Tau Delta (English)
Society of American Military Engineers
Tau Beta Pi (Engineering Scholarship)
Tau Beta Sigma (Women's Band)
Theta Sigma Phi (Women's Journalism)

Local Honorary And Professional Organizations

Texas Tech Honorary Agriculture Club (Scholarship)

Divisional And Departmental Organizations

Ag. Eco. Club
Agricultural Club
Book Reviewers Club
Capa y Espada (Spanish)
Cercle Francais (French)
Cosmopolitan (Foreign Students)
Double T Association (Athletic Letter Men)
Dairy Manufactures Club
Engineering Society
Future Farmers of America
Future Teachers of America
Gargoyle Club (Architecture)
Home Economics Club
Infantry Club
International Relations Club
Liederkranz (German)
Physics Club
Plant Industry Club
Pre-Law Club
Pre-Med Club
Press Club
Sock and Buskin
Society of Petroleum Engineers and Geologists
Sociology Club
Tech Accounting Society
Texas Tech 4-H Club
Texas Tech Army Signals Association
Texas Tech Radio Club
Texas Tech Rodeo Association
Textile Engineering Society
Women's Physical Education Major - Minor Club
Women's Recreational Association

Service Clubs

Alpha Phi Omega
Association of Women Students

Casa Linda Club
Forum
Junior Council
Men's Dormitory Association
Red Cross College Unit
Saddle Tramps
Texas Tech Chamber of Commerce
Women's Dormitory Association

Religious Organizations

Student Religious Council
Baptist Student Union Council
Canterbury Club
Gamma Delta
Newman Club
Wesley Students

Social Clubs

For Women
D. F. D.
Ko Shari
Las Chaparritas
Las Vivarachas
Sans Souci

For Men
Centaur
College Club
Kemas
Los Camaradas
Silver Key
Socii
Wranglers

Common Interest Clubs

Circle 8 (Square Dance)
Flying T's (Aviation)

DIVISION OF AGRICULTURE

WENZEL L. STANGEL, *Dean*

The aim of the Division of Agriculture is to afford its students a liberal education, including instruction in the scientific and technical subjects which are fundamental to an understanding of the agricultural industry. Purpose of the courses of study is to meet the needs of those who desire to prepare themselves for service and life in some part of the agricultural organization of this country.

The scientific and technical subjects are fundamental. In the latter years of the student's work, the scientific and agricultural subjects have a more specific application to certain special lines of work which the student may desire to pursue as a life work.

Service. Instruction in all the subjects offered in the various courses is available to all students in the college. To the end that the agricultural equipment and facilities may serve the greatest number of people, contests are conducted for vocational agriculture students and boys' club members, as well as short courses and demonstrations of one to two days each.

Field for Graduates. There is a demand for college-trained men in specialized lines of agriculture, as well as for professional men with a basic agricultural education. Among the lines of work usually open to graduates are the following:

Farmers, ranchers, and farm or ranch managers; marketing agents; managers of cooperative associations; teachers in colleges and high schools; teachers for Veterans' Vocational Training in Agriculture; extension agents and specialists in agricultural colleges, banks, land companies, and railroads; federal and state research workers; dairy plant managers or operators; milk distributors; milk and food sanitarians; dairy equipment and supply representatives; agricultural journalists for farm journals; radio farm editors; seedsmen; horticulturists; plant quarantine inspectors; plant pathologists; entomologists; city park superintendents; farm machinery specialists; field men for livestock associations and milk plants; poultrymen; livestock feeders; feed salesmen; employees of Soil Conservation Service, Production and Marketing Administration, and Farmer's Home Administration.

Teacher Training in Vocational Agriculture. Federal and state requirements provide that the teacher of vocational agriculture in the high school "must have completed a four-year course of college grade in agriculture." These requirements may be met in the Division of Agriculture. The other requirements for this certificate are shown under *Agricultural Education.*

Teachers' certificates other than in vocational agriculture may be secured by agriculture students. Special certificates authorize the holders to teach agriculture and may entitle the school

in which the holder teaches to receive state and federal aid.

Trips and Judging Teams. To enable students to secure a better conception of the agricultural industry, the Division of Agriculture recommends and fosters trips of inspection and intercollegiate judging contests for advanced students. These trips are not required, and the college does not pay the expenses of the students. In the case of judging teams, staff members coach and train the teams outside of regular classes, supplementing class instruction.

Requirements for Graduation. Special courses of study are offered in agronomy, agronomy and farm machinery, animal husbandry, horticulture, agricultural economics, dairy manufactures, and agricultural education.

All agricultural students follow a definite course of study in the first two college years. This is to allow the student to become familiar with the courses of instruction and to decide fully about his qualifications before selecting a specific major. The uniform requirements include survey courses in the various departments of the Division of Agriculture, a series of orientation lectures, and work in biology, chemistry, English, and mathematics. Students who are found to be notably deficient in the fundamentals of oral and written English are required to remove such deficiency before proceeding with work of the junior year. No grade lower than C will be counted in the major subjects or in subject matter closely connected therewith.

With the approval of the Dean of Agriculture, subjects other than those in the uniform curriculum for the first two years may be followed. Such subjects will not be considered a part of the uniform requirements but may be considered a part of the elective credit permissible in the junior or senior years. Substitution and combinations are permitted only when there is good evidence that the student desiring such work is reasonably certain he will follow the branch selected.

The four-year curricula leading to the Degree of Bachelor of Science in Agriculture have a twofold purpose. It is desired that the student shall receive instruction in all of the fundamental courses that are necessary for a broad occupational understanding of Southwestern agriculture. Students are allowed to select departments in which they wish to do advanced work and are allowed to choose a certain amount of elective work. The student who is awarded a degree is thus specially trained in a particular field.

A candidate for a degree in agriculture must have had satisfactory farm, dairy, or other experience in labor or management during the recent years. A statement giving details regarding this experience must be filed in the Dean's Office previous to the first semester of the candidate's senior year and is required before registration for senior studies.

Undergraduate Degree. The Degree of Bachelor of Science

in Agriculture is conferred upon students who satisfactorily complete the requirements for graduation outlined on the following pages. This degree is given with majors in agronomy, agronomy and farm machinery, animal husbandry, horticulture, agricultural economics, agricultural education, and dairy manufactures.

Master's Degree. The Division of Agriculture gives graduate work in certain departments leading to the Degree of Master of Science. Discussion of graduate work, including admission and departments offering graduate work, will be found in this catalog under *The Division of Graduate Studies.*

Electives. Prior to the beginning of the junior year the student shall designate his electives. These electives must be approved by the head of the department and by the Dean of Agriculture before the student registers for these courses. Subjects to absolve extra hours required because of excessive absences or deficiency in grade points must be approved by the Dean of Agriculture.

CURRICULA IN THE DIVISION OF AGRICULTURE

BACHELOR OF SCIENCE IN AGRICULTURE

Uniform Freshman and Sophomore Years for All Students in Agriculture

Freshman Year

First Semester	Credit	Second Semester	Credit
A. H. 131-General	3	D. M. 131—Prin. of Dairying	3
Agron 131—Crop Production	3	Hort. 131—Plant Propagation	3
Biol. 133—Bot.	3	Eng. 132—Composition	3
Chem. 131—Gen. Chem.	3	Chem. 132—Gen. Chem.	3
Eng. 131—Composition	3	Biol. 134—Zool.	3
P.E., Band, or M.S.	1-2	P.E., Band, or M.S.	1-2
	16-17		16-17

Sophomore Year

First Semester	Credit	Second Semester	Credit
A. H. 231—Breeds	3	P. H. 231—Farm Poultry	3
Ag. Eco. 235—Fundamentals	3	Ag. Eco 236—Prin. of Mkt.	3
Agron. 221—Soils	2	D. M. 222—Dairy Industries	2
Bact. 231	3	Hort. 231—Veg. Gardening	3
Chem. 341—Organic	4	Chem. 220—Agr. Qual.	2
Eng. 234—Correct Usage	3	Math. 230—Agricultural	3
P. E., Band, or M. S.	1	P.E., Band or M.S.	1
	19		17

BACHELOR OF SCIENCE IN AGRICULTURE
AGRICULTURAL ECONOMICS MAJOR

For Uniform Freshman and Sophomore Years See Above

Junior Year

First Semester	Credit	Second Semester	Credit
Ag. Eco 323—Advanced	2	Ag. Eco. 322—Mkt. Ag. Products	2
Ag. Eco. 331—Statistics	3	Speech 338—Bus. and Professional	3
Ag. Eco. 333—Cooperatives	3	P.I. 341—Prin. of Genetics	4
Agron. 331—Forage Crops	3	A.H. 331—Prin. of Feeding	3
Govt. 230—National and State	3	Electives	5
Electives	3		
	17		17

Senior Year

First Semester	Credit	Second Semester	Credit
Ag. Eco. 411—Seminar	1	Ag. Eco. 412—Seminar	1
Ag. Eco. 421—Land Eco.	2	Ag. Eco. 422—Prices	2
Ag. Eco. 433—Farm Mgt.	3	Ag. Eco. 434—Adv. Farm Mgt.	3
Rur. Soc. 431—Research	3	Ag. Eco. 435—International	3
Electives	8	Rur. Soc. 432—Rur. Soc.	3
		Electives	5
	17		17

Hours required for graduation, exclusive of P. E., Band, or M. S.—132.

BACHELOR OF SCIENCE IN AGRICULTURE
AGRICULTURAL EDUCATION MAJOR
(Vocational Agriculture Teacher Training)

For Uniform Freshman and Sophomore Years See Above

Junior Year

First Semester	Credit	Second Semester	Credit
Ag. Eco. 331—Statistics	3	Ag. Engr. 322—Farm Shop	2
Ag. Engr. 321—Farm Shop	2	Agron. 331—Forage Crops	3
A. H. 331—Prin. of Feeding	3	P. I. 341—Prin. of Genetics	4
A. H. 322—Farm Meats	2	Ag. Ed. 321—Admin.	2
P. I. 331—Plant Insects	3	Psy. 231—Educational	3
Govt. 230—Natl. and State	3	Vet. 333—General Sci.	3
Electives	3		
	19		17

Senior Year

First Semester	Credit	Second Semester	Credit
Ag. Ed. 431—Methods	3	Ag. Ed. 432—Methods	3
Ag. Ed. 421—Prac. Teaching	2	Ag. Ed. 422—Prac. Teaching	2
Ag. Eco. 433—Farm Mgt.	3	Ag. Eco. 435—Internati.	3
Agron. 422—Soil Mgt.	2	A. H. 441—Livestock Produc.	4
Ag. Engr. 411—Soil Mgt. Lab.	1	Electives	3
P. I. 441—Plant Produc.	4		
Electives	2		
	17		15

Hours required for graduation, exclusive of P. E., Band, or M. S.—132.

BACHELOR OF SCIENCE IN AGRICULTURE
AGRONOMY AND FARM MACHINERY MAJOR

For Uniform Freshman and Sophomore Years See Above

Junior Year

First Semester	Credit	Second Semester	Credit
Agron. 311—Soils	1	Agron. 331—Forage Crops	3
Agron. 332—Grain Crops	3	Ag. Engr. 332—Farm Power	3
Ag. Engr. 321—Farm Shop	2	Ag. Engr. 322—Farm Shop	2
Ag. Engr. 331—Farm Power	3	P. I. 341—Prin. of Genetics	4
P. I. 331—Plant Insects	3	*Electives	6
Ag. Eco. 331—Statistics	3		
Govt. 230—Natl. and State	3		
	18		18

* At least 6 hours must be taken in a subject to be eligible for elective credit. A minimum of freshman and sophomore courses will be accepted as electives.

Electives may be chosen from the following: agricultural economics, agricultural education, agricultural engineering, agronomy, animal husbandry, architecture, biology, chemistry, dairy manufactures, education, English, engineering, engineering drawing, geology, journalism, foreign languages, mathematics, Bible, military science, physical education, physics, plant industry.

Senior Year

First Semester	Credit	Second Semester	Credit
Agron. 422—Soil Mgt.	2	Agron. 421—Cotton and Fiber Crops	2
Ag. Engr. 411—Soil Mgt. Lab.	1	Agron. 423—Soil Mgt.	2
Ag. Engr. 323—Farm Machinery	2	Ag. Engr. 412—Soil Mgt. Lab.	1
Ag. Engr. 431—Farm Buildings	3	P. I. 411—Seminar	1
*Electives	8	Spch. 338—Bus. & Professional	3
		*Electives	7
	16		16

Hours required for graduation, exclusive of P. E., Band, or M. S.—132.

BACHELOR OF SCIENCE IN AGRICULTURE
AGRONOMY MAJOR

For Uniform Freshman and Sophomore Years See Above

Junior Year

First Semester	Credit	Second Semester	Credit
Ag. Eco. 331—Statistics	3	P. I. 331—Plant Insects	3
A.H. 331—Prin. of Feeding	3	P. I. 341—Prin. of Genetics	4
Agron. 331—Forage Crops	3	Agron. 311—Soils	1
Govt. 230—Natl. and State	3	P. I. 333—Plant Functions	3

RANGE MANAGEMENT OPTION

Bot. 232—Taxonomy	3	Agron. 333—Range Plants	3
Bio. 333—Plant Bio-ecology	3	Vet. 333—General Science	3
	18		17

CROPS OPTION

Agron. 332—Grain Crops	3	Agron. 323—Crop Judging	2
*Electives	3	*Electives	3
	18		16

SOILS OPTION

*Electives	6	Agron 323—Crop Judging	2
		*Electives	3
	18		16

Senior Year

First Semester	Credit	Second Semester	Credit
Agron. 422—Soil Mgt.	2	Agron. 434—Soil Conservation	3
Ag. Eco. 433—Farm Mgt.	3	P. I. 411—Seminar	1
		P. I. 431—Plant Breeding	3
		Ag. Eco. 435—International	3

RANGE MANAGEMENT OPTION

Agron. 437—Range Mgt.	3	A. H. 424—Beef Cattle Production	2
Agron. 435—Soil Genesis	3	A.H. 426—Sheep and Wool Production	2
Ag. Engr. 432—Land Map & Measuring	3	A. H. 438—Range Mgt.	3
*Electives	3		
	17		17

* At least 6 hours must be taken in a subject to be eligible for elective credit. A minimum of freshman and sophomore courses will be accepted as electives.

Electives may be chosen from the following: agricultural economics, agricultural education, agricultural engineering, agronomy, animal husbandry, architecture, biology, chemistry, dairy manufactures, education, English, engineering, engineering drawing, geology, journalism, foreign languages, mathematics, Bible, military science, physical education, physics, plant industry.

CROPS OPTION

Text. Engr. 234—Cotton Classing 3	Agron. 421—Cotton and Fiber Crops 2
Ag. Engr. 323—Farm Machinery 2	Agron. 423—Soil Mgt. 2
Ag. Engr. 411—Soil Mgt. Lab. 1	Ag. Engr. 412—Soil Mgt. Lab. 1
*Electives 6	*Electives 2
17	17

SOILS OPTION

Agron. 435—Soil Genesis 3	Agron. 423—Soil Mgt. 2
Agron. 439—Soil Microbiology 3	Agron. 436—Soil Chemistry 3
Ag. Engr. 323—Farm Machinery 2	Ag. Engr. 412—Soil Mgt. Lab. 1
Ag. Angr. 411—Soil Mgt. Lab. 1	
*Electives 4	
18	16

Hours required for graduation, exclusive of P. E., Band, or M. S.—132.

* See footnote preceding page.

BACHELOR OF SCIENCE IN AGRICULTURE
ANIMAL HUSBANDRY MAJOR

For Uniform Freshman and Sophomore Years See Above

Junior Year

First Semester	Credit	Second Semester	Credit
Ag. Eco. 331—Statistics	3	A. H. 331—Prin. of Feeding	3
Agron. 331—Forage Crops	3	P. I. 341—Prin of Genetics	4
Spch. 338—Bus. & Professional	3	Vet. 332—Diseases and Parasites	3
Vet. 331—Anat. & Phyisiology	3		

ANIMAL INDUSTRY OPTION

A. H. 312—Adv. L. S. Judging 1	A. H. 313—Adv. L. S. Judging 1
Electives 4	A. H. 322—Farm Meats 2
	Electives 4
17	17

DAIRY HUSBANDRY OPTION

A. H. 324—Dairy Breeds 2	A. H. 323—Adv. Dairy Cattle Judg. 2
D. M. 331—Market Milk 3	D. M. 323—Judging Dairy Prod. 2
	Electives 3
17	17

POULTRY HUSBANDRY OPTION

P. H. 324—Adv. Poultry Judging 2	P. H. 331—Incubation & Brooding 3
Electives 3	Electives 4
17	17

RANGE MANAGEMENT OPTION

Bot. 232—Taxonomy 3	Agron. 333—Range Plants 3
Biol. 333—Plant Bio-ecology 3	Electives 3
18	16

Senior Year

First Semester	Credit	Second Semester	Credit
A. H. 422—Breeding	2	Ag. Eco. 433—Farm Mgt.	3
Govt. 230—National & State	3	Ag. Eco. 435—International	3

ANIMAL INDUSTRY OPTION

A. H. 421—Purebred Herds & Flocks 2	A. H. 411—Seminar 1
A. H. 427—Swine Produc. 2	A. H. 423—Nutrition 2
Electives 8	A. H. 424—Beef Cattle Produc. 2
	A. H. 426—Sheep & Wool Produc. 2
	Electives 4
17	17

DAIRY HUSBANDRY OPTION

A. H. 428—Dairy Cattle Production	2	A. H. 4111—Seminar	1
A. H. 427—Swine Production	2	A. H. 412—Dairy Cattle Breeding	1
Electives	8	A. H. 429—Adv. Dairy Cattle Prod.	2
		D. M. 335-Dairy Bact.	3
		A. H. 423—Nutrition	2
		Electives	2
	17		17

POULTRY HUSBANDRY OPTION

P.H. 422—Turkey Production	2	A. H. 411—Seminar	1
P. H. 423—Market Eggs	2	P. H. 421—Poultry Produc.	2
A. H. 428—Dairy Cattle Production	2	A. H. 423—Nutrition	2
Electives	6	Electives	6
	17		17

RANGE MANAGEMENT OPTION

Ag. Engr. 432—Land Map. & Meas.	3	A. H. 411—Seminar	1
Agron. 437—Range Mgt.	3	A. H. 424—Beef Cattle Produc.	2
Agron. 435—Soil Genesis	3	A. H. 426—Sheep & Wool Produc.	2
Electives	3	A. H. 438—Range Mgt.	3
		Agron. 434—Soil Conserv.	3
	17		17

Hours required for graduation, exclusive of P. E., Band, or M. S.—132.

Electives may be chosen from the following: agricultural economics, agricultural education, agronomy, agronomy and farm machinery, biology, business administration, chemistry, dairy manufactures, foreign languages, horticulture, journalism, military science, physics, speech.

BACHELOR OF SCIENCE IN AGRICULTURE
DAIRY MANUFACTURES MAJOR

For Uniform Freshman and Sophomore Years See Above

Junior Year

First Semester	Credit	Second Semester	Credit
D. M. 321—Testing Dairy Prod.	2	D. M. 332—Market Milk	3
D. M. 323—Judging Dairy Prod.	2	D. M. 335—Dairy Bact.	3
D. M. 331—Market Milk	3	D. M. 337—Dairy Plant Equip.	3
Ag. Eco. 331—Statistics	3	A. H. 331—Prin. of Feeding	3
Spch. 338—Bus. & Professional	3	P. I. 341—Prin. of Genetics	4
*Electives	4	*Electives	2
	17		18

Senior Year

First Semester	Credit	Second Semester	Credit
D. M. 420—Merchandising	2	D. M. 411—Seminar	1
D. M. 431—Cheese Making	3	D. M. 421—Creamery Mgt.	2
D. M. 441—Butter Making	4	D. M. 422—Condensed & Powd. Milk	2
Govt. 230—National & State	3	D. M. 433—Ice Cream Making	3
*Electives	5	Ag. Eco. 435—International	3
		*Electives	5
	17		16

Hours required for graduation, exclusive of P. E., Band, or M. S.—132.

*Electives will be chosen from the following groups:

A. General agriculture—Courses to be selected from other departments in the division. Six hours of elective work in dairy manufactures will be allowed.

B. General science—chemistry, bacteriology, physics, mathematics, engineering drawing.

C. Business administration—economics, including agricultural economics, psychology, journalism.

D. Military science.

BACHELOR OF SCIENCE IN AGRICULTURE
HORTICULTURE MAJOR

For Uniform Freshman and Sophomore Years See Above

Junior Year

First Semester	Credit	Second Semester	Credit
Hort. 333—Fruit Culture	3	P. I. 341—Prin. of Genetics	4
Agron. 311—Soils	1	Agron. 331—Forage Crops	3
P. I. 331—Plant Insects	3		
Ag. Eco. 331—Statistics	3		

GENERAL HORTICULTURE OPTION

Hort. 331—Trees and Shrubs	3	Hort. 332—Annuals and Perennials	3
*Electives	5	Hort. 322—Landscape Appreciation	2
		*Electives	4
	18		16

POMOLOGY OPTION

*Electives	8	P. I. 321—Beekeeping	2
		Hort. 322—Landscape Appreciation	2
		*Electives	5
	18		16

LANDSCAPE AND FLORICULTURE OPTION

Hort. 331—Trees and Shrubs	3	Hort. 332—Annuals and Perennials	3
Hort. 334—Floriculture	3	Hort. 335—Floriculture	3
Arch. 121—Freehand Dr.	2	Engr. Dwg. 131—Engr. Drawing	3
		Arch. 121—Freehand Dr.	2
	18		18

Senior Year

First Semester	Credit	Second Semester	Credit
Ag. Eco. 433—Farm Mgt.	3	Agron. 423—Soil Mgt.	2
Govt. 230—National and State	3	Ag. Engr. 412—Soil Mgt. Lab.	1
Ag. Engr. 411—Soil Mgt. Lab.	1	P. I. 411—Seminar	1
		P. I. 431—Adv. Plant Breeding	3
		P. I. 333—Plant Functions	3

GENERAL HORTICULTURE OPTION

*Electives	11	*Electives	6
	18		16

POMOLOGY OPTION

Hort. 431—Adv. Pomology	3	Hort. 432—Adv. Pomology	3
Hort. 421—Citriculture	2	*Electives	3
Hort. 433—Systematic Pomology	3		
*Electives	3		
	18		16

LANDSCAPE AND FLORICULTURE OPTION

Hort. 336—Landscape Design	3	Hort. 337—Landscape Design	3
*Electives	8	Hort. 332—Landscape Application	2
		*Electives	1
	18		16

Hours required for graduation, exclusive of P. E., Band, or M. S.—132.

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* At least 6 hours must be taken in a subject to be eligible for elective credit. A minimum of freshman and sophomore courses will be accepted as electives.

Electives may be chosen from the following: agricultural economics, agricultural education, agricultural engineering, agronomy, animal husbandry, architecture, biology, chemistry, dairy manufactures, education, English, engineering, engineering drawing, geology, journalism, foreign languages, mathematics, Bible, military science, physical education, physics, plant industry.

DIVISION OF ARTS AND SCIENCES

R. C. GOODWIN, *Dean*

The Division of Arts and Sciences has three chief functions:

First, the division offers the requisites of a general and liberal education, directed toward the attainment and enrichment of social and personal culture.

Second, the division makes available specialized training in the various departments of its program of studies:

Biology	History and Anthropology
Chemistry	Journalism
Economics	Mathematics
Education and Psychology	Music
English	Philosophy and Sociology
Foreign Languages	Physical and Health Education
Geology	Physics
Government	Speech

Specialization in these subjects is designed to prepare students to go directly into professional work as writers, translators, industrial chemists, geologists, physicists, social workers, teachers and school administrators, government representatives at home or abroad; to enter upon the study of medicine, dentistry, pharmacy or law; or to continue advanced study in the humanities or sciences in the graduate schools and research institutions.

Third, the division provides training in certain foundation subjects necessary for advanced study in the other divisions of Texas Technological College.

Degrees and Degree Requirements

The Division of Arts and Sciences offers four-year curricula leading to the Degrees of Bachelor of Arts, Bachelor of Science, and Bachelor of Science in Education. Curricula required for admission to the standard law and medical schools are also provided.

Unless specifically indicated to the contrary in a particular curriculum, all entering freshmen students in this division will pursue the established freshman year set forth immediately below. This same year will be followed by prospective majors in the Division of Business Administration. The courses beyond the freshman year may vary according to the degree sought and are described in the curricula established for these degrees.

Prescribed Freshman Curriculum:	Credit
1. Eng. 131-2—Composition	6
2. Math, foreign language, science or history	18
3. Electives, if not included under 2 above	6
4. Phy. ed., band or mil. sci.	2-4
Total for both semesters of freshman year	32-34 hours

Required freshman courses should be taken during the freshman year and not postponed. No student will be classified as a senior unless he has completed four separate semesters of physical education, military science, or band. Furthermore, students who postpone taking required freshman subjects until the senior year must take such subjects though the credit therefrom will not apply toward the hours required for a degree. For the purpose of this regulation a senior is considered as a student with a minimum of 90 semester hours to his credit.

The normal amount of work to be carried by a student in the Division of Arts and Sciences should not exceed 17 hours per semester. Unless specifically prescribed by a particular curriculum, loads exceeding 17 hours or loads of less than 12 hours must have the expressed approval of the dean. In calculating the load, all active correspondence courses will be considered. Grade point averages and extra-curricular work are also considered in the approval of any student's load.

The Bachelor of Arts Degree. The curriculum established for the Degree of Bachelor of Arts is designed specifically to fulfill the aims of liberal education through a well-rounded study of the humanities, the physical and biological sciences. It provides also the basis of facts and insights requisite for specialized study and professional work in these fields.

The minimum requirements for the Degree of Bachelor of Arts in terms of semester hours, are as follows:

1. English 12
2. A foreign language 12*
3. Mathematics 0-6**
4. Government 230-1 6
5. History 131-2 or its equivalent 6
6. Six hours of a social science above the freshman level other than major or minor 6
7. A laboratory science 6-12***
8. Major, minor, and electives sufficient with the above required courses to total a minimum of 123 semester hours not including p. e., band, or m. s.
9. Physical education, band, or military science..... 4-6

Order and Choice of Work. All entering freshman will follow the prescribed curriculum. During the sophomore year the

* If three or more units in a foreign language are accepted for admission, one year in college of the same language (a 300 course or above) will satisfy the foreign language requirement. If less than two admission units in the same foreign language are accepted, three years or 18 semester hours in college are required for graduation with a Bachelor of Arts Degree.

** If three and one-half units of mathematics including algebra, plane geometry, and plane trigonometry are accepted for admission, no further courses in mathematics are required. If three units are accepted including two units in algebra and one in plane geometry, Math 130 or 131 or 137 is required.

*** If two or more units of laboratory science, biological or physical or both, are accepted for admission, one year of a laboratory course in college will satisfy the natural science requirement. Should either or both the units accepted be in general science and applied science, two years of college science will be required to satisfy degree requirements. If two years are required in college, they cannot be offered in the same subject.

student should take English, the second year of physical education, band or military science, and remove all unabsolved freshman requirements. The selection of the major and minor fields should be made by the time the student reaches his junior year. For the major subject he will be required to complete 24 semester hours in addition to the minimum degree requirements in that subject. In the case of a subject offered as a major in which no specific courses are included in the prescribed requirements for the Bachelor of Arts Degree, a minimum of 30 semester hours must be completed in the major subject. Eighteen hours of the major subject must be in courses of junior and senior rank. For the minor he will complete a minimum of 18 semester hours, at least 6 of which must be of junior and senior rank. All courses in the major and minor subject must be approved by the head of the department concerned.

Not more than 42 semester hours in one subject may be counted in the requirement for the Bachelor of Arts Degree. Not more than 12 hours in Biblical history and literature may be counted; nor more than 8 hours in music, except for students offering music as a major or a minor. A maximum of 24 semester hours of electives in the technical or professional subjects of agriculture, commerce, education, engineering, and home economics may be offered for the Degree of Bachelor of Arts. Courses in shorthand and typewriting may not, however, be offered for this degree.

Students majoring in subjects other than education may qualify for a teacher's certificate by enrolling for the requisite amount of education required for the various certificates. Candidates for the Bachelor of Arts Degree or the Degree of Bachelor of Science in Education may qualify for the permanent teacher's certificate by completing the required 24 semester hours in education. Choice of education courses should be approved by the Head of the Department of Education.

Pre-Professional Courses

A student may combine his courses in arts and sciences and law or medicine or dentistry, and receive the Bachelor's Degree after three years in this college and graduation from the professional school.

Studies Peparatory to Law. The usual minimum requirements for admission to standard law school include 15 entrance units and graduation from high school plus at least three academic years (96 semester hours) of college work. Exceptions are sometimes made in the case of veterans for whom special requirements may be fixed. Many law schools now require a degree from a reputable college or university for admission, and in most cases it is recommended that a degree be completed.

The following curriculum is suggested for students who contemplate the study of law:

Freshman Year: The prescribed freshman curriculum should be followed but should include History 133-4 and Government 131-2. The course in the freshman year will vary somewhat depending upon whether or not the student intends to complete a degree before going to law school.

Sophomore Year: English 231-2, History 231-2, Government 232, and Economics 231-2 should be taken. If a foreign language was begun in the freshman year, it should be continued. The student should consult with his adviser concerning other courses.

Junior and Senior Years: A major and minor should be designated by the beginning of the junior year, and if a Bachelor of Arts Degree is anticipated, a degree plan should be worked out during the junior year. Electives should be chosen chiefly from the social sciences.

The Degree of Bachelor of Arts for Pre-Law Students: The Bachelor of Arts Degree for pre-law students may be obtained in one of two ways:

A. While in residence at Texas Technological College completing the degree requirements prescribed in this catalog.

B. By completing three years of work in the Division of Arts and Sciences totaling a minimum of 96 semester hours and graduation from a three-year standard law school and subject to the following regulations:

1. Of the three years of pre-professional work, at least the junior year must be completed in residence at this college.
2. The three years' work must satisfy all graduation requirements for the Bachelor of Arts Degree in Texas Technological College with the exception of the major requirements.
3. A minimum of 18 hours credit should be obtained in each of two of the social sciences.
4. The applicant for a Bachelor of Arts Degree must present credentials showing graduation from an approved law school along with a request for the granting of the Bachelor of Arts Degree from Texas Technological College.

The Head of the Department of Government is the adviser for pre-law students. All pre-law students should consult with him at each registration period.

Studies Preparatory to Medicine and Dentistry. Colleges of medicine and dentistry require an applicant to present 15 units of approved work and a certificate of graduation from an accredited high school and a minimum of two years college work. Many medical schools require three years of college work and some require a Bachelor's Degree.

The following course of study meets the usual pre-medical requirements. For pre-dentistry students certain modifications may be advisable.

Freshman Year: The established freshman curriculum should

include Chemistry 131-2 and Biology 131-2. If necessary, Math 130 should be included as a prerequisite for Physics 141-2 (See below). The University of Texas College of Medicine requires 6 semester hours of American history before a degree will be granted. History 231-2 fulfills this requirement and may be taken during the freshman year.

Sophomore Year

First Semester	Credit	Second Semester	Credit
Chem. 220—Qual. Anal.	2	Chem. 242—Inorganic Chem.	4
Zool. 234—Invert. Morph.	3	Zool. 241—Comp. Vert. Anat.	4
*Phys. 141—Gen Phys.	4	*Phys. 142—Gen. Phys.	4
Eng. 237—Types of Lit.	3	Eng. 238—Types of Lit.	3
For. Lang.	3	For. Lang.	3
P. E., Band, or M. S.	1	P. E., Band, or M. S.	1
	16		19

Junior Year

First Semester	Credit	Second Semester	Credit
Zool. 331—Animal Histology	3	Zool. 332—Comp. Vert. Embry.	3
or		or	
Bact. 331—Prin. of Bact.	3	Bact. 332—Prin. of Bact.	3
Chem. 343—Organic Chem.	4	Chem. 344—Organic Chem.	4
Chem. 331—Quan. Anal.	3	Chem. 332—Quan. Anal.	3
Govt. 230—Amer. Govt.	3	Govt. 231—Amer. Govt.	3
Electives	3	Electives	3
	16		16

The Degree of Bachelor of Arts for Pre-Medical or Pre-Dental Students. The Degree of Bachelor of Arts for pre-medical or pre-dental students may be obtained in one of two ways:

A. While in residence at Texas Technological College by completing the requirements outlined in this catalog. Such students will probably select chemistry or zoology as their major subject; therefore, their senior years are outlined accordingly.

Senior Year: A sufficient number of courses in the major department to complete the major requirements, and all other required courses, not previously taken, should be completed, together with sufficient electives to meet the semester hour requirement.

For Chemistry Majors. Chemistry 411-2, 3 semester hours of senior chemistry and Bacteriology 331-2 complete the major requirement. Chemistry 441-2 may be substituted for the above courses except Chemistry 411-2 by those students who have completed the mathematics prerequisite.

For Zoology Majors. Biology 331, Zoology 411, Bacteriology 331-2, and 6 hours of zoology of senior rank complete the major requirements.

B. By completing three years of work in the Division of Arts and Sciences totaling a minimum of 100 semester hours and graduation from a Class A medical or dental college, and subject to the following regulations:

* The prerequisites for Physics 141-2 are two units of high school algebra and one unit of high school plane geometry or Math 130.

1. Of the three years of pre-professional work at least the junior year must be completed in residence at this college. This minimum will apply to transfers from other colleges, provided they have satisfactorily completed the work outlined in the freshman and sophomore years, or its equivalent.
2. The three years' work must satisfy all graduation requirements for the Bachelor of Arts Degree in Texas Technological College with the exception of the major requirements.
3. Submission of properly approved credentials from a Class A college of medicine or college of dentistry to the effect that the applicant has completed satisfactorily the work leading to a Degree of Doctor of Medicine or Doctor of Dental Surgery.

The program outlined above is not designed to meet the minimum requirements of any medical school, but it is planned to fit the student for the successful study of medicine. Each student is charged with the responsibility for knowing any special requirements of the medical school which he plans to attend, and should consult with the pre-medical adviser, Prof. Joe Dennis, at each registration period. Application for admission to the professional school should be made through his office. The Professional Aptitude Test may be taken at Texas Technological College.

CURRICULA IN THE DIVISION OF ARTS AND SCIENCES

BACHELOR OF ARTS
AMERICAN CIVILIZATION MAJOR

American Civilization is an interdepartmental major (chiefly American literature and American history) with emphasis upon the historical, economic, and cultural development of the United States. The program is designed to furnish the background for intelligent participation in American life and to supplement more specialized training in other fields.

Professor W. B. Gates of the Department of English is in general charge of this major. The program for the four years, in terms of semester hours, is as follows:

1. English		27
	English 131-2; 235-6 or 237-8	12
	American Literature (including 4320-1)	9
	Electives in Department of English	6
2. History and Anthropology		27
	History 131-2 or 133-4; 231-2	12
	Anthropology 331-2	6
	History 4322	3
	Electives in American History	6
3. Foreign Languages (usually Spanish)		12 to 18

4. Government 230 and 231		6
5. Economics		6
6. Philosophy 333		3
7. Sociology 230		3
8. Mathematics (See BA Degree Requirements)	0 to	6
9. Science (See BA Degree Requirements)	6 to	12
10. Physical Eduation (first two years)		4
11. Electives from a restricted list	15 to	33
Total		127

Electives:

English	History and Anthropology
Education	Foreign Language
Government	Philosophy and Sociology
Economics	History of American Journalism
Geography	Certain courses in Art, Architecture,
Psychology	and Home Economics

BACHELOR OF ARTS

ECONOMICS MAJOR*

For Prescribed Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Eco. 231—Prin. of Eco.	2	Eco. 232—Prin. of Eco.	3
Govt. 230—Amer. Govt.	3	Govt. 231—Amer. Govt.	3
Eng. 237—Types of Lit.	3	Eng. 238—Types of Lit.	3
For. Lang.	3	For. Lang.	3
Science	3	Science	3
P.E., Band, or M.S.	1	P.E., Band, or M.S.	1
	16		16

Junior Year

First Semester	Credit	Second Semester	Credit
Eco. 331—Inter. Eco. Prin.	3	Mkt. 346—Statistics	4
Hist. 231—Hist. of the U.S.	3	Hist. 232—Hist. of the U.S.	3
Fin. 333—Banking Prin.	3	Eco. electives	3
Eco. electives	3	Electives	6
Electives	4		
	16		16

Senior Year

First Semester	Credit	Second Semester	Credit
Eco 4310—Adv. Eco. Prin.	3	Eco. 436—Dev. of Eco. Doctrines	3
Eco. 437—Cur. Eco. Prob.	3	Eco. 438—Eco. & Bus. Research	3
Eco. electives	3	Eco. electives	3
Electives	7	Electives	7
	16		16

* For administrative purposes the Department of Economics is a part of the Division of Business Administraton. The Degree of Bachelor of Arts with economics major is conferred by the Division of Arts and Sciences.

BACHELOR OF ARTS
JOURNALISM MAJOR

For Prescribed Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 235—Survey Eng. Lit.	3	Eng. 236—Eng. Lit.	3
Govt. 230—Amer. Govt.	3	Govt. 231—Amer. Govt.	3
Jour. 231—Reporting	3	Jour. 232—Reporting	3
Science	3	Science, cont.	3
For. Lang. begun Fr. Yr.	3	For. Lang., cont.	3
P.E.. Mil. Sci., or Band	1	P.E., Mil. Sci., or Band	1
	16		16

Junior Year

First Semester	Credit	Second Semester	Credit
Jour. 335—Hist.	3	Jour. Elective	3
Jour. 336—Adv. Reporting	3	Jour. 337—Adv. Reporting	3
Eco. 231—Principles	3	Eco. 232—Principles	3
Eng. elective	3	Eng. Elective	3
Electives	4	Phil. 330 or Psy. 230	3
		Elective	1
	16		16

Senior Year

First Semester	Credit	Second Semester	Credit
Jour. 434—Edit. Wr. or 333—Prob.	3	Jour. 430—Principles	3
Jour. Electives	6	Jour. Electives	6
Electives	7	Electives	6
	16		15

BACHELOR OF ARTS
MUSIC OR BAND MAJOR

For Prescribed Freshman Year See Above*

Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 237—Types of Lit.	3	Eng. 238—Types of Lit.	3
For. Lang.	3	For. Lang.	3
Music 221—Solfeggio	2	Music 222—Solfeggio	2
Music 223—Harmony	2	Music 224—Harmony	2
Music or Band 225—Applied	2	Music or Band 226—Applied	2
Phys. 137	3	Phys. 138	3
P. E., M.S., or Band	1	PE., M.S., or Band	1
	16		16

Junior and Senior Years

First Semester	Credit	Second Semester	Credit
Govt. 230—Amer. Govt.	3	Govt. 231—Amer. Govt.	3
Hist. 131—Hist. of Civil.	3	Hist. 132—Hist. of Civil.	3
Math. 130—Alg. or 137—Com. Alg.	3	Math. 131—Trig. or 138—Math. of Fin.	3
Science	3	Science	3
Psy. 230 or Social Science	3	Phil. 230 or Social Science	3
Music	9	Music	9
Electives	9	Electives	9
	33		30

* Six hours of music may be substituted for six hours of mathematics or history, though such work must be included later. The music branches offered are Music 121-2, Music 123-4, Music 125-6, or Band 125-6.

The Degree of Bachelor of Science: For students primarily interested in the natural sciences and mathematics, the Division of Arts and Sciences provides curricula leading to the Degree of Bachelor of Science. The fundamentals of liberal education as well as the foundation courses necessary for advanced study in the fields of science and mathematics are emphasized in the requirements for this degree. The minimum requirements for this degree, in terms of semester hours, are as follows:

1. English ..... 12 semester hours
2. Foreign Language ..... 12 semester hours
3. Mathematics ..... 6 semester hours
4. Economics ..... 6 semester hours
5. Government ..... 6 semester hours
6. Additional courses to make a minimum total of 124 semester hours, exclusive of required physical education, band, or military science.
7. Physical Education, Band, or Military Science 4-6 sem. hrs.

Specific curricula in the various major fields are shown below. In general a minimum of 70 hours must be completed in the Departments of Biology, Chemistry, Geology, Mathematics, and Physics with at least 6 hours in each department, though majors in physics and mathematics are required to complete work in only three of the science departments. Geology majors may substitute engineering drawing and 8 hours of mathematics above the required work in that department for the two years of foreign language, provided such substitution has the approval of the Head of the Department of Geology.

Freshmen will follow the curriculum for the established freshman year with the specific recommendations as shown under the respective majors. Thereafter the student will follow the prescribed curriculum of the major of his choice as set forth below. Any and all electives allowed must receive the prior approval of the head of the major department.

BACHELOR OF SCIENCE
BOTANY MAJOR

Freshman and Sophomore Years

Biol. 133—Bot.	3	Biol. 134—Zool.	3
Chemistry, geology, or physics (beginning courses)	6	Chemistry, geology, or physics (beginning courses)	6
Math.	3	Math.	3
Eng. 131—Comp	3	Eng. 132—Comp.	3
Eng. 237—Types of Lit.	3	Eng. 238—Types of Lit.	3
For. Lang.	6	For. Lang.	6
Bot. 231—Plant Groups	3	Bot. 232—Taxonomy	3
Zool. 234—Invert. Morph. or app. elec.	3	Zool. 241—Vert. Anat. or app. elec.	3 or 4
P.E., Band, or M.S.	2-3	P.E., Band, or M.S.	2-3
	32-33		32-34

Junior and Senior Years

Bot. 331—Plant Physiol.	3
Bot. (junior or senior)	3
Bact., Biol., or Bot. (jun. or sen.)	6
Chem., Geol., or Phys. (begin. course)	3
Approved science electives	9
Eco.	3
Govt.	3
Approved elective	2
Bot. 411—Seminar	1
	33

Bot. 339—Pl. Anat.	3
Bot. (junior or senior)	3
Bact., Biol., or Bot. (jun. or sen.)	6
Chem., Geol., or Phys. (begin. course)	3
Approved science electives	6
Eco.	3
Govt.	3
Approved electives	6
	33

BACHELOR OF SCIENCE
ZOOLOGY MAJOR

Freshman and Sophomore Years

Biol. 133—Botany	3
Chem., Geol., or Phys. (begin. courses)	6
Math.	3
Eng. 131—Comp.	3
Eng. 237—Types of Lit.	3
For. Lang.	6
Zool. 234—Invert. Morph.	3
Bot. 231— Plant Groups or app. elec.	3
P.E., Band, or M.S.	2-3
	32-33

Biol. 134—Zoology	3
Chem., Geol., or Phys. (begin. courses)	6
Math.	3
Eng. 132—Comp.	3
Eng. 238—Types of Lit.	3
For. Lang.	6
Zool. 241—Vert. Anat.	4
Bot. 232—Taxonomy or app. elec.	3
P.E., Band, or M.S.	2-3
	33-34

Junior and Senior Years

Zool. 331—An. Histol.; 333—Parasitol.	3 or 6
Zool. (junior or senior)	0 or 3
Bact., Biol., or Bot. (jun. or sen.)	6
Chem., Geol., or Phys. (begin. course)	3
Approved science electives	9
Eco.	3
Govt.	3
Approved electives	2
Zool. 411—Seminar	1
	30-36

Zool. 332—Embryol.; 333—Parasitol.	3 or 6
Bact., Biol., or Bot. (jun. or sen.)	6
Zool. (junior or senior)	0 or 3
Chem., Geol., or Phys. (begin. course)	3
Approved science electives	6
Eco.	3
Govt.	3
Approved electives	6
	30-36

BACHELOR OF SCIENCE
CHEMISTRY MAJOR

For Prescribed Freshman Year See Above*

Sophomore Year

First Semester	Credit
Chem. 220—Qual. Anal.	2
Science—Courses in 2 science depts. not represented in freshman year	6
For. Lang.	3
**Govt. 230—Amer. Govt. or **Math 231—Diff. and Integ. Calc.	3
P.E., M. S., or Band	1
	15

Second Semester	Credit
Chem. 242—Inorg. Chem.	4
Science—Continuation of courses begun first semester	6
For. Lang.	3
**Govt.. 231—Amer. Govt. or **Math. 232—Diff. & Integ. Calc.	3
P.E.,M. S., or Band	1
	17

Junior Year

First Semester	Credit
Chem. 331—Quan. Anal.	3
Chem. 343—Org. Chem.	4
For. Lang.	3
Phys. Elective	3
Govt. 230—Amer. Govt. or Math 231—Diff. & Integ. Calc.	3
	16

Second Semester	Credit
Chem. 332—Quan. Anal.	3
Chem. 344—Org. Chem.	4
For. Lang.	3
Phys. Elective	3
Govt.231—Amer. Govt. or Math 232—Diff. & Integ. Calc.	3
	16

Senior Year

First Semester	Credit	Second Semester	Credit
Chem. 411—Seminar	1	Chem. 412—Seminar	1
Chem. 441—Phys. Chem.	4	Chem. 442—Physical Chem.	4
Economics	3	Economics	3
Eng. 237—Types of Lit.	3	Eng. 238—Types of Lit.	3
Chem. 435—Adv. Quan. Anal. or Chem. 436—Biol. Chem.	3	Science Electives	4
Science Elective	3		
	17		15

* A second science should be substituted for Hist. 131-2.

** If Math. 121-2 and Math. 131-2 were taken during the freshman year, Math. 335-6 may be taken in the sophomore year. If Math. 130 and Math. 131 were taken in the freshman year, Math. 235-6 should be taken in the sophomore year and Math. 335-6 in the junior year.

BACHELOR OF SCIENCE
MATHEMATICS MAJOR

For Prescribed Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Math. 132—Anal. Geo.	3	Math. 234—Algebra	3
Math. 231—Diff. Calc.	3	Math. 232—Int. Calc.	3
Eng. 237—Types of Lit.	3	Eng. 238—Types of Lit.	3
For. Lang.	3	For. Lang.	3
Science	3	Science	3
P.E., M.S., or Band	1	P.E., M.S., or Band	1
	16-		16

Junior and Senior Years

Math.* Numbers over 200	12	Math. Numbers over 200	12
Govt. 230—Amer. Govt.	3	Govt. 231—Amer. Govt.	3
Eco. 231— Prin. of Eco.	3	Eco. 232—Prin. of Eco.	3
Science	9	Science	9
Approved Electives	5	Approved Electives	5
	32		32

* Astronomy 231-2 may be included in this group.

BACHELOR OF SCIENCE
PETROLEUM GEOLOGY MAJOR

Freshman Year

First Semester	Credit	Second Semester	Credit
Geol. 131—Gen. Geol.	3	Geol. 132—Gen. Geol.	3
Chem. 131—Gen. Chem.	3	Chem. 132—Gen. Chem.	3
For. Lang. 131 or E. Dr. 131—Drawing	3	For. Lang. 132 or E. Dr. 121—Drawing	3 2
Math. 130—Algebra	3	Math. 131—Trig.	3
Eng. 131—Composition	3	Eng. 132—Composition	3
P.E., M.S., or Band	1-2	P.E., M.S., or Band	1-2
	16-17		15-17

Sophomore Year

For. Lang. 231 or Math 132—Analytics	3	For. Lang. 232 or Elective	3
Geology 231—Mineralogy	3	Geol. 232—Mineralogy	3
Geol. 235—Adv. Gen. Geol.	3	Geol. 236—Adv. Hist. Geol.	3
Biol. 133—Botany or Phys. 131—Gen Phys.	3	Biol. 134—Zoology or Phys. 132—Gen. Phys.	3
Eng. 237—Types of Lit.	3	Eng. 238—Types of Lit.	3
P.E., M.S., or Band	1	P.E., M.S., or Band	1
	16		16

SUMMER

Geol 363—Field Geology 3

Junior Year

Geol. 333—Petrog. & Petrol.	3
Geol.335—Paleo	3
Eco. 231—Prin. of Eco.	3
Biol. 133—Botany	
or	
Phys. 131—Gen. Phys.	3
Govt. 230—Amer. Govt.	3
Elective	
or	
Math. 231—Diff. Calculus	3
	18

Geol. 334—Petrog. & Petrol.	3
Geol. 336—Paleo	3
Eco. 232— Prin. of Eco.	3
Biol. 134—Zoology	
or	
Phys. 132—Gen. Phys.	3
Govt. 231—Amer. Govt.	3
Elective	
or	
Math. 232—Int. Calculus	3
	18

Senior Year

Geol. 433—Struct. Geol.	3
Geol. 435—Index Fossils	
or	
Geol. 437—Sedimen.	
or	
Geol. 4314—Strat	3
Science Elective	3
General Elective	3
	12

Geol. 434—Pet. Geol.	3
Geol. 436—Micropaleo.	
or	
Geol. 438—Sedimen.	
or	
Geol. 4315—Strat	3
Science Elective	3
General Elective	3
	12

BACHELOR OF SCIENCE
PHYSICS MAJOR

Freshman Year

First Semester	Credit
Eng. 131—Composition	3
Math. 121—Algebra	2
Math 131—Trig.	3
Physics 131—Elem. Physics	3
Chem. 131—Gen. Chem.	3
P.E. ,M.S., or Band	1-2
	15-16

Second Semester	Credit
Eng. 132—Composition	3
Math. 122—Algebra	2
Math 132—Analytics	3
Physics 132—Elem. Physics	3
Chem. 132—Gen. Chem.	3
P.E., M.S., or Band	1-2
	15-16

Sophomore Year

First Semester	Credit
Eng. 237—Types of Lit.	3
Math 251—Calculus	5
Physics 235—Engr. Phys.	3
Physics 215—Phys. Meas.	1
Geol. 131—Gen. Geol.	3
P.E., M.S., or Band	1
	16

Second Semester	Credit
Eng. 238—Types of Lit.	3
Math 233—Calc. appl.	3
Physics 236—Engr. Phys.	3
Physics 216—Phys. Meas.	1
Geol. 132—Gen Geol.	3
P.E., M.S., or Band	1
Elective	3
	17

Junior and Senior Years

First Semester	Credit
Germ. 131— Begin. Course	
or	
French 131—Begin. Course	3
Govt. 230—Amer. Govt.	3
Eco. 231—Prin. of Eco.	3
Math 321—Diff. Equat.	2
Math 434—Adv. Calc.	3
Physics 331—Light	3
Physics 333—Elect.and Mag.	3
Physics 337— Mod. Phys.	3
Physics 411 or 413—Seminar	1
Physics 423—Elect.. Meas.	2
German 233—Sci. Germ.	
or	
French 231—Gramm., Read.	3
Electives	3
	32

Second Semester	Credit
Germ. 132—Begin. Course	
or	
French 132—Begin. Course	3
Govt. 231—Amer. Govt.	3
Eco. 232—Prin. of Eco.	3
Physics 435—Mechanics	3
Math 435—Adv. Calc.	3
Physics 332—Heat	3
Physics 334—Elect. and Mag.	3
Physics 338—Mod. Phys.	3
Physics 412 or 414—Seminar	1
Physics 424—Elect. Meas.	2
German 234—Sci. Germ.	
or	
French 232—Gramm., Read.	3
Electives	3
	33

The Degree Bachelor of Science in Education

The Degree Bachelor of Science in Education is set up specifically for teachers in order to give definite professional training in their respective fields of work.

Minimum requirements for the Degree Bachelor of Science in Education, in terms of semester hours, are as follows:

1. English 12
2. Government 6
3. History or speech 6
4. Laboratory science, 12; or science, 6, and mathematics, 6 12
5. Physical education 6
6. Music (for elementary majors) 6
7. Art (for elementary majors) 6
8. Sociology 3
9. Degree major, teaching major, teaching minor, and electives sufficient with the above required courses, but not including freshman and sophomore physical education, band, of military science, to total 124 semester hours.
10. Physical Education, Band, or Military Science 4-6

The work of the freshman year is largely prescribed. In the sophomore year, the student may choose the particular field of education in which he desires to work. Choice must also be made of the subject matter field in which he desires to prepare for teaching. The student must also elect a second subject which he may use as a subject-matter minor in his classroom teaching. Such teaching majors and minors are available in the various subject fields of the Division of Arts and Sciences, including health and physical education, music, and band. With the approval of the deans concerned, teaching majors and minors may also be taken in other divisions of the college. Ordinarily, the teaching major calls for completion of a minimum of 24 semester hours, and the teaching minor a minimum of 18 semester hours. Certain more general teaching majors and minors are available, such as social science, general science, and foreign language. Such majors and minors ordinarily call for completion of a minimum of 30 and 24 semester hours, respectively. The 30 hours for the teaching major include 18 hours in one subject, 12 hours above the basic course, and 6 hours in each of two other subjects. The 24 hours for the teaching minor include 12 hours in one subject, 6 hours above the basic course, and 6 hours in each of two other subjects. Special requirements are made for public school music and band majors, as outlined in the appropriate curricula below. Certificate requirements are outlined in the Appendix of this catalog.

To complete the degree, the student is required to show a total of 138 grade points.

BACHELOR OF SCIENCE IN EDUCATION

For Prescribed Freshman Year See Above*

Sophomore Year

First Semester	Credit	Second Semester	Credit
Ed. 234—Prin. of Sec. Educ. or Ed. 236—Basic Skills in Elem. Grades	3	Ed. 235—High Sch. Meth or Ed. 237—Lang. Arts	3
or Eng. 235—Survey of Eng. Lit. or Eng. 237—Types of Lit	3	Eng. 236—Survey of Eng. Lit. or Eng. 238—Types of Lit.	3
Biol. 133—Botany or Zool. 235—Anat., Physiol. and Hyg	3	Biol. 134—Zoology or Zool. 236—Anat. Physiol. and Hyg.	3
Govt. 230—Amer. Govt.	3	Govt. 231—Amer. Govt.	3
Psy. 230—Intro. to Psy.	3	Teaching Major	3
P.E., M.S., or Band	1	P.E.,M.S., or Band	1
	16		16

* The student will take Ed. 131 and 138 and either mathematics or science, and may substitute speech for history.

Junior Year

First Semester	Credit	Second Semester	Credit
Psy. 333—Meas. in Educ. or Psy. 431—Mental Testing	3	Psy. 335—Psy. of Adol. or Psy. 331—Child Psy.	3
Ed. 331—Prin. of Educ. or Ed. 430—Soc. Prin. of Educ. or Ed. 431—Educ. in the U. S.	3	Sociol.	3
Phys. Ed. 230—Prin. of Health Ed.	3	P.E., 233—Meth. in P.E. or Elective	3
Teaching Major	3	Teaching Major	3
Teaching Minor	3	Teaching Minor	3
Elective	2	Elective	2
	17		17

Senior Year

First Semester	Credit	Second Semester	Credit
Elective in Educ.	3	Ed. 3316 or 3317—Obs. and Prac.	3
Teaching Major	6	Elective in Educ.	3
Teaching Minor	6	Teaching Major	3
		Teaching Minor	6
	15		15

Hours required for graduation—124, exclusive of physical education, band, or military science.

Note:

1. High school majors are required to complete 30 semester hours in education and psychology; elementary majors, 39 hours.

2. Students should consult the head of the Department of Education and Psychology in order to choose the proper courses for certificate purposes and also for either elementary or secondary school teaching.

3. The courses in education must include at least one course each in methods of teaching, educational psychology, tests and measurements, history or principles of education, and practice teaching.

4. Teaching majors and minors ordinarily require 24 and 18 hours, respectively. Departmental requirements are in some cases higher.

5. Elementary teachers should take Biology 133-134; high school teachers, Zoology 235-6. A student may, however, take both of these sciences.

BACHELOR OF SCIENCE IN EDUCATION
PUBLIC SCHOOL MUSIC MAJOR

Freshman Year

First Semester	Credit	Second Semester	Credit
Eng. 131—Comp.	3	Eng. 132—Comp.	3
Ed. 131—Intro. to Educ.	3	Ed. 138—Career Guid.	3
Phys. 137	3	Phys. 138	3
Music 121—Solfeggio	2	Music 122—Solfeggio	2
Music 123—Harmony	2	Music 124—Harmony	2
Music 125—Applied	2	Music 126—Applied	2
Music 117—Class Voice	1	Music 118—Class Voice	1
P.E., M.S., or Band 111	1-2	P.E., M.S., or Band 112	1-2
	17-18		17-18

Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 237—Types of Lit.	3	Eng. 238—Types of Lit.	3
Govt. 230—Amer. Govt.	3	Govt. 231—Amer. Govt.	3
Ed. 234—Prin. of Sec. Educ.		Ed. 235—High Sch. Meth.	
or		or	
Ed. 236—Basic Skills in Elem. Ed	3	Ed. 237—Lang. Arts	3
Music 221—Solfeggio	2	Music 222—Solfeggio	2
Music 223—Harmony	2	Music 224—Harmony	2
Music 225—Applied	2	Music 226—Applied	2
Music 217—Class Voice	1	Music 218—Class Voice	1
P.E., Band, or M.S.	1	P.E., M.S., or Band	1
	17		17

Junior Year

First Semester	Credit	Second Semester	Credit
Music 327—Conducting	2	Music 328	2
Psy. 230—Intro. to Psy.	3	Psy. 333—Meas. in Educ.	
Music 335—Music Hist.	3	or	
Music 337—Music Educ.	3	Psy. 431—Mental Testing	3
Music 325—Applied	2	Music 336—Music Hist.	3
Subject Matter Minor	3	Music 438—Music Meth.	3
		Music 326—Applied	2
		Subject Matter Minor	3
		Band 321—Conduc. & Meth.	2
	16		18

Senior Year

First Semester	Credit	Second Semester	Credit
Music 431—Minor Instru.	3	Music 432—Minor Instru.	3
Music 425—Applied	2	Music 426	2
Music 413—Chorus	1	Music 414	1
Subject Matter Minor	3	Subject Matter Minor	6
Ed. 331—Prin. of Educ.		Ed. 3316 or 3317—Observ. & Pract.	3
or			
Ed. 430—Soc. Prin. of Educ.			
or			
Ed. 431—Educ. in the U.S.	3		
Psy. 335—Psy. of Adol.			
or			
Psy. 331—Child Psy.	3		
	15		15

NOTE:

1. Students should consult the Head of the Department of Education in order to choose the proper courses for certification and also for either elementary or secondary school teaching.

BACHELOR OF SCIENCE IN EDUCATION
BAND MUSIC MAJOR

Freshman Year

First Semester	Credit	Second Semester	Credit
Eng. 131—Comp.	3	Eng. 132—Comp.	3
Ed. 131—Intro. to Educ.	3	Ed. 138—Career Guid.	3
Science	3	Science	3
Music 121—Solfeggio	2	Music 122—Solfeggio	2
Music 123—Harmony	2	Music 124—Harmony	2
Band 125—Applied	2	Band 125—Applied	2
Music 117—Class Voice	1	Music 118—Class Voice	1
P.E., M.S., or Band 111	1-2	P.E., M.S., or Band 112	1-2
	17-18		17-18

Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 237—Types of Lit.	3	Eng. 238—Types of Lit.	3
Govt. 230—Amer. Govt.	3	Govt. 231—Amer. Govt.	3
Ed. 234—Prin. of Sec. Educ.		Ed. 235—High Sch. Meth.	
or		or	
Ed. 236—Basic Skills in Elem. Ed.	3	Ed. 237—Lang. Arts	3
Music 221—Solfeggio	2	Music 222—Solfeggio	2
Music 223—Harmony	2	Music 224—Harmony	2
Music 217—Class Voice	1	Music 218—Class Voice	1
Band 225—Applied	2	Band 226—Applied	2
P.E., M.S., or Band 211	1	P.E., M.S., or Band 212	1
	17		17

Junior Year

First Semester	Credit	Second Semester	Credit
Band 325—Applied	2	Band 326—Applied	2
Psy. 230—Intro. to Psy.	3	Psy.333—Meas. in Educ.	
Music 327—Conducting	2	or	
Teaching Minor	6	Psy. 431—Mental Testing	3
Electives in Social Science	3	Teaching Minor	3
		Electives in Social Science	3
		Band 321—Conduc. & Methods	2
		Music 328—Conducting	2
	16		15

Senior Year

First Semester	Credit	Second Semester	Credit
Band 421—Conducting	2	Band 422	2
Band 425—Applied	2	Band 426—Applied	2
Music 431—Minor Instruments	3	Music 432—Minor Instruments	3
Teaching Minor	3	Teaching Minor	6
Ed. 331—Prin. of Educ.		Ed. 3316 or 3317—Observ. & Pract.	3
or			
Ed. 430—Soc. Prin. of Educ.			
or			
Ed. 431—Educ. in the U. S.	3		
Psy. 335—Psy. of Adol.			
or			
Psy. 331—Child Psy.	3		
	16		16

NOTE:

1. Students should consult the Head of the Department of Education in order to choose the proper courses for certification and also for either elementary or secondary school teaching.

DIVISION OF BUSINESS ADMINISTRATION

HASKELL G. TAYLOR, *Acting Dean*

Admission

Students interested in the field of business who have completed sufficient college work to attain sophomore standing are generally admitted to the Division of Business Administration. A written permit is necessary for a student to transfer from another division. Veteran students who have 26 or more college credit hours should enroll directly in the Division of Business Administration. Transfer students from other schools having 26 or more college credit hours may enroll directly in the division. Students who, during their last semester in Texas Technological College, were enrolled in Business Administration, will be re-admitted directly into the division.

Degrees Granted

The Division of Business Administration offers two undergraduate and two graduate degrees: Bachelor of Business Administration, Bachelor of Science, Master of Business Administration, and Master of Science.

Bachelor of Business Administration. This degree will be awarded to all students who have completed the minimum requirements in terms of semester hours, as follows:

1. English	12
2. Mathematics 137-8	6
3. A laboratory science	6
4. History	6
5. Government 230-1	6
6. Economics 231-2	6
7. Introduction to Accounting 244-5	8
8. Physical Education, Military Science or Band (a maximum of four 1-hour courses)	4

9. The completion of one of the prescribed curricula in the Division of Business Administration, as outlined on the following pages: Accounting, Finance, Management, Office Management, Marketing, Secretarial Administration, or Commercial Teaching, for a total of 127 semester hours.

Bachelor of Science. This degree will be awarded to all students who have completed the minimum requirements in terms of semester hours, as follows:

1. English	12
2. Mathematics 137-8	6
3. A laboratory science	6
4. History	6

5. Government 230-1 6
6. Economics 231-2 6
7. Introduction to Accounting 244-5 8
8. Physical Education, Military Science or Band (a maximum of four 1-hour courses) 4
9. The completion of one of these prescribed curricula in the Division of Business Administration, as outlined on the following pages: Economics, International Trade, or Public Administration, for a total of 127 semester hours.

Master of Business Administration Degree and the *Master of Science Degree* are awarded upon completion of the requirements of the Division of Graduate Studies.

Selection Of A Major

Students in the Division of Business Administration will complete the uniform sophomore program as outlined below. At some time before completion of the sophomore year, students will select a major field of study from one of the following curricula, and will consult the faculty adviser of the chosen major.

Students are urged to acquire skill in the use of a typewriter early in their college work. Students who expect to major in secretarial administration should take typewriting and shorthand in their freshman year in college.

No grade lower than C will be accepted in junior and senior courses in the major subjects.

CURRICULA IN THE DIVISION OF BUSINESS ADMINISTRATION

DEGREES BACHELOR OF BUSINESS ADMINISTRATION AND BACHELOR OF SCIENCE

Uniform Sophomore Year

First Semester	Credit	Second Semester	Credit
Eco. 231—Prin.	3	Eco. 232—Prin.	3
Acct. 244—Intro. to Acct.	4	Acct. 245—Intro. to Acct.	4
Govt. 230—Amer. Govt.	3	Govt. 231—Amer. Govt.	3
Eng. 237—Types of Lit.	3	Eng. 238—Types of Lit.	3
Elective	3	Elective	3
P.E., M.S., or Band	1	P.E., M.S., or Band	1
	17		17

Students electing a finance major are to take Finance 231, personal finance; students electing a management major are to take Management 231, business organization and management.

BACHELOR OF BUSINESS ADMINISTRATION ACCOUNTING MAJOR

For Uniform Sophomore Year See Above

Junior Year

First Semester	Credit	Second Semester	Credit
Acct. 334—Intermed.	3	Acct. 335—Intermed.	3
Acct. 336—Princ. of Cost	3	Speech 338—Bus. Speech	3
Fin. 331—Corp.	3	Mkt. 332—Prin.	3
Fin. 338—Bus. Law	3	Fin. 339—Business Law	3
Sect. Admin. 333—Bus. Corres.	3	Mkt. 346—Stat.	4
	15		16

Senior Year

First Semester	Credit	Second Semester	Credit
Acct. 434—Advan. Acct.	3	Acct. 435—Advan. Acct.	3
Acct. 437—Auditing	3	Eco. 438—Research	3
Elective Acct.	3	Elective Acct.	3
Electives	6	Electives	6
	15		15

Hours required for graduation—127.

BACHELOR OF BUSINESS ADMINISTRATION
COMMERCIAL TEACHING MAJOR

For Uniform Sophomore Year See Above

Junior Year*

First Semester	Credit	Second Semester	Credit
Ed. 234—Prin. of Sec. Ed.	3	Ed. 235—High Sch. Meth.	3
Sect. 333—Bus. Corres.	3	Mkt. 346—Stat.	4
Mkt. 332—Prin. of Mkt.	3	Fin. 331—Corp. Fin.	3
Fin. 338—Bus. Law	3	Sect. 321—Office Machines	2
Sect. 338—Filing Proced. & Prac.	3	Fin. 339—Bus. Law	3
	15		15

Senior Year

First Semester	Credit	Second Semester	Credit
Psy. 231—Educ. Psy.	3	Ed. 3316—Prac. Teaching	3
Sect. 421—Voice Writing & Dup.	2	Sect. 432—Meth. of Teaching	3
Mkt. 433—Salesmanship	3	Spch. 338—Bus. Speech	3
Eco. 438—Research	3	Electives	7
Electives	6		
	17		16

Hours required for graduation—127.

* Secretarial Administration 114, typewriting, and Secretarial Administration 235-6, shorthand, will be completed in the sophomore year.

BACHELOR OF BUSINESS ADMINISTRATION
FINANCE MAJOR

For Uniform Sophomore Year See Above

Junior Year

First Semester	Credit	Second Semester	Credit
Fin. 331—Corp. Fin.	3	Fin. 332—Short-Term	3
Fin. 333—Banking	3	Fin. 334—Credits and Collec.	3
Mkt. 346—Stat.	4	Mkt. 332—Prin.	3
Fin. 336—Life Insur.	3	Fin. 337—Prop. and Cas. Ins.	3
Fin. 338—Bus. Law	3	Fin. 339—Bus. Law	3
	16		15

Senior Year

First Semester	Credit	Second Semester	Credit
Fin. 431—Federal Reserve System	3	Fin. 434—Invest.	3
Sect. 333—Bus. Corres.	3	Spch. 338—Bus. Speech	3
Electives	9	Eco. 438—Research	3
		Electives	6
	15		15

Hours required for graduation—127.

BACHELOR OF BUSINESS ADMINISTRATION
MANAGEMENT MAJOR

For Uniform Sophomore Year See Above

Junior Year*

First Semester	Credit	Second Semester	Credit
Mgt. 331—Indus. Mgt.	3	Mgt. 332—Mgt. Small Bus. Ent.	3
Mgt. 333—Labor Problems	3	Mgt. 334—Personnel Mgt.	3
Mkt. 332—Prin. of Mkt.	3	Mkt. 346—Stat.	4
Fin. 338—Bus. Law	3	Fin. 339—Bus. Law	3
Sect. 337—Report Writing	3	Fin. 331—Corp. Fin.	3
	15		16

Senior Year

First Semester	Credit	Second Semester	Credit
Mgt. 431—Office Mgt.	3	Mgt. 433—Labor Relations	3
Mgt. 435—Employee Supv.	3	Mgt. 434—Job Eval. & Wage Adm.	3
Speech 338—Bus. Speech	3	Electives	9
Electives in Business	6		
	15		15

Hours required for graduation—127.

* Management 231, business organization and management, should be completed in the sophomore year.

BACHELOR OF BUSINESS ADMINISTRATION
OFFICE MANAGEMENT MAJOR

For Uniform Sophomore Year See Above

Junior Year*

First Semester	Credit	Second Semester	Credit
Mgt. 231—Bus. Org. & Mgt.	3	Mgt. 334—Personnel Mgt.	3
Sect. 321—Office Machines	2	Sect. 332—Sect. Prac.	3
Sect. 331—Sect. Prac.	3	Sect. 333—Bus. Corres.	3
Mkt. 346—Stat.	4	Mkt. 332—Prin. of Mkt.	3
Fin. 338—Bus. Law	3	Fin. 339—Bus. Law	3
	15		15

Senior Year

First Semester	Credit	Second Semester	Credit
Mgt. 431—Office Mgt.	3	Mgt. 436—Prob. in Office Mgt.	3
Mgt. 435—Employee Supv.	3	Sect. 338—Filing Procedure & Prac.	3
Speech 338—Bus. Speech	3	Sect. 421—Voice Writing & Dup.	2
Fin. 334—Credits & Collec.	3	Sect. 433—Sect. Prob. & Prac.	3
Electives	3	Electives	4
	15		15

Hours required for graduation—127.

* Secretarial Administration 131-2, elementary shorthand, and Secretarial Administration 235-6, intermediate shorthand, will be completed in the sophomore year.

BACHELOR OF BUSINESS ADMINISTRATION
MARKETING MAJOR

For Uniform Sophomore Year See Above

Junior Year

First Semester	Credit	Second Semester	Credit
Mkt. 332—Prin. of Mkt.	3	Mkt. 333—Mkt. Prob.	3
Eco. 335—Transporta. Eco.	3	Sect. 333—Bus. Corres.	3
Psy. 230—Intro. to Psy.	3	Psy. 338—Psy. Applied to Bus.	3
Mkt. 346—Stat.	4	Fin. 331—Corp. Fin.	3
Fin. 338—Bus. Law	3	Fin. 339—Bus. Law	3
	16		15

Senior Year

First Semester	Credit	Second Semester	Credit
Mkt. 433—Salesmanship	3	Mkt. 435—Bus. Cycles and Forecasts	3
Mkt. 436—Retail Store Mgt.	3	Eco. 438—Research	3
Speech 338—Bus. Speech	3	Electives	9
Eco. 338—Foreign Trade	3		
Electives	3		
	15		15

Hours required for graduation—127.

BACHELOR OF BUSINESS ADMINISTRATION
SECRETARIAL ADMINISTRATION MAJOR

For Uniform Sophomore Year See Above

Junior Year*

First Semester	Credit	Second Semester	Credit
Sect. 321—Office Machines	2	Sect. 332—Sect. Prac.	3
Sect. 331—Sect. Prac.	3	Mkt. 346—Stat.	4
Sect. 333—Bus. Corres.	3	Fin. 339—Bus. Law	3
Fin. 338—Bus. Law	3	Spch. 338—Bus. Speech	3
Sect. 338—Filing Proced. & Prac.	3	Electives	3
Elective	1		
	15		16

Senior Year

First Semester	Credit	Second Semester	Credit
Acct. 441—Machine Acct.	4	Sect. 421—Voice Writing & Dup.	2
Eco. 438—Research	3	Sect. 433—Sect. Prob. & Prac.	3
Mgt. 431—Office Mgt.	3	Electives	10
Electives	5		
	15		15

Hours required for graduation—127.

* Secretarial Administration 114, 131, 132, 235, 236 will be completed previous to the junior year.

BACHELOR OF SCIENCE
ECONOMICS MAJOR

For Uniform Sophomore Year See Above

Junior Year

First Semester	Credit	Second Semester	Credit
Eco. 332—Pub. Util.	3	Eco. 334—Taxation	3
Eco. 333—Pub. Expend.	3	Fin. 331—Corp.	3
Eco. 336—Labor Prob.	3	Spch. 338—Bus. Speech	3
Mkt. 332—Prin.	3	Mkt. 346—Stat.	4
Fin. 338—Bus. Law	3	Fin. 339—Bus. Law	3
	15		16

Senior Year

First Semester	Credit	Second Semester	Credit
Eco. 331—Intermed. Eco.	3	Eco. 433—Internatl. Eco. Relations	3
Eco. 338—Internat. Trade	3	Eco. 436—Devel. of Doctrines	3
Eco. 438—Research	3	Mkt. 435—Bus. Cycles and Forecasts	3
Eco. 437—Current Eco. Prob.	3	Eco. 4310—Advan. Prin.	3
Sect. 333—Bus. Corres.	3	Elective	3
	15		15

Hours required for graduation—127.

BACHELOR OF SCIENCE
INTERNATIONAL TRADE MAJOR

For Uniform Sophomore Year See Above

Junior Year

First Semester	Credit	Second Semester	Credit
Eco. 335—Transportation	3	Eco. 337—Eco. Sys.	3
Eco. 338—Foreign Trade	3	Eco. 339—Latin Amer. and the U.S.	3
Fin. 338—Bus. Law	3	Fin. 339—Bus. Law	3
Mkt. 332—Prin.	3	Govt. 336—Amer. Diplomacy	3
Mkt. 346—Stat.	4	Spch. 338—Bus. Speech	3
	16		15

Senior Year

First Semester	Credit	Second Semester	Credit
Eco. 432—For. Mkt. Surveys	3	Eco. 433—Internatl. Trade Relations	3
Eco. 437—Current Eco. Prob.	3	Govt. 436—Internatl. Law	3
Eco. 434—Air Transport.	3	Sect. 333—Bus. Corres.	3
Govt. 435—Internat. Org.	3	Electives	6
Govt. 437—Polit. Geog.	3		
	15		15

Hours required for graduation—127.

BACHELOR OF SCIENCE
PUBLIC ADMINISTRATION MAJOR

For Uniform Sophomore Year See Above

Junior Year

First Semester	Credit	Second Semester	Credit
Eco. 332—Pub. Util.	3	Eco. 333—Pub. Expend.	3
Eco. 335—Transporta.	3	Mkt. 346—Stat.	4
Fin. 331—Corp. Fin.	3	Mkt. 332—Prin.	3
Fin. 338—Bus. Law	3	Fin. 339—Bus. Law	3
Spch. 338—Bus. Speech	3	Sect. Admin. 333—Bus. Corres.	3
	15		16

Senior Year

First Semester	Credit	Second Semester	Credit
Eco. 331—Intermed.	3	Eco. 4310—Advan. Prin.	3
Eco. 334—Taxation	3	Mkt. 435—Bus. Cycles and Forecasts	3
Eco. 438—Research	3	Acct. 432—Governmental	3
Electives, Eco. and Govt.	6	Electives, Eco. and Govt.	6
	15		15

Hours required for graduation—127.

DIVISION OF ENGINEERING

O. V. ADAMS, *Dean*

The importance of the Division of Engineering is stressed in the first section of the bill by which the Thirty-eighth Legislature established this college. It is pointed out that the commercial development of the state depends largely upon the opportunities for students to receive thorough training in engineering and manufacturing fields.

Purpose. The aim and purpose of the Division of Engineering is to give students a thorough knowledge of the fundamentals of all engineering work with specialization in one particular line only to the extent that experience appears to demand as a minimum. The course of study is planned with the view of giving the student basic training which he can not get after graduation, leaving a large part of his specialization to his later professional employment. Experience has shown this type of training to produce the most successful engineers.

Engineering has been defined as the "scientific utilization of the forces and materials of nature in the construction, production, and operation of works for the benefit of man." Therefore, the fundamental training of the engineer includes a knowledge of pure science, as well as its application to the various specialized fields. As an aid to the development of a scientific attitude, engineering instruction emphasizes the qualities of honesty, loyalty, thoroughness, and industry and fosters the desire for learning and for a knowledge of the ethics of the profession.

Degrees Granted. The Division of Engineering offers the following four-year curricula, each leading to the Degree of Bachelor of Science in its respective field:

Chemical Engineering; Civil Engineering; Electrical Engineering; Industrial Engineering; Mechanical Engineering; Petroleum Engineering; Textile Engineering. In the Department of Architecture five-year curricula in architecture and commercial art are offered leading to the Degrees of Bachelor of Architecture and Bachelor of Commercial Art, respectively. For those who desire it, the Bachelor of Arts Degree will be conferred upon the completion of the first four years of the prescribed five-year course in commercial art. However, one receiving the Bachelor of Arts Degree must do at least one semester or two six-week summer terms prior to the time when his degree in the five-year curriculum is conferred.

Field For Graduates. The engineering student upon graduation usually spends a period of time in subordinate positions securing experience and preparing himself for the more important work of the executive, the designer, the consulting engineer, the teacher, or the operator.

Engineering training is recognized as desirable preparation

for a commercial career. From 60 to 70 per cent of engineering graduates in the past have eventually held executive positions. Surveys of employment records of engineering graduates disclose the fact that men who have had an engineering education have found their way into nearly every type of vocation. A few of the vocations which the engineering graduate may reasonably expect to enter upon graduation, or after a period of practical experience, have been indicated in the beginning of the departmental descriptions. Attention is called to the fact that in a civilization such as ours where one is constantly in contact with the results of our modern industrial development, no type of education is more suitable than that leading to an engineering degree.

Requirements For Graduation. All four-year students in the Division of Engineering, except those in the Department of Architecture, are required to take identical work throughout the freshman year. This is done in order that the student, before choosing his professional field, may have the opportunity of becoming familiar with the courses of instruction and the possibilities after graduation in the various fields of engineering.

Freshman students are required to take engineering orientation which includes lectures and motion picture showings on the scope and opportunities of the various fields of the engineering profession.

Electives in any curriculum must be approved by the head of the department in which the student seeks the degree and by the dean of the division before the student registers for the course. A course regularly approved as an elective normally becomes a part of the student's requirements for graduation for the particular curriculum in which he seeks a degree.

Subjects to absolve extra hours required because of excessive absences or for deficiency in grade points must be approved by the dean before the student registers for the course. No approval will be given to remove a deficiency in grade points until the student has substantially completed his required curriculum. Credit for advanced military science may not be used to absolve extra hours required because of an excessive number of absences.

Physically qualified engineering students desiring to do so may take work in military science. All students are eligible for the Air Corps and Infantry units. The Corps of Engineers is limited to those students following any academic course of instruction leading to an engineering, technical, or scientific degree. The Signal Corps is limited to students pursuing academic courses leading to a degree in engineering, electronics, or physics.

It is recommended that all students majoring in chemical engineering acquire a reading knowledge of German before graduation.

Professional Degrees. An engineering graduate of Texas Technological College may become a candidate for a professional degree, of which the following are available: Chemical Engineer,

Civil Engineer, Electrical Engineer, Geological Engineer, Industrial Engineer, Mechanical Engineer, Textile Engineer.

The requirements of any of these degrees include acceptable professional experience, a thesis, and an examination.

CURRICULA IN DIVISION OF ENGINEERING

Uniform Freshman Year

To be used with curricula in Chemical, Civil, Electrical, Industrial, Mechanical, Petroleum, and Textile Engineering

First Semester	Credit
E.Dr. 131—Engr. Drawing	3
Math. 121—Alg.	2
Math. 131—Trig.	3
Eng. 131—Comp.	3
Chem. 131—Gen. Chem.	3
E.Or. 111—Orient.	1
P.E. or Band	1
or M.S.	2
	16 or 17

Second Semester	Credit
E.Dr. 121—Engr. Drawing	2
Math. 122—Alg.	2
Math. 132—Anal.	3
Eng. 132—Comp.	3
Chem. 132—Gen. Chem.	3
Govt. 230—Amer. Govt.	3
P.E. or Band	1
or M.S.	2
	17 or 18

BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit
Chem.220—Qual. Anal.	2
Chem. 331—Quant. Anal.	3
Math. 251—Calc.	5
Phys. 235—Engr. Phys.	3
Phys. 215—Phys. Meas.	1
Eng. 233—Tech. Writing	3
P. E., M.S., or Band	1
	18

Second Semester	Credit
Chem. 242—Inorg. Chem.	4
Chem. 332—Quant. Anal.	3
Chem. 234—Engr. Mtls. & Calcns.	3
Phys. 236—Engr. Phys.	3
Phys. 216—Phys. Meas.	1
C. E., 331—Statics	3
P.E., M.S., or Band	1
	18

Junior Year

First Semester	Credit
Chem. 343—Org. Chem.	4
Chem.441—Phys. Chem.	4
Chem. 431—Prin. of Chem. Engr.	3
Chem. 411—Chem. Seminar	1
E.E. 426—Elem. of E.E.	2
E.E. 412—E.E. Lab.	1
I.E. 332—Mgt.—Prod. Plan. & Cont.	3
	18

Second Semester	Credit
Chem. 344—Org. Chem.	4
Chem. 442—Phys. Chem.	4
Chem. 432—Prin. of Chem. Engr.	3
Chem. 412—Chem. Seminar	1
E.E. 427—Elem. of E.E.	2
E.E. 413—E.E. Lab.	1
C.E. 333—Strength of Mater	3
	18

Senior Year

First Semester	Credit
Ch.E. 431—Chem. Tech.	3
M.E. 334—Elem. Thermo.	3
Ch.E. 425—Unit Op. Lab.	2
Ch.E. 437—Adv. Chem. Eng.	3
I.E. 421—Chem. Plant Des.	2
Electives	6
	19

Second Semester	Credit
Ch.E. 432—Chem. Tech.	3
Ch.E. 434—Ch.E. Thermo.	3
Ch.E. 426—Unit Op. Lab.	2
M.E. 335—Heat Engines	3
I.E. 422—Chem. Plant Des.	2
Electives	6
	19

Hours required for graduation—139 and P. E., M.S., or Band.

Electives: Choices from the following are suggested, M.E. 337, Ch. E. 421, Chem. 434, Chem.435, Chem. 438, Speech 338. Other courses may be chosen as elective subject to the approval of the head of the department and dean.

NOTE: Eco. 231-2 may be used as elective or substitution if it is on record as completed by the student before fall semester of 1949.

BACHELOR OF SCIENCE IN CIVIL ENGINEERING

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
C.E. 231—Plane Surveying	3	C.E. 232—Plane Surveying	3
Math. 251—Calc.	5	C.E. 331—Statics	3
Phys. 235—Engr. Phys.	3	Math. 233—Calc. Applic.	3
Phys. 215—Phys. Meas.	1	Phys. 216—Phys. Meas.	1
Geol. 233—Geol. for Engineers	3	Phys. 236—Engr. Phys.	3
Eco. 235—Prin.	3	Chem. 220—Qual. Anal.	2
P. E., M.S., or Band	1	Eng. 233—Tech. Writing	3
		P. E., M.S., or Band	1
	19		19

Junior Year

First Semester	Credit	Second Semester	Credit
C.E. 332—Kinematics & Kinetics	3	C.E. 333—Strength of Mater.	3
C.E. 320—Struct.	2	C.E. 330—Struct.	3
C. E. 335—Highway Engr.	3	C.E. 336—Highway Engr.	3
C.E. 339—Fluid Mech.	3	C.E. 334—Surveying	3
C.E. 312—Fluid Mech. Lab.	1	M.E. 335—Heat Engines	3
C.E. 3310—Munic. San.	3	Spch. 338—Bus. & Prof. Spch.	3
M.E. 334—Elem. Thermo.	3		
	18		18

Senior Year
(Not effective before year of 1950-51)
See Twenty-second Catalog

First Semester	Credit	Second Semester	Credit
C.E. 424—Mater.	2	C.E. 425—Mater.	2
C.E. 423—Eco. of Hwy. Design	2	C.E. 439—Law & Ethics	3
C.E. 431—Rein. Conc.	3	C.E. 4312—Soil Mech. & Found.	3
C.E. 433—Struct.	3	E.E. 427—Elem. of E.E.	2
E.E. 412—E.E. Lab.	1	E.E. 413—E.E. Lab.	1
E.E. 426—Elem. of E.E.	2	**Elective B	6
*Elective A	3	*Elective A	3
	16		20

Hours required for graduation—139 and P. E., M.S., or Band.

* Elective A. Choices made from the following are suggested, but 6 credit hours of continuous material are required: C.E. 437 and C.E. 438; Acct. 244 and Acct. 245; Fin. 338 and Fin. 339; Span. 131 and Span. 132. Other courses may be chosen as Elective A subject to approval by head of department and dean.

** Elective B. Choices are limited to the folowing: C.E. 432, C.E. 434, C.E. 4313 C.E. 4314.

Advanced military science may be substituted for Speech 338 and M.E. 335, in accordance with catalog regulations.

BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
E.E. 231—Prin. of E.E.	3	E.E. 232—Prin. of E.E.	3
E.E. 221—E.E. Lab.	2	E.E. 222—E.E. Lab.	2
Math. 251—Calc.	5	Math. 233—Calc. Applic.	3
Phys. 235—Engr. Phys.	3	Phys. 236—Engr. Phys.	3
Phys. 215—Phys. Meas.	1	Phys. 216—Phys. Meas.	1
E.Dr. 221—Machine Dr.	2	C.E. 331—Statics	3
Chem. 220—Qual. Anal.	2	Eng. 233—Tech. Writing	3
P.E., MS., or Band	1	P.E., MS., or Band	1
	19		19

Junior Year

First Semester	Credit	Second Semester	Credit
E.E. 332—A.C. Circuits	3	E.E. 334—Com. Circuits	3
E.E. 322—A.C. Circuits Lab.	2	E.E. 324—Communication Lab.	2
C.E. 332—Kinematics & Kinetics	3	E.E. 325—Electronics	2
M.E. 334—Elem. Thermo.	3	E.E. 323—Electronics Lab.	2
M.E. 317—Heat Engr. Lab.	1	C.E. 333—Strength of Mater.	3
M.E. 313—Machine Shop	1	M.E. 314—Machine Shop	1
Math. 321—Diff. Equat.	2	M.E. 335—Heat Engines	3
Eco. 235—Prin.	3	M.E. 318—Heat Engr. Lab.	1
	18		17

Senior Year

First Semester	Credit	Second Semester	Credit
E.E. 4312—Elec. Mach.	3	E.E. 4313—Elec. Mach.	3
E.E. 4212—Elec. Mach. Lab.	2	E.E. 4213—Elec. Mach. Lab.	2
E.E. 428—Engr. Electronics	2	E.E. 429—Engr. Electronics	2
E.E. 4215—Engr. Electronics Lab.	2	E.E. 4216—Engr. Electronics Lab.	2
I. E. 332—Mgt.—Prod. Plan. & Cont.	3	C.E. 439—Law & Ethics in Engr.	3

COMMUNICATIONS OPTION

First Semester	Credit	Second Semester	Credit
E.E. 4310—Radio Engr.	3	E.E. 4311—Radio Engr.	3
E.E. 4210—Radio Engr. Lab.	2	E.E. 4211—Radio Engr. Lab.	2
*Electives	2	*Electives	2
	19		19

POWER OPTION

First Semester	Credit	Second Semester	Credit
E.E. 4214—Adv. Circuit Theory	2	E.E. 433—Transmission	3
C.E. 420—Hydraulics	2	C. E. 310—Testing Lab.	1
*Electives	3	*Electives	3
	19		19

Hours required for graduation—140 and P.E., or M.S., or Band.

*Subject to approval by Dean of Engineering and Head of Department.

Advanced military science may be substituted for Eng. 233, provided a B average or better has been made in Eng. 131-2. Not more than 6 hours credit may be used for military science.

BACHELOR OF SCIENCE IN INDUSTRIAL ENGINEERING

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
E.Dr. 221—Mach. Drawing	2	E.Dr. 222—Des. Geom.	2
Math. 251—Calc.	5	Math. 233—Calc. Applic.	3
Phys. 235—Engr. Phys.	3	Phys. 236—Engr. Phys.	3
Phys. 215—Phys Meas.	1	Phys. 216—Phys. Meas.	1
M.E. 221—Engr. Prob.	2	M.E. 211—Sheet Metal Wk.	1
Psy. 230—Intro. to Psy.	3	C.E. 331—Statics	3
Eco. 235—Prin.	3	Chem. 220—Qual. Anal.	2
PE., M.S., or Band	1	Acct. 231—Indus. Acct. for Engrs.	3
		PE., M.S., or Band	1
	20		19

Junior Year

First Semester	Credit	Second Semester	Credit
I.E. 316—Personnel Admin.	1	I.E. 331—Time & Motion Study	3
I.E. 332—Mgt.—Prod. Plan. & Cont.	3	I. E. 336—Tool Design	3
I.E. 333—Manuf. Meth.	3	C. E. 333—Strength of Mater.	3
E.Dr. 322—Advan. Mach. Dr.	2	M.E. 315—Heat Treating of Steel	1
C.E. 231—Plane Surveying	3	M.E. 316—Welding Prac.	1
M.E. 334—Elem. Thermo.	3	M.E. 335—Heat Engines	3
M.E. 313—Mach. Shop	1	Spch. 338—Bus. & Prof. Spch.	3
Eng. 233—Tech. Writing	3		
	19		17

Senior Year

First Semester	Credit	Second Semester	Credit
I.E. 432—Indus. Plant Design	3	I.E. 433—Indus. Plant Design	3
I.E. 436—Prin. of Engr. Eco.	3	I.E. 435—Indus. Safety Engr.	3
M.E. 311—Pattern Shop	1	I.E. 431—Purch. & I.E. Prob.	3
M.E. 312—Foundry Prac.	1	E.E. 439—Elem. of E.E.	3
E.E. 438—Elem. of E.E.	3	E.E. 413—E.E. Lab.	1
E.E. 412—E.E. Lab.	1	*Elective	3
Fin. 338—Bus. Law	3		
*Elective	2		
	17		16

Hours required for graduation—137 and P.E., or M.S., or Band.

* Must be in one branch of engineering or business administration. Recommended electives: Group A—M.E. 337, Math. 321, C.E. 439, Chem. 322; Group B—C.E. 420, C.E. 426, Fin. 339. Not more than 3 hours may be selected from Group B.

Advanced military science (12 hours) may be substituted for Spch. 338.

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING AND MECHANICAL ENGINEERING—AERONAUTICAL OPTION

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
M.E. 221—Engr. Prob.	2	M.E. 241—Mech. Dynamics	4
Math. 251—Calc.	5	Math. 233—Calc. Applic.	3
Phys. 235—Engr. Phys.	3	Phys. 236—Engr. Phys.	3
Phys. 215—Phys. Meas.	1	Phys. 216—Phys. Meas.	1
E.Dr. 221—Mach. Dr.	2	C.E. 331—Statics	3
Eco. 231—Prin.	3	Eco. 232—Prin.	3
Chem. 220—Qual. Anal.	2	P. E., M.S., or Band	1
P.E., M.S., or Band	1		
	19		18

Junior Year

First Semester	Credit	Second Semester	Credit
M.E. 313—Mach. Shop	1	M.E. 314—Mach. Shop	1
M.E. 311—Pattern Shop	1	M.E. 315—Heat Treating	1
M.E. 312—Foundry Prac.	1	M.E. 316—Welding Prac.	1
M.E. 330—Thermo.	3	M.E. 331—Thermo.	3
M.E. 337—Metallurgy	3	M.E. 322—Elem. Mach. Des.	2
M.E. 341—Steam Power	4	M.E. 332—Thermo. Lab.	3
C.E. 332—Kinematics & Kinetics	3	C.E. 333—Strength of Mater.	3
Math. 321—Diff. Equat.	2	C.E. 310—Testing Lab.	1
		Eng. 233—Tech. Writing	3
	18		18

Senior Year

First Semester	Credit	Second Semester	Credit
M.E. 436—Mach. Design	3	M.E. 437—Mach. Design	3
M.E. 431—Power Lab.	3	M.E. 434—Indus. Mgt.	3
E.E. 438—Elem. of E.E.	3	E.E. 439—Elem. of E.E.	3
E.E. 412—E.E. Lab.	1	E.E. 413—E.E. Lab.	1
Electives	7	Electives	9
	17		19

Subject to approval by the head of the Department of Mechanical Engineering and by the Dean of Engineering prior to registration, electives may be chosen from the following subjects:

Group A: M.E. 423-4, 432, 438-9, 4310, 4311.

Group B: C.E. 231, 339, 434, 4310; T.E. 331, 332; I. Engr. 331; E. Sem. 411, 412; Spch. 338, 439, Pet. E. 331, 333.

A minimum of 7 semester hours must be selected from Group A. Advanced military science may be substituted for 6 hours of Group B electives in accordance with catalog regulations.

AERONAUTICAL OPTION

Senior Year

First Semester	Credit	Second Semester	Credit
M.E. 436—Mach. Design	3	M.E. 437—Mach. Design	3
M.E. 431—Power Lab.	3	M.E. 434—Indus. Mgt.	3
M.E. 423—Int. Comb. Eng.	2	M.E. 424—Int. Comb. Eng.	2
M.E. 4.10—Aerodynamics	3	M.E. 4311—Aerodynamics	3
C.E. 4310—Airplane Struct.	3	C.E. 434—Struct.	3
E.E. 438—Elem. of E.E.	3	E.E. 439—Elem. of E.E.	3
E.E. 412—E.E. Lab.	1	E.E. 413—E.E. Lab.	1
	18		18

Hours required for graduation—138 and P. E., or M. S., or Band.

BACHELOR OF SCIENCE IN PETROLEUM ENGINEERING

For Uniform Freshman Year See Above

GEOLOGY OPTION

Geology Option is open only to those students who elected it prior to March 1948

Junior Year

First Semester	Credit	Second Semester	Credit
Geol. 333—Petrol.	3	Geol. 334—Petrol.	3
Geol. 335—Paleon.	3	Geol. 336—Paleon.	3
C.E. 332—Kinematics & Kinetics	3	C.E. 333—Strength of Mater.	3
C.E. 231—Plane Surveying	3	C.E. 232—Plane Surveying	3
Eco. 231—Prin.	3	C.E. 310—Testing Lab.	1
		Eco. 232—Prin.	3
	15		16

Summer

	Credit
Geol. 363—Field	6

Senior Year

First Semester	Credit	Second Semester	Credit
Geol. 431—Advan. Gen.	3	Geol. 432—Advan. Gen.	3
Geol. 433—Struct.	3	Geol. 434—Petrol.	3
Geol. 435—Index Fossils	3	Geol. 436—Micropaleon.	3
Geol. 411—Texas Geol.	1	Geol. 412—Texas Geol.	1
Geol. 413—Seminar	1	Geol. 414—Seminar	1
C.E. 334—Surveying	3	Spch. 338—Bus. & Prof. Spch.	3
		*Elective	3
	14		17

Hours required for graduation—134 and P.E. or M.S., or Band.

*Advanced military science may be substituted for Speech 338 and used as elective in accordance with catalog regulations.

GEOPHYSICS OPTION

Geophysics Option is open only to those students who elected it prior to March 1948.

Junior Year

First Semester	Credit	Second Semester	Credit
Geol. 333—Petrol.	3	Geol. 334—Petrol.	3
Geol. 335—Paleon.	3	Geol. 336—Paleon.	3
Geol. 411—Texas Geol.	1	Geol. 412—Texas Geol.	1
E.E. 332—Alt. Current	3	E.E. 333—Electronics	3
E.E. 322—Alt. Current Lab.	2	E.E. 323—Electronics Lab.	2
Phys. 333—Elec. & Mag.	3	Phys. 334—Elec. & Mag.	3
	15		15

Summer

	Credit
Geol. 363—Field	6

Senior Year

First Semester	Credit	Second Semester	Credit
Geol. 431—Advan. Gen.	3	Geol. 432—Advan. Gen.	3
Geol. 433—Structural	3	Geol. 434—Petrol.	3
Geol. 435—Index Fossils	3	Geol. 436—Micropaleon.	3
Geol. 413—Seminar	1	Geol. 414—Seminar	1
Geol. 427—Geophysics	2	Geol. 428—Geophysics	2
E.E. 4210—Radio Engr. Lab.	2	E.E. 4211—Radio Engr. Lab.	2
E.E. 4310—Radio Engr.	3	E.E. 4311—Radio Engr.	3
	17		17

Hours required for graduation—136 and P. E., or M.S., or Band.

When possible, it is recommended that E.E. 232, E.E. 222 and Math. 321 be substituted for Phys. 333-4; and that E.E. 334 and E.E. 324 be substituted for E.E. 4311 and E.E. 4211.

Advanced military science may be substituted for Geology 427—428—Geophysics in accordance with catalog regulations.

NATURAL GAS OPTION

Senior Year

First Semester	Credit	Second Semester	Credit
Pet. E. 434—Nat. Gas Engr.	3	Pet. E. 435—Nat. Gas & Gasoline	3
Pet. E. 410—Seminar	1	Pet. E. 413—Nat. Gas Lab.	1
C.E. 334—Surveying	3	Pet. E. 411—Seminar	1
E.E. 438—Elem. of E.E.	3	*Fin. 3310—Oil & Gas Law	3
E.E. 412—E.E. Lab.	1	E.E. 413—E.E. Lab	1
M.E. 423—Int. Comb. Engines	2	E.E. 439—Elem. of E.E.	3
Geol. 4312—Sedimentation	3	M.E. 424—Int. Comb. Engines	2
C.E. 339—Fluid Mech.	3	Geol. 4313—Sedimentation	3
C.E. 312—Fluid Mech. Lab.	1	Acct. 231—Acct. for Engrs.	3
	20		20

PRODUCTION AND NATURAL GAS OPTION

Sophomore Year

First Semester	Credit	Second Semester	Credit
Chem. 235—Hydrocarbons	3	Chem. 246—Analytical	4
Math. 251—Calc.	5	Math. 233—Calc. Applic.	3
Phys. 235—Engr. Phys.	3	Phys. 236—Engr. Phys.	3
Phys. 215—Phys. Meas.	1	Phys. 216—Phys. Meas.	1
Geol. 131—Gen.	3	Geol. 132—Gen.	3
M.E. 221—Engr. Prob.	2	C.E. 331—Statics	3
Eco. 235—Prin.	3	Eng. 233—Tech. Writing	3
P.E., M.S., or Band	1	P.E., M.S., or Band	1
	21		21

Junior Year

First Semester	Credit	Second Semester	Credit
Pet. E. 331—Dev. Meth.	3	Pet. E. 333—Prod. Meth.	3
Geol. 433—Struct.	3	Geol. 434—Petrol.	3
Math 432—Diff. Equat.	3	Eco. 326—Petrol.	2
C.E. 332—Kinematics & Kinetics	3	C.E. 333—Strength of Mater.	3
C.E. 231—Plane Surveying	3	C.E. 310—Testing Lab.	1
M.E. 338—Thermo.	3	M.E. 339—Thermo.	3
M.E. 317—Heat Lab.	1	M.E. 318—Heat Lab.	1
		Chem. 346—Physical	4
	19		20

PRODUCTION OPTION

Senior Year

First Semester	Credit	Second Semester	Credit
Pet. E. 410 Seminar	1	Pet. E. 411—Seminar	1
Pet. E. 433—Advan. Prod. Engr.	3	Pet. E. 436—Reservoir Engr.	3
C.E. 334—Surveying	3	Pet. E. 412—Prod. Lab.	1
E.E. 438—Elem. of E.E.	3	Fin. 3310—Oil & Gas Law	3
E.E. 412—E.E. Lab.	1	E.E. 439—Elem. of E.E.	3
M.E. 423—Int. Comb. Engines	2	E.E. 413—E.E. Lab.	1
Geol. 4312—Sedimentation	3	M.E. 424—Int. Comb. Engines	2
C.E. 339—Fluid Mech.	3	Geol. 4313—Sedimentation	3
C.E. 312—Fluid Mech. Lab.	1	Acct. 231—Acct. for Engrs.	3
	20		20

Hours required for graduation—150 and P.E., or M.S., or Band.

Advanced Military Science may be substituted for Accounting 231 and English 233 in accordance with catalog regulations.

BACHELOR OF SCIENCE IN TEXTILE ENGINEERING

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
T.E. 234—Cotton Class. & Mkt.	3	T.E. 235—Textl. Fibers	3
Math. 251—Calc.	5	T.E. 326—Wool	2
Phys. 235—Engr. Phys.	3	Phys. 236—Engr. Phys.	3
Phys. 215—Phys. Meas.	1	Phys. 216—Phys. Meas.	1
E. Dr. 221—Mach. Drawing	2	C.E. 331—Statics	3
M.E. 221—Engr. Prob.	2	Chem. 322—Power Plant Chem.	2
Eco. 231—Prin.	3	**Eco. 232—Prin.	3
P.E., M.S., or Band	1	P.E., M.S., or Band	1
	20		18

Junior Year

First Semester	Credit	Second Semester	Credit
T.E. 331—Yarn Mfr.	3	T.E. 332—Yarn Mfg.	3
T.E. 333—Bleaching & Dyeing	3	T.E. 334—Bleaching & Dyeing	3
T.E. 335—Fab. Des. & Weaving	3	T.E. 336—Fab. Des. & Weaving	3
M.E. 334—Elem. Thermo.	3	M.E. 335—Heat Engines	3
M.E. 317—Heat Engr. Lab.	1	M.E. 318—Heat Engr. Lab.	1
C.E. 332—Kinematics & Kinetics	3	C.E. 333—Strength of Mater.	3
Chem. 341—Organic Chem.	4	I.E. 332—Mgt.-Prod. Plan. & Cont.	3
	20		19

Senior Year

First Semester	Credit	Second Semester	Credit
T.E. 437—Textile Costing	3	T.E. 438—Mill Organization	3
T.E. 421—Fabric Anal. Weav. & Jac. Design	2	T.E. 422—Fab. Anal. Weav. & Jac. Design	2
T.E. 433—Dyeing & Finishing	3	T.E. 434—Dyeing & Finishing	3
T.E. 435—Adv. Yarn Mfr.	3	T.E. 436—Adv. Yarn Mfr.	3
E.E. 412—E.E. Lab.	1	E.E. 413—E.E. Lab.	1
E.E. 426—Elem. of E.E.	2	E.E. 427—Elem. of E.E.	2
T.E.S. 411—T.E. Seminar	1	T.E.S. 412—T.E. Seminar	1
M.E. 313—Machines Shop	1	M.E. 316—Welding Prac.	1
I.E. 316—Personnel Admin.	1	Eng. 233—Tech. Writing	3
	17		19

Hours required for graduation—142 and P.E., or M.S., or Band.

** Advanced military science may be substituted for Economics 232 and English 233 in accordance with catalog regulations

BACHELOR OF SCIENCE IN TEXTILE ENGINEERING

CHEMISTRY AND DYEING OPTION

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
T.E. 234—Cotton Class & Mkt.	3	T.E. 235—Textl. Fibers	3
Math. 251—Calc.	5	T.E. 326—Wool	2
Phys. 235—Engr. Phys.	3	Phys. 236—Engr. Phys.	3
Phys. 215—Phys. Meas.	1	Phys. 216—Phys. Meas.	1
M.E. 221—Engr. Prob.	2	C.E. 331—Statics.	3
Chem. 220—Qual. Anal.	2	Chem. 242—Inorganic Chem.	4
Eco. 231—Prin.	3	Eco. 232—Prin.	3
P.E., M.S., or Band	1	P.E., M.S., or Band	1
	20		20

Junior Year

First Semester	Credit
T.E. 331—Yarn Mfr.	3
T.E. 333—Bleaching & Dyeing	3
T.E. 335—Fab. Des. & Weav.	3
C.E. 332—Kinematics & Kinetics	3
Chem. 331—Quant. Anal.	3
Chem. 343—Organic Chem.	4
	19

Second Semester	Credit
T.E. 332—Yarn Mfr.	3
T.E. 334—Bleaching & Dyeing	3
T.E. 336—Fab. Des. & Weaving	3
Chem. 344—Organic Chem.	4
Chem. 332—Quant. Anal.	3
*Eng. 233—Tech. Writing	3
	19

Senior Year

First Semester	Credit
T.E. 437—Textile Costing	3
T.E. 421—Fab. Anal. Weav. & Jac. Design	2
T.E. 433—Dyeing & Finishing	3
T.E. 435—Adv. Yarn Mfr.	3
M.E. 313—Machine Shop	1
T.E.S. 411—T.E. Seminar	1
Chem. 441—Physical Chem.	4
	17

Second Semester	Credit
T.E. 438—Mill Org.	3
T.E. 422—Fab. Anal. Weav. & Jac. Design	2
T.E. 434—Dyeing & Finishing	3
T.E. 436—Adv. Yarn Mfr.	3
T.E. 423—Adv. Dye. & Color Matching	2
T.E.S. 412—T.E. Seminar	1
M.E. 316—Welding Practice	1
Chem. 434—Organic Prep.	3
	18

Hours required for graduation—142 and P.E., M.S., or Band.

* Advanced military science may be substituted for Eco. 232 and Eng. 233 in accordance with catalog regulations.

BACHELOR OF SCIENCE IN TEXTILE ENGINEERING

WEAVING AND DESIGN OPTION

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit
T.E. 234—Cotton Class. & Mkt.	3
Math. 251—Calc.	5
Phys. 235—Engr. Phys.	3
Phys. 215—Phys. Meas.	1
Arch. 121—Freehand Drawing	2
Arch 123—Elem. of Comp. I.	2
Eco. 231—Prin.	3
P.E., M.S., or Band	1
	20

Second Semester	Credit
T.E. 235—Textl. Fibers.	3
Phys. 216—Phys. Meas.	1
Phys. 236—Engr. Phys.	3
M.E. 221—Engr. Prob.	2
Arch. 122—Freehand Drawing	2
Arch 124—Elem. of Comp. I.	2
C.E. 331—Statics	3
*Eco. 232—Prin.	3
P.E., M.S., or Band	1
	20

Junior Year

First Semester	Credit
T.E. 335—Fab. Des. & Weaving	3
T.E. 331—Yarn & Mfr.	3
T.E. 333—Bleaching & Dyeing	3
C.E. 332 Kinematics & Kinetics	3
Arch. 437—Dr., Ptg., & Theory Des.	3
Chem. 341—Organic Chem.	4
	19

Second Semester	Credit
T.E. 336—Fab. Des. & Weaving	3
T.E. 332—Yarn Mfr.	3
T.E. 334—Bleaching & Dyeing	3
I.E. 332—Mgt.-Prod. Plan. & Cont.	3
Arch. 438—Dr., Ptg., & Theory Des.	3
Chem. 322—Power Plant Chem.	2
	17

Senior Year

First Semester	Credit
T.E. 437—Textile Costing	3
T.E. 421—Fab. Anal. Weav. & Jacq. Design	2
T.E. 433—Dyeing & Finishing	3
T.E. 435—Adv. Yarn Mfr.	3
M.E. 313—Machine Shop	1
Arch. 426—Oil Ptg., or W. Color	2
I.E. 316—Personnel Admin.	1
T.E.S. 411—T.E. Seminar	1
*Eng. 233—Tech. Writing	3
	19

Second Semester	Credit
T.E. 438—Mill Org.	3
T.E. 422—Fab. Anal. Weav. & Jacq. Design	2
T.E. 434—Dyeing & Finishing	3
T.E. 436—Adv. Yarn Mfr.	3
T.E. 326—Wool	2
Arch. 427—Oil Ptg. or W. Color	2
M.E. 316——Welding Prac.	1
T.E.S. 412——T.E. Seminar	1
	17

Hours required for graduation—142 and P.E., M.S., or Band.

* Advanced military science may be substituted for Eco. 232 and Eng. 233 in accordance with catalog regulations.

BACHELOR OF ARCHITECTURE

DESIGN OR CONSTRUCTION OPTION

Freshman Year

First Semester	Credit	Second Semester	Credit
Arch. 121—Freehand Drawing I.	2	Arch 122—Freehand Drawing II	2
Arch. 125—Shades & Shadows	2	Arch 126—Perspective	2
Arch 131—Elem. of Arch.	3	Arch 132—Elem. of Arch.	3
Math. 121—Alg.	2	Math. 122—Alg.	2
Math. 131—Trig.	3	Math. 132—Anal.	3
E. Or. 111—Orientation	1	Eng. 132—Comp.	3
Eng. 131—Comp.	3	P.E., M.S., or Band	1
P.E., M.S., or Band	1		
	17		16

CONTRUCTION OPTION

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Arch. 231—Arch. Design I	3	Arch. 232—Arch. Design I	3
Arch. 221—Hist. Ancient Arch.	2	Arch. 222—Hist. Med. Arch.	2
Math. 251—Calc.	5	Math. 233—Calc. Applic.	3
Phys. 235—Engr. Phys.	3	Phys. 236—Engr. Phys.	3
Phys. 215—Phys. Meas.	1	Phys. 216—Phys. Meas.	1
Engr. 233—Tech. Writing	3	C.E. 331—Statics.	3
P.E., M.S., or Band	1	P.E., M.S., or Band	1
	18		16

Junior Year

First Semester	Credit	Second Semester	Credit
Arch 351—Arch. Design II	5	Arch. 352—Arch. Design II	5
Arch. 322—Hist. Ren. Arch.	2	Arch. 323—Hist. Am. & Mod. Arch.	2
C.E. 231—Plane Surveying	3	E.E. 335—Wiring & Illum.	3
C.E. 320—Struct.	2	C.E. 330—Struct.	3
C.E. 332—Kinematics & Kinetics	3	C.E. 333—Strength of Mater.	3
Eco. 235—Princ.	3	Spch. 338—Bus. & Prof. Spch.	3
	18		19

Senior Year

First Semester	Credit	Second Semester	Credit
Arch. 461—Arch. Design III	6	Arch. 462—Arch. Design III	6
Arch. 333—Bldg. Constr.	3	Arch. 334—Bldg. Constr.	3
Arch 422—Bldg. Mat. & Constr.	2	Arch 420—Professional Prac.	2
C.E. 431—Reinf. Conc.	3	C.E. 432—Reinf. Conc.	3
M.E. 334—Elem. Thermo.	3	Govt. 230—Amer. Govt.	3
	17		17

Fifth Year

First Semester	Credit	Second Semester	Credit
Arch. 435—Advan. Arch. Constr.	3	Arch. 436—City Planning	3
C.E. 433—Struc.	3	C.E. 434—Struct.	3
C.E. 424—Mater.	2	C.E. 425—Mater.	2
M.E. 438—Heat., Vent., & Air Condit.	3	M.E. 439—Heat., Vent., & Air Condit.	3
Approved Electives	4	Approved Electives	3
	15		14

Hours required for graduation—163 and P.E., M.S., or Band.

DESIGN OPTION

Sophomore Year

First Semester	Credit	Second Semester	Credit
Arch. 231—Arch. Design I	3	Arch. 232—Arch. Design I	3
Arch. 221—Hist. Ancient Arch.	2	Arch. 222—Hist. Med. Arch.	2
Arch. 224—Freehand Drawing III	2	Arch. 225—Freehand Drawing IV	2
Phys. 131—Elem. Coll. Phys.	3	Phys. 132—Elem. Coll. Phys.	3
Eng. 237—Types of Lit.	3	C.E. Approved Elective	2
Fren. 131 or Span. 131—Beg. Crse.	3	A For. Lang. Cont.	3
P.E., M.S., or Band	1	P.E., M.S., or Band	1
	17		16

Junior Year

First Semester	Credit	Second Semester	Credit
Arch. 351—Arch. Design II	5	Arch. 352—Arch. Design II	5
Arch. 322—Hist. Ren. Arch.	2	Arch. 323—Hist. Am. & Mod. Arch.	2
Arch. 326—Constr. Anat.	2	Arch. 327—Life Drawing I	2
C.E. 231—Plane Surveying	3	E.E. 335—Wiring & Illumination	3
Eco. 235—Prin.	3	Spch. 338—Bus. & Prof. Spch.	3
A For. Lang. begun in Soph. Yr. or Eng. 238—Types of Lit.	3	A For. Lang. Cont. or Eng. 3323—Masterpcs. of Wld. Lit.	3
	18		18

Senior Year

First Semester	Credit	Second Semester	Credit
Arch 461—Arch. Design III	6	Arch. 462—Arch Design III	6
Arch 333—Bldg. Constr.	3	Arch. 334—Bldg. Constr.	3
Arch. 422—Bldg. Mat. & Const.	2	Arch. 420—Professional Prac.	2
Arch. 321—Hist. E. Civ. & Art.	2	Arch. 324—Hist. Sculpture	2
Arch. 423—Life Drawing II	2	Arch. 424—Life Drawing III	2
C.E. 337—Struc. Mech.	3	C.E. 338—Struc. Mech.	3
	18		18

Fifth Year

First Semester	Credit	Second Semester	Credit
Arch. 483—Arch Design IV	8	Arch. 484—Arch. Design IV (Thesis)	8
Arch. 3216—Clay Modeling	2	Arch. 3217—Clay Modeling	2
Arch. 435—Advan. Arch. Constr.	3	Arch. 436—City Planning	3
Govt. 230—Amer. Govt.	3	C.E. 310—Testing Lab.	1
	16		14

Hours required for graduation—165 and M.S., or P.E., or Band.

Advanced military science may be substituted for French 232, Spanish 232, or English 3323 in design option and for 6 semester hours of approved electives in construction option in accordance with catalog regulatons.

BACHELOR OF COMMERCIAL ART

Freshman Year

First Semester	Credit	Second Semester	Credit
Arch. 121—Freehand Drawing I	2	Arch. 122—Freehand Drawing II	2
Arch. 123—Elem. of Comp. I	2	Arch. 124—Elem. of Comp. I	2
Math. 121—Alg.	2	Arch. 125—Shades & Shadows	2
E. Dr. 134—Graphic Arts	3	Math. 131—Trig.	3
E. Or. 111—Orientation	1	E. Dr. 135—Graphic Arts	3
Eng. 131—Comp.	3	Eng. 132—Comp.	3
Arch. 133—Commerc. Lettering	3	P.E., or Band	1
P.E., or Band	1		
	17		16

Sophomore Year

First Semester	Credit	Second Semester	Credit
Arch. 131—Elem. of Arch.	3	Arch. 132—Elem. Arch.	3
Arch. 221—Hist. Ancient Arch.	2	Arch. 222—Hist. Med. Arch.	2
Arch. 224—Freehand Drawing III	2	Arch. 225—Freehand Drawing IV	2
Arch. 235—Elements of Comp. II	3	Arch. 236—Elem. of Comp. II	3
Eng. 237—Types of Lit.	3	Arch. 126—Perspective	2
A For. Lang., Fr., Span., or Germ.	3	A For. Lang., Fr., Span., or Germ.	3
P.E., M.S., or Band	1	P.E., or Band	1
	17		16

Junior Year

First Semester	Credit	Second Semester	Credit
Arch. 239—Pottery	3	Arch. 2310—Pottery	3
Arch. 320—Hist. of Orn. & Furn.	2	Arch. 234—Hist. of Sculpture	2
Arch. 321—Hist. E. Civ. & Art.	2	Arch. 327—Life Drawing I	2
Arch. 322—Hist. Ren. Arch.	2	Arch. 3211—Commerc. Illus. I	2
Arch. 326—Constr. Anat.	2	Spch. 338—Bus. & Prof. Spch	3
Arch. 3210—Commerc. Illus. I	2	Eco. 235—Prin.	3
A For. Lang. begun Soph. Yr. or Eng. 238—Types of Lit.	3	A For. Lang. begun Soph. Yr. or Eng. 3323—Masterpcs. of Wld. Lit.	3
	18		18

Senior Year

First Semester	Credit	Second Semester	Credit
Arch. 331—Commerc. Design I	3	Arch. 332—Commerc. Design I	3
Arch. 423—Life Drawing II	2	Arch. 424—Life Drawing III	2
Arch. 426—Oil Ptg., or W. Color	2	Arch. 427—Oil Ptg., or W. Color	2
Arch. 428—Hist. of Ptg.	2	Arch 429—Hist. of Ptg.	2
Arch. 437—Dr. Ptg., & Theory Des.	3	Arch. 438—Dr., Ptg., & Theory Des.	3
Govt. 230—Amer. Govt.	3	Arch. 420—Professional Prac.	2
Psy. 230—Intro. to Psy.	3	Psy. 338—Psy. Applied to Bus.	3
	18		17

Fifth Year

First Semester	Credit	Second Semester	Credit
Arch. 4210—Decorative Fig. Dr.	2	Arch. 4211—Decorative Fig. Dr.	2
Arch. 4212—Commerc. Illus. II	2	Arch. 4213—Commerc. Illus. II	2
Arch 433—Commerc. Design II	3	Arch 434—Commerc. Design II	3
Jour. 435—Advertising	3	Jour. 436—Advertising	3
Approved Electives	6	Approved Electives	6
	16		16

Hours required for graduation—163 and P.E., or Band.

DIVISION OF HOME ECONOMICS

MARGARET W. WEEKS, *Dean*

The Division of Home Economics consists of the Departments of Applied Arts, Child Development, Clothing and Textiles, Foods and Nutrition, Home Economics Education, Home Management, and Institutional Management.

The functions of the division are:

First, to offer a broad educational program based on the needs of women as homemakers, as leaders, and as citizens in the modern world;

Second, to offer specialized training in the various professional fields of home economics such as homemaking, home demonstration work, teaching home economics under state and federal vocational education programs, dietetics, food management in cafeterias and school lunchrooms, home service positions, nursery school positions, occupations in the arts and crafts field, and commercial positions in clothing and textiles and art;

Third, to give instruction to students registered in other divisions of the college who may elect home economics as a part of a liberal education. (A maximum of 24 semester hours may be used as electives by students majoring in arts and sciences and business administration.)

Undergraduate Degree. The Degree Bachelor of Science in Home Economics is conferred upon students who satisfactorily complete one of the prescribed curricula in the Division of Home Economics as outlined on the following pages. The degree is given with majors in the Departments of Applied Arts, Child Development, Clothing and Textiles, Foods and Nutrition, and Home Economics Education.

Requirements for Graduation. Completion of a curriculum leading to the degree usually requires four years. This time may be shortened by attending summer sessions.

Each student enrolled in the division will pursue during the first year the uniform freshman curriculum. The choice of the major is not made until the beginning of the sophomore year. This is done in order that the student, before choosing her professional field, may have the opportunity of becoming familiar with the courses of instruction and the possibilities available after graduation in the various fields of home economics. To provide guidance in the selection of her college major, every freshman student is required to schedule Home Economics Education 111—Orientation, which includes lectures and discussions on the opportunities available for home economics graduates.

The standard amount of work for a student registered in the Division of Home Economics is 16 or 17 semester hours each semester. More than 17 semester hours or less than 12 semester hours cannot be taken without securing the approval of the dean. A written petition is necessary to secure this approval.

Not more than 6 semester hours in Biblical history and literature or in music nor more than 3 semester hours in chorus can be counted toward degree requirements. Electives in any curriculum must be approved by the head of the department in which the student seeks a degree. The approval must be secured in writing and filed with the dean.

Teacher Training in Vocational Home Economics. Home economics instruction at Texas Technological College has been approved by the Federal and State Boards of Vocational Education. Students interested in securing on graduation the Vocational Certificates of Approval should select the home economics education curriculum. The certificate may be obtained with either the bachelor's or master's degree.

Students transferring to this college in their senior year who wish to be recommended for a Vocational Certificate of Approval must include in their requirements for graduation at least 3 semester hours in each of the subject matter departments in the Division of Home Economics. The requirement may be increased on the recommendation of the head of the department concerned.

A Vocational Certificate of Approval is not in lieu of any state teacher's certificate but is in addition thereto.

Teachers' Certificates. Teachers' certificates may be secured by students registered in the Division of Home Economics provided a sufficient nuumber of courses in education are included in the curriculum chosen. The courses in education may count as elective subjects.

Master's Degree in Home Economics. The Division of Home Economics offers a Master of Science Degree with majors in the Departments of Clothing and Textiles, Foods and Nutrition, and Home Economics Education. Minors are offered in these departments as well as in the Departments of Applied Arts and Child Development. A Master's Degree is also given in general home economics whereby certain advanced courses approved for graduate credit in several departments may be used to complete requirements.

For further information regarding graduate work, consult the Bulletin on Division of Graduate Studies.

CURRICULA IN DIVISION OF HOME ECONOMICS

BACHELOR OF SCIENCE IN HOME ECONOMICS

Uniform Freshman Year*

First Semester	Credit	Second Semester	Credit
Eng. 131—Comp.	3	Eng. 132—Comp.	3
Chem. 131—Gen. Chem.	3	Chem. 132—Gen. Chem.	3
A. Arts 131—Design	3	Child Dev. 131—Child Guid.	3
Cloth. 132—Cloth. Prob.	3	Foods 131—Prep. & Serv.	3
Math. 137—Com. Alg.	3	Elective	3
H.E. Ed. 111—Orientation	1	P.E. 112	1
P.E 111	1		
	17		16

* To be used with all curricula except Pre-Nursing.

BACHELOR OF SCIENCE IN HOME ECONOMICS
APPLIED ARTS MAJOR

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit
Eng. 237—Typ. and Mast.	3
Psy. 231—Ed. Psy.	3
Zool. 235—Anat.	3
A.A. 133—Design	3
Cloth. 131—Basic Textiles	3
Govt. 230—Amer. Govt.	3
P.E.	1
	19

Second Semester	Credit
Eng. 238—Typ. and Mast.	3
Ed. 234—Sec. Ed.	3
Zool. 236—Anat.	3
A.A. 231—Cos. Design	3
A.A. 233—Textile Design	3
P.E.	1
	16

Junior Year

First Semester	Credit
Eco. 231—Prin. of Eco.	3
H. Mgt. 332—H. Mgt.	3
A.A.—232—Crafts Design	3
Elective in Foods and Nutr.	3
*Elective	3
	15

Second Semester	Credit
Soc. 230—Intro. to Sociol. or Soc. 233—Social Prob.	3
Bact. 231—Bact.	3
A.A. 234—Minor Crafts	3
A.A. 331—Interior Design	3
Electives	3
	15

Senior Year

First Semester	Credit
Fam. Rel. 433	3
Cloth. 335—Weaving Crafts	2
A.A. 431—Wood	3
Psy. 331—Ch. Psy. or Psy. 335—Adol. Psy.	3
**Electives	6
	17

Second Semester	Credit
A.A. 434—Metalwork or A.A. 435—Jewelry-Lapidary	3
H.E. Ed. 331—Prin. of Tch. H. E.	3
H.E. Ed. 411—H.E. Lect.	1
Electives	9
	16

Hours required for graduation—132.

* General Option select Cloth. 232; Crafts Option select P.E. 230.
** General Option select Cloth. 333; Crafts Option select Psy. 433 and P.E. 331.

BACHELOR OF SCIENCE IN HOME ECONOMICS
CHILD DEVELOPMENT AND FAMILY RELATIONS MAJOR

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit
Eng. 237—Types of Lit.	3
Zool. 235—Anat., Phys. and Hyg.	3
Foods 132—Elem. Food Prep.	3
Psy. 231—Ed. Psy.	3
Govt. 230—Amer. Govt.	3
P.E.	1
	16

Second Semester	Credit
Eng. 238—Types of Lit.	3
Zool. 236—Anat., Phys. and Hyg.	3
Cloth. 131—Basic Textiles	3
Ch. D. 231—Dev. in Infancy	3
Ed. 234—Prin. of Sec. Ed.	3
P.E.	1
	16

Junior Year

First Semester	Credit
Eco. 231—Prin. of Eco. or Ag. Eco. 235—Fund. of Eco.	3
Ch. D. 431—Dev. of Learn.	3
Foods 232—Meal Plan. and Serv.	3
H. Mgt. 332—Home Mgt.	3
A. A. 233—Textile Design	3
	15

Second Semester	Credit
Soc. 230—Intro. to Sociol.	3
Fam. Rel. 433—Fam. Rel.	3
Nutr. 334—Dietetics	3
Psy. 331—Ch. Psy.	3
H.E. Ed. 331—Prin. of Tch. H.E.	3
Electives	3
	18

Senior Year

First Semester	Credit	Second Semester	Credit
Psy. 433—Mental Hyg.	3	A.A. 331—Int. Design.	3
Ed. 3310—Ch. Lit.	3	Ch. D. 435—Stud. Tch. in Nur. Sch.	3
Ch. D. 432—Nur Sch. Ed.	3	H.E. Ed. 411—H.E. Lect.	1
H.E. Ed. 431—Meth. of Tch. H.E.	3	H.E. 412—Sup. Obs. in H. Ec.	1
H. Mgt. 432—Res. in H. Mgt. Hse.	3	H.E. Ed. 435—Meth. for Adult Lead.	3
		Electives	6
	15		17

Hours required for graduation—130.

BACHELOR OF SCIENCE IN HOME ECONOMICS
CLOTHING AND TEXTILES MAJOR

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 237—Types of Lit.	3	Eng. 238—Types of Lit.	3
Cloth. 131—Basic Text.	3	Cloth. 232—Dressmaking	3
Hist. 131—Hist. of Civ.	3	Hist. 132—Hist of Civ.	3
A.A. 231—Cost. Design	3	Govt. 230—Amer. Govt.	3
Psy. 231—Ed. Psy.	3	Elective	3
P.E.	1	P.E.	1
	16		16

Junior Year

First Semester	Credit	Second Semester	Credit
Elective	3	Elective	3
Cloth. Elec.	3	Cloth. Elec.	3
Cloth. 333—Pattern Design	3	Nutr. Elec.	3
A.A. 331—Int. Design	3	A.A. Elec.	3
Eco. 231—Prin. of Eco.	3	Soc. 230—Intro. to Sociol.	3
Zool. 235—Anat., Phys. and Hyg.	3	or	
		Soc. 233—Cur. Social Prob.	3
		Zool. 236—Anat., Phys. and Hyg.	3
	18		18

Senior Year

First Semester	Credit	Second Semester	Credit
Eco. 232—Prin. of Eco.	3	H.E. Ed. 411—H.E. Lect.	1
Elective	3	Elective	3
Cloth. Elec.	3	Cloth. Elec.	6
Cloth. 431—Textl. Eco.	3	Fam. Rel. Elec.	3
H. Mgt. 332—H. Mgt.	3	Bact. 231—Bact.	3
		or	
		Chem. 341—Org. Chem.	
	15		16

Hours required for graduation 132.

BACHELOR OF SCIENCE IN HOME ECONOMICS
FOODS AND NUTRITION MAJOR

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 237—Types of Lit.	3	Eng. 238—Types of Lit.	3
Zool. 235—Anat., Phys. and Hyg.	3	Zool. 236—Anat., Phys. and Hyg.	3
Chem. 220—Qual. Anal.	2	Foods 232—Meal Plan. and Serv.	3
Foods 132—Food Prep.	3	*Ed. 234—Prin. Sec. Ed.	3
Psych. 231—Ed. Psych.	3	Gov. 230—Amer. Govt.	3
Cloth. 131—Textiles	3	P.E.—Phys. Ed for Women	1
P.E.—Phys. Ed. for Women	1		
	18		16

Junior Year

First Semester	Credit	Second Semester	Credit
Eco. 231—Prin. of Eco.	3	Soc. 233—Cur. Social Prob.	3
Nutr. 334—Dietetics	3	Foods 332	3
Bact. 231—Bacteriology	3	A.A. Elec.	3
Chem. 341—Org. Chem.	4	Chem. 342—Phys. Chem.	4
Elective	3	Elective	3
	16		16

Senior Year

First Semester	Credit	Second Semester	Credit
Nutr. 432—Nutrition	3	Nutr. 431—Nutr. in Disease	3
H. Mgt. 332—Home Management	3	H. Mgt. Elec.	3
Foods & Nutr. Elec.	3	Foods 333—Exp. Cookery	3
**Approved Electives	6	**Approved Electives	6
		H.E. Ed. 411	1
	15		16

Hours required for graduation—130.

* Teaching option select Ed. 234. Nutrition option select Math. 138. Institutional Management option select Acct. 244. Commercial Foods Service option select Journ. 3310.

**Teaching option select H.E. Ed. 331, 431, and other courses in education necessary to qualify for the desired certificate. Nutrition option select Chem. 331-2. Institutional Management option select Instit. Mgt. 432, 435, 436; Cloth. 431. Commercial Foods Service option select Foods 331, 333; Cloth. 431; Home Mgt. 433.

BACHELOR OF SCIENCE IN HOME ECONOMICS
GENERAL HOME ECONOMICS MAJOR

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 237—Types of Lit.	3	Eng. 238—Types of Lit.	3
Zool. 235—Anat., Phys. and Hyg.	3	Zool. 236—Anat., Phys. and Hyg.	3
Psy 231—Ed. Psy.	3	Govt. 230—Amer. Govt.	3
A.A. 231—Costume Design	3	Cloth. 232—Dressmaking	
Cloth. 131—Basic Textiles	3	or	
P.E.	1	Foods 232—Meal Plan. and Serv.	3
		Foods 132—Elem. Food Prep.	3
		P.E.	1
	16		16

Junior Year

First Semester	Credit	Second Semester	Credit
Eco. 231—Prin. of Eco.		Soc. 230—Intro. to Sociol., or	
or		R. Soc. 432—Rural Sociol.	3
Ag. Eco. 235—Fund. of Eco.	3	Cloth. 333—Pattern Design	3
Chem. 341—Organic Chem.	4	Nutr. 334—Dietetics	3
or		H. Mgt. 432—Res. in H. Mgt. House	3
Bact. 231—Bacteriology	3	Electives	5
Foods 232—Meal Plan. and Serv.			
or			
Cloth. 232—Dressmaking	3		
H. Mgt. 332—Home Management	3		
A.A. 331—Interior Design	3		
	15 or 16		17

Senior Year

First Semester	Credit	Second Semester	Credit
Ch. D. 431—Dev. Learn	3	Elective—Child Dev.	3
Arts & Sciences Elec.	3	Arts & Sciences Elec.	3
Cloth. 334—Fam. Cloth. Probs		Cloth. 435—Home Furn.	3
or		H.E. Ed. 411—H.E. Lectures	1
Cloth. 431—Textile Eco.	3	Elective—Foods & Nutr.	3
Home Mgt. Elec.	3	Elective	3
Electives	5		
	17		16

Hours required for graduation—130.

Electives: Students who wish to prepare themselves for Extension Service work such as

BACHELOR OF SCIENCE IN HOME ECONOMICS
HOME ECONOMICS EDUCATION MAJOR
(Vocational Home Economics Teacher Training)

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 237—Types of Lit.	3	Eng. 238—Types of Lit.	3
Zool. 235—Anat. Phy. Hyg.	3	Zool. 236—Anat. Phy. Hyg.	3
Psy. 231—Ed. Psy.	3	Ed. 234—Prin. Sec. Ed.	3
Foods 132—Elem. Food Prep.	3	Govt. 230—Amer. Govt.	3
A.A. 231—Cost. Design	3	Cloth. 232—Dressmaking	
Cloth. 131—Basic Text	3	or	
P.E.	1	Foods 232—Meal Plan. Table Serv.	3
		P.E.	1
	19		16

Junior Year

First Semester	Credit	Second Semester	Credit
Eco. 231—Prin Eco.		Soc. 230—Intro. to Sociol.	
or		or	
Ag. Eco. 235—Fund. of Eco.	3	Soc. 233—Cur. Sociol. Prob.	
Chem. 341—Organic	4	or	
Foods 232—Meal Plan. and Serv.		R. Soc. 432—Rural Soc.	3
or		Bact. 231—Bacteriology	3
Cloth. 232—Dressmaking	3	Nutr. 334—Dietetics	3
H. Mgt. 332—Home Mgt.	3	H.E. Ed. 331—Prin. Tch. H.E. Ed.	3
A.A. 331—Int. Design	3	Elective	3
	16		15

Senior Year

First Semester	Credit	Second Semester	Credit
H.E. Ed. 431—Meth. Tch. H.E.	3	H.E. Ed. 441—Stud. Tch. H.E.	4
Ch. D. 431—Dev. Learn	3	Elect. in Ch. Dev. or Fam. Rel.	3
H.Mgt. 432—Res. H. Mgt. House	3	Cloth. 435—Home Furn.	3
Cloth. 334—Fam. Cloth. Prob.	3	H.E. Ed. 411—H.E. Lectures	1
H.E. Ed. 412—Supr. Obs. in H.E.	1	Electives	6
Electives	2		
Foods electives	3		
	18		17

Hours required for graduation—134.

CURRICULUM FOR PRE-NURSING STUDENTS

(Recommended for students who contemplate the study of nursing as a profession.)

Freshman Year

First Semester	Credit	Second Semester	Credit
Eng. 131—Comp.	3	Eng. 132—Comp.	3
Chem. 131—Gen. Chem.	3	Chem. 132—Gen. Chem.	3
Foods 131—Elem. Food Prep.	3	Foods 132—Elem. Food Prep.	3
Math 137—Com. Alg.	3	Ch.D. 131—Child Guid.	3
Biol. 133—Botany	3	Biol. 134—Zool.	3
H.E. Ed. 111—Orientation	1	P. E. 112	1
P.E. 111	1		
	17		16

Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 237—Types of Lit.	3	Eng. 238—Types of Lit.	3
Govt. 230—Amer. Govt.	3	Govt. 231—Amer. Govt.	3
Psy. 230—Intro. to Psy.	3	Soc. 230—Intro. to Sociol.	3
Chem. 220—Qual. Anal.	2	Foods 232—Meal Plan. and Serv.	3
Hist. 231—Eco. & Polit. Hist. U.S.	3	Hist. 232—Eco. & Polit. Hist. U.S.	3
P.E.	1	P.E.	1
	15		16

county home demonstration agents or assistant agents should choose among their electives:

Foods 331, food demonstration.
Foods 335, food preservation.
Cloth. 233, clothing demonstrations.
Electives in Division of Agriculture—at least 6 semester hours.

DIVISION OF GRADUATE STUDIES

WILLIAM C. HOLDEN, *Dean*

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

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

Graduate Assistantships and Fellowships

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

Graduate fellowships are available from time to time in the Departments of Accounting and Finance, Animal Husbandry, Biology, Chemistry, Clothing and Textiles, Education and Psychology, Electrical Engineering, English, Geology, Government, History and Anthropology, Physical Education for Women, Physics, Plant Industry.

Admission

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

Registration

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

1. Candidates for the Master's Degree.
2. Students who have received a Bachelor's Degree from a recognized institution and are not now candidates for a second Bachelor's Degree.
3. A third class of students may pursue graduate work. Students in residence who lack 6 semester hours or less of having completed the requirements for the Bachelor's Degree may, with prior approval of the dean of the division concerned, enroll for courses carrying graduate credit while completing their undergraduate requirements. Although such students are not under his supervision, the Dean of the Division of Graduate Studies must approve all courses which the student intends to use for graduate credit. Furthermore, in such cases, if graduate credit is desired for any part of the work carried, the combined load

of graduate and undergraduate courses must not exceed 15 semester hours.

Candidacy for the Master's Degree

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

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

   To be accepted as a candidate by the department the student shall present undergraduate work equivalent to a major in that department or shall have completed a minimum of 12 semester hours of advanced undergraduate work in the major department together with advanced undergraduate courses in closely allied fields. For a minor subject the student must have completed the equivalent of the minor required for the undergraduate degree in that department or must have completd a minimum of 6 semester hours in advanced undergraduate courses in such department. If the student cannot meet these requirements or if a period of five years has elapsed since the student received his Bachelor's Degree suitable leveling courses may be prescribed which must be completed without graduate credit before the student is accepted as a candidate for the Master's Degree.

   An undergraduate record above average is a prerequisite to candidacy. In cases where the grade of B or better has not been received on at least 50 per cent of his undergraduate work, the student may become a candidate for a Master's Degree only by satisfactorily completing a preliminary examination over his major and minor fields, as well as over other work in which he may be deemed deficient.
2. After 12 semester hours of graduate work have been satisfactorily completed, a formal application must be made for admission to candidacy. This application, approved by the heads of major and minor departments, must be submitted to the Dean of the Division of Graduate Studies not later than 12 weeks prior to the date on which the degree is to be conferred.

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

Requirements for the Master's Degree

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

1. Amount of work: The minimum amount of work beyond the Bachelor's Degree required for the Master's Degree (except the Degree of Master of Education) is 27 hours and a thesis, although a department may increase the number of hours required of a particular candidate. Of the required work at least 15 semester hours and a thesis must be completed in the major subject. At least 6 of the 27 hours must be in a department other than the major department. Two minors may be chosen, but in no case will less than 6 hours be accepted towards a minor. The

minor, or minors, must be in subject matter other than the major subject.

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

a. Graduate courses: Those courses are open only to graduate students and cannot be used towards the fulfillment of a Bachelor's Degree. Such courses are numbered 500 and above.
b. Advanced undergraduate courses: These courses are regular junior and senior courses. If such courses, or their equivalents, have not been taken for undergraduate courses, they may be taken for graduate credit, provided such courses have been approved by the Committee on Graduate Work and with the understanding that additional work over and above that completed by the undergraduate student must be completed by the student seeking graduate credit in these courses.

For completion of requirements for the major at least 9 semester hours must be completed in courses of Class a above.

Graduate students are limited to a load of not exceeding 15 semester hours for each semester and a load of not exceeding 6 semester hours for each full summer term of six weeks if any portion of such work is to be counted toward graduate credit. Those who may be employed or otherwise partially engaged are subject to further restrictions as set forth below.

2. Residence Requirements: A minimum of 24 weeks in residence at this institution is required, and in addition, another six weeks of work must be accounted for in one of the following ways:
   a. As a resident student at Texas Technological College.
   b. As a resident student in some other college of equal rank.
   c. As a student in extension courses offered by Texas Technological College.

   An applicant for the Master's Degree must complete all requirements for the degree within three years from the date of his enrollment for graduate study, except that a student in summer school only may have the time extended to five years. Six summers will be allowed for Plan III and seven summers for the nonthesis option of Plan II of the Master of Education Degree.

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

   In case a student is enrolled for the completion of a thesis only, the number of weeks allowed toward the fulfillment of the residence requirement will in no case exceed one semester, regardless of the number of semesters or terms required for completion of the thesis.
3. Non-residence and extension credit: Either of the following methods, or a combination of the two, may be used to account for 6 hours of graduate credit:
   a. A maximum of 6 semester hours of graduate work may be accepted from another institution of equal rank if the student was enrolled as a resident student of that institution.
   b. A maximum of 6 semester hours of graduate work taken through the Division of Extension of Texas Technological College may be used.

   An additional 9 semester hours may be accepted when a department recommends that a student be sent to a particular college for the consummation of particular work. Such work must be outlined and approved by the department, the dean of the division concerned, and the Committee on Graduate Work before such work is undertaken.
4. Foreign languages: A reading knowledge of a foreign language is required of all candidates for the Master of Arts Degree. In certain departments no candidate may receive a Master of Science Degree without meeting the requirement in foreign language.

5. Thesis: The completion of an acceptable thesis is a requirement of all Masters' Degrees, with the exception of Master of Education.

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

   A complete draft of the thesis shall be prepared in form and manner acceptable to the major professor and the committee as a whole. The candidate must submit his first draft to the committee in ample time for full consideration. Failure to do so shall be considered ground for non-acceptance of the thesis. This complete draft, with the signed approval of the members of the advisory committee, must be submitted to the dean of the division not later than 30 days prior to Commencement during the regular session, and not later than 20 days prior to end of the summer session.

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

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

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

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

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

8. Government Requirement: The Forty-fifth Legislature, by statute, requires the study of state and federal government as a pre-

requisite to any degree granted by a state-supported college. Each candidate for a Master's Degree should consult with the Dean of the Division of Graduate Studies concerning this requirement.

9. Special departmental requirements: Each major department, in addition to the foregoing, may impose special requirements, such as a written examination, special reading assignments, or any other provisions deemed essential.

DEGREES

Master of Arts

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

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

Master of Science

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

Master of Education

The Degree of Master of Education is designed primarily for teachers and administrators, or those who expect to fill such positions. It is predicated upon the Degree of Bachelor of Science in Education or its equivalent which should include 30 semester hours in education.

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

1. Plan I, designated especially for administrators. Required: 27 hours of advanced and graduate courses and a thesis. The courses include 9 hours of graduate level courses, 3 hours in statistics, and 3 hours in technique of research. The major in education consists of 15 hours and a thesis, and the minor of 12 hours in a subject-matter department, or 6 hours in each of two such departments.
2. Plan II, designed especially for classroom teachers.
   a. Option 1, with thesis. Required: 27 hours of advanced and graduate courses and a thesis. The courses include 3 hours in the technique of research and at least 9 hours at graduate level. As few as 12 hours and as many as 24 hours may be in the Department of Education. The remainder may be in a subject-matter field, or in two subject-matter fields. In either

case the usual graduate requirements for a minor must be observed. With the consent of the Graduate Committee upon the advice of the departments concerned, the candidate may write his thesis in the subject-matter department.

b. Option 2, without thesis. Forty-two hours required, including 30 hours in advanced and graduate levels. At least 9 hours must be at the graduate level. As few as 12 hours and as many as 24 may be taken in the Department of Education. The remainder of the 30 hours may be taken in a subject-matter, or minor, department, or in two such departments. Twelve of the 42 hours may be selected from any department in the college, and may be of any level.

3. Plan III, without thesis. Required: 36 hours of advanced and graduate courses, 9 of which must be of graduate level. From 18 to 24 hours may be taken in education, the remainder of the 36 hours to be in one or two minor departments in which the candidate has the necessary prerequisites.

Master of Business Administration

Prerequisites: An approved Bachelor's Degree, with 6 hours in the principles of economics and at least 30 hours in business administration, including courses in accounting, business law, finance, marketing, and statistics.

1. Plan I, designed especially for students intending to enter the field of business. Required: 27 hours of senior and graduate courses in business administration and a thesis. The professor directing the student's program may substitute 6 hours of courses approved for graduate credit from any department in the college, provided such courses are advantageous to the objectives of the student.

   The student should confer with the professor in charge of his field of concentration and with the Dean of the Division of Business Administration before or at the time of registration in order to arrange a tentative program. His program must be approved by the Dean of the Division of Business Administration.

2. Plan II, designed primarily for students intending to enter government service. Required: 27 hours of senior and graduate courses and a thesis. The professor directing the student's program may include as much as 12 hours of courses approved for graduate credit outside the Division of Business Administration, provided such substitutions are advantageous to the objectives of the student.

   It is advisable for a student electing Plan II to confer with the Dean of the Division of Business Administration as early as the junior year and arrange his electives so as to achieve a concentration in the fields of economics and government. The combined graduate and undergraduate work should include: 6 hours of advanced accounting; 6 hours of advanced economics; 3 hours of business writing; 6 hours of business law; 3 hours of statistics; 6 hours of marketing; 3 hours of short term finance; 3 hours of investments; 3 hours of foreign trade; 6 hours of governmental administration.

   The student's graduate program must be approved by the Dean of the Division of Business Administration.

Master of Science in Home Economics

Prerequisites: An approved Bachelor's Degree in Home Economics, or its equivalent.

Requirements: 27 hours of courses approved for graduate

credit, with due regard for prerequisites, and a thesis. With the approval of the professor directing student's concentration of work and of the Dean of the Division of Home Economics, as much as 12 hours may be taken outside the Division of Home Economics, such courses confined preferably to the physical sciences, natural sciences, education, or the social sciences, and provided the courses are advantageous to the objectives of the student.

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

Professional Degrees in Engineering

The professional degrees in engineering, Chemical Engineer, Civil Engineer, Electrical Engineer, Industrial Engineer, Mechanical Engineer, Petroleum Engineer, and Textile Engineer, are open, upon application, to graduates of the Division of Engineering of Texas Technological College, and to others upon invitation from the faculty of the college. The degrees are conferred only upon recommendation of the faculty of the Division of Engineering and the Committee on Graduate Work.

Normally the requirements include distinctive professional experience and a thesis. The candidate must have made a superior undergraduate record and since graduation, he must have been an honor and an asset to his profession.

Professional experience will include five years subsequent to graduation and prior to his application for a degree. Two of the five years will have been in positions of direct responsibility and trust from an engineering standpoint. The quality of this experience will be judged by the faculty of the Division of Engineering, and Committee on Graduate Work, and such other members of the profession as may be selected. A Master's Degree in engineering may be substituted for two years of the ordinary professional experience.

The thesis project will be on an engineering subject; it will include only personal investigations or discoveries by the applicant; and it will be a distinct contribution to engineering. It will be evaluated upon the standards used in respect to the quality of the professional experience, and by the same people.

Not later than eight months prior to the time when the degree is to be conferred, the candidate will make written application to the Committee on Graduate Work. This application will include a statement of the degree desired, a resume of professional experience with pertinent documentary evidence, and a comprehensive outline of the thesis. The applicant will be admitted to candidacy upon approval by the faculty of the Division of Engineering and the Committee on Graduate Work.

Eight weeks before the degree is to be conferred a copy of the thesis will be submitted to the Dean of the Division of Grad-

uate Studies. It must be approved by the faculty of the Division of Engineering, or its selected representatives, and by the Committee on Graduate Work. Two weeks before the degree is to be conferred, three complete copies of the approved thesis will be filed with the Dean of the Division of Graduate Studies.

The candidate will be present to receive the degree except under extraordinary circumstances.

RESEARCH

The legislative act creating Texas Technological College recognized the necessity of research in all branches of academic training. The act also pointed out the responsibility of the college for the industrial development, through research, of the State but with particular reference to the resources of the western portion of the State.

In furtherance of this same belief the legislature has made annual appropriations to aid research. Additional funds have been appropriated for the particular study of cotton and it is anticipated that this study will be broadened to include other textiles, agricultural products and mineral resources.

It is the policy of the college to use such funds as may be allocated to it to further research by co-operative work with industry. Several such projects are underway and numerous others are in prospect. It is believed that by such co-operative work the greatest benefit will accrue to the State by the development of both the producer of the raw materials and the processers of these materials.

DIVISION OF EXTENSION

J. HOMER MILLIKIN, *Director*

Texas Technological College through the Division of Extension offers approximately 250 courses through correspondence study for those who cannot attend the regularly scheduled classes. Correspondence and extension class work offered by the Division of Extension has been approved by the Association of Texas Colleges. The Division of Extension is a member of the National University Extension Association.

Correspondence Department

Correspondence study courses are available in the following divisions and departments:

Agriculture: Agricultural Economics, Farm Management and Rural Sociology.

Arts and Sciences: Bible, Biology, Education and Psychology, English, Foreign Languages (French, German, Latin, and Spanish), Geology (Geography), Government, History and Anthropology, Journalism, Mathematics and Astronomy, Music and Band, Philosophy and Sociology, and Physical Education.

Business Administration: Accounting and Finance, Economics and Management, Marketing and Secretarial Administration.

The following general regulations govern correspondence courses:

One-fourth of the required work for a Bachelor's Degree may be done through correspondence study and/or extension class work. A maximum of 6 hours of the final semester's work required for a Bachelor's Degree may be completed by correspondence work provided the work does not constitute a part of the major or minor requirements toward the degree.

No credit will be given toward a degree on a correspondence course on which the student has made a grade of F in residence.

One-half of the work required for a teacher's certificate may be done through correspondence study.

The registration fee for each semester hour is $7 (a 3-semester-hour course would cost $21). All fees are payable in advance and are not refundable. A correspondence course may not be exchanged for some other course nor transferred to another person.

A resident student may begin or continue work in the Division of Extension only with the approval of his academic dean. Students of other colleges must secure the advance approval of their deans for correspondence or extension class work, or assume the risk of securing credit for the work.

Correspondence courses for credit are the equivalent in content of the corresponding residence courses.

College entrance courses are available in the following fields: Agriculture, business, English, foreign languages (Latin and Spanish), history and social sciences, journalism, mathematics, and science.

The enrollment fee for a one-half unit course is $11; for each one-unit course, $21.

Extension Department

Extension classes will be organized in convenient centers upon request of a sufficient number of students, depending upon the distance. Both graduate and undergraduate courses are available.

Credit courses organized on the college campus will be counted as residence work, and students entering these classes will be required to meet the same entrance requirements as for residence work.

Enrollment fees for extension class work are the same as for correspondence work: $7 per semester hour of credit. Laboratory fees may be required for courses requiring laboratory work. All fees are required in advance and are not refunded.

A maximum of 6 semester hours of extension credit will be allowed toward a Master's Degree. One-fourth of the work required for a Bachelor's Degree may be taken by extension class work and/or correspondence study courses.

Lecture Department

Speakers for any educational occasion (such as study club programs or commencement) will be suggested upon request. Travelling expenses and suitable honoraria are customary.

Visual Instruction Department

Educational motion picture films (16mm, silent and sound) are available for use by schools, clubs, and other organizations, at reasonable rental rates.

For Further Information or bulletins giving details of any of the services of the Division of Extension, please write to the Division of Extension, Texas Technological College, Lubbock, Texas.

MILITARY SCIENCE AND TACTICS
R. O. T. C.

All physically fit male students of the freshman and sophomore years, except veterans, are required to elect either band, physical education, or military science. Should the student elect military science (ROTC) he agrees to continue the basic course for two academic years or completion as a prerequisite to graduation unless released for reasons beyond his control. Total credit for the basic course amounts to 6 semester hours.

RESERVE OFFICERS' TRAINING CORPS

The Departments of the Army and the Air Force maintain a senior division of the ROTC at Texas Technological College, which is classified a CC (Civilian College) institution. The misson of the senior division is to produce junior officers who have the qualities and attributes essential to progressive and continued development as officers in a component of the Army and Air Forces of the United States. The Division of Military Science and Tactics at this college places special emphasis upon *leadership* to assist men in meeting life situations with success and honor. The Reserve Officers' Training Corps is not a component of the armed forces of the United States, however those students securing a deferment from the draft because of enrollment in the ROTC program must agree, in writing, subject to call, to serve not less than two years on active duty after receipt of a commission. Besides producing reserve officers, the senior division ROTC provides the principal source of procurement of junior officers for the Regular Army or Air Force. The Department of the Army maintains three units of ROTC at this college which are: Corps of Engineers, Signal Corps, and Infantry. The Department of the Air Force maintains two units, these being: Administration and Military Management, and Armament.

Senior ROTC Program

The senior ROTC program consists of two parts: basic course and advanced course, including a summer camp.

Basic course. (a) For freshmen, the course consists of formal military instruction of four hours per week for one academic year, and (b) for sophomores, the course consists of formal instruction of three hours per week for one academic year. The professor of military science and tactics may allow up to two years credit in the basic course for previous honorable active service in the armed forces. Veterans of World War II who have had 6 to 12 months active service may be given credit for one year of the basic course and a veteran who has had over 12 months of service may be given credit for the entire basic course making him eligible for consideration in the advanced course immediately, provided he

has attained full sophomore college standing, the minimum considered necessary for the advanced course.

Advanced course. The advanced course consists of formal military instruction, principally of a specialized type applicable to the arm or service concerned for six hours per week over a period of not less than two academic years of 32 weeks each and a summer camp of six weeks duration and is designed to qualify selected students for Reserve or Regular Army or Air Force Commissions in one of the several arms or services. Entrance to the advanced course is limited to those taking an academic course on the college level who have completed the basic course or received credit for prior service. Upon successful completion of the advanced course ROTC and four years of college work the graduate will be tendered a commission as second lieutenant in the Organized Reserve Corps. Exception to this allows the granting of Reserve Commissions to veterans upon successful completion of the advanced course. Those electing the advanced course are advised that completion of the summer encampment and the acceptance of a reserve commission are prerequisites to receiving any part of the academic credit allowed for the advanced course toward a college degree. Exceptions to this will be made only to those students becoming physically unqualified.

Distinguished military students are so designated by the professor of military science and tactics with the concurrence of the President of the College, from those ROTC students who have achieved scholastic excellence and who possess outstanding qualities of leadership, character and aptitude for military service. This selection is made during the second year of advanced work and is progressive in that a student so selected, and who continues to do the same quality of work until graduation, is at that time designated a *distinguished military graduate.* This makes him eligible to be considered for a Regular Army or Regular Air Force Commission.

Financial Assistance

Advanced ROTC course students are paid a monetary allowance at a daily rate equal to the value of the commuted ration, (during the fiscal year 1948-49 this was 90 cents per day) for a maximum of 570 days. It is expected that Congress will authorize the payment of an allowance for quarters. These figures are in excess of veteran benefits under Section 400 (b), Servicemen's Readjustment Act of 1944, and of any disability benefit authorized a veteran provided he passes the ROTC physical examination.

Uniforms and Equipment

All ROTC students are furnished officer type uniforms, including overcoat and shoes, without cost to the student. This uniform and other property remains the property of the United

States. Each student is required to maintain his uniform by cleaning and proper care and to return same to the ROTC supply office in the event he leaves school or becomes separated from the ROTC for other reasons.

The Federal Government provides the necessary texts and equipment to carry out the ROTC program. This equipment consists of M1 .30 caliber rifles, .45 caliber pistols, carbines, machine guns, automatic rifles, .22 caliber rifles, ammunition for small bore rifle shooting, trench mortars, 20 mm, 57mm, and 75mm guns, trucks, tractors, fire control instruments, radar, radio, telephone and telegraph equipment, and visual signal equipment, bomb sights, bomb racks, automatic pilots, and numerous other training aids such as charts, maps, training films, and movie projectors of various types.

Discipline

Texas Technological College is not a military school. Discipline in the military science division is accomplished by instilling pride in the individual student and by a system of demerits for minor offenses such as failure properly to maintain equipment and personal appearance. These demerits may be removed by constructive study or other work in the division. Unremoved demerits will lower the student's final semester grades. This system of demerits does not apply to students not enrolled in military science.

Summer Camp

Members of the advanced course are required to attend camp one summer, normally between the first and second advanced years. All students going to camp receive mileage for the round trip from school or home at the rate of 5 cents per mile and are furnished mess, housing, uniforms, and medical attention at government expense and are paid at the rate of $75 per month while at camp. Summer camp begins about June 15 each year and is of six weeks' duration.

The military training at camp will consist of practical and theoretical instruction of a specialized branch type. In addition to this training, the student has an opportunity to participate in outdoor sports of all kinds and in competition with young men from other colleges. All students attending camp should take with them athletic shorts, tennis shoes, swimming suit, and personal athletic equipment. A well-arranged religious program is conducted at each of the several camps by experienced army chaplains.

Requirements for Enrollment and Continuance

The general requirements for enrollment and continuance in the ROTC are: be a citizen of the United States, be physically

qualified as prescribed by the Department of the Army or Air Force, be accepted by the institution as a regularly enrolled student, be not less than 14 years of age and not over 23 years of age at the time of enrollment except for veterans of World War II enrolling at college prior to Jan. 1, 1950. No student will be enrolled in the advanced course after he has reached 27 years of age. He must successfully complete such general survey or screening tests as are given to determine eligibility for admittance to the basic and advanced courses, and agree in writing upon admission to the advanced ROTC course to complete the course of instruction offered unless sooner released by the Department of the Army or Air Force. Should a student fail to continue the prescribed course while enrolled at this college, he may be required to refund to the government any sums previously paid him. The contract will expire if the student's attendance at school is interrupted for more than two calendar years.

Membership in the ROTC program defers students from the draft, but not registration, as long as they remain in the ROTC program, provided they are on the deferred list prescribed by the Selective Service Act of 1948. Students receiving such a deferment from the draft must agree to serve, subject to call by the Department of the Army or Air Force, two years active duty after receipt of a commission.

Academic Credit

Credit is granted toward a degree for the completion of courses in military science as follows:

Fall Semester		Spring Semester	Total
Basic 1st yr.	2 hrs.	2 hrs.	4
Basic 2nd yr.	1 hr.	1 hr.	2
Advan. 1st yr.	3 hrs.	3 hrs.	6
Advan. 2nd yr.	3 hrs.	3 hrs.	6

Band

An ROTC band, trained by the college music department, is a regular part of the ROTC program. Those students with prior band experience will be assigned to the band and will maintain practice periods and play during the normal drill period. The ROTC band is supervised by a member of the military science division. A large number of band instruments are furnished by the government; however, students owning instruments are encouraged to use them.

Members of the ROTC band are also eligible for membership in the college band.

Rifle Team

A rifle team chosen through individual competition is selected to represent the ROTC in Hearst matches, in Army matches, and in matches with other colleges and universities throughout

the country. The firing is conducted with modern small-bore rifles on an indoor rifle range in the basement of the Military Science Building.

The Basic Course

Military instruction is of a general type applicable to the Army and Air Force as a whole and is for the purpose of providing the student with a foundation of basic military knowledge for the future officer.

Subjects	Freshman Class Hours	Sophomore Class Hours
Processing, Testing & Orientation	3	
Individual Weapons & Marksmanship	28	
National Defense Act & ROTC	4	
Military Organization	9	
Hygiene & First Aid	11	
Maps & Aerial Photographs	11	8
Leadership, Drill & Exercise of Command	48	36
Commander's Time	8	8
Holidays	6	
Evolution of Warfare		18
Physical Development Methods		6
Military Administration		8
Military Law & Boards		12
	128	96

The Advanced Course

Those who successfully complete the basic course may apply for enrollment in the advanced course. When a student applies for the advanced course, credit may be given toward completion of the basic course for training received at an educational institution having a junior ROTC unit or for former military service. Students must pass successfully the prescribed physical examination prior to enrollment in the advanced course.

The number enrolled in the advanced course varies from year to year, depending on the number authorized by the Departments of the Army and Air Force. It is to the student's advantage to make his intention known to the Division of Military Science and Tactics as early as possible in order to be included in the quota, after which he is assigned to a branch unit most closely related to his college course. Students who desire to take the advanced military science course but who are not able due to physical or other reasons to qualify for ROTC under those regulations may take the course without expense to the government, qualifying for college credit and other benefits the course affords provided they have the necessary prerequisites.

In general, students selected for the advanced course are those who have shown, in the basic course, outstanding potential qualities for "leadership and command", and whose intelligence insures their developing into efficient officer material.

The training of the advanced student is divided into two dis-

tinct phases: one, theoretical, involving study and recitations in the classroom; the other, practical, involving exercises that develop leadership which establishes a sound foundation for command duty after the receipt of a commission. Illustrations of theoretical classroom work are; military problems of the United States, psychological warfare, and military teaching methods. The supervision and training of basic course students by the advanced course student, under the direction of Regular Army or Air Force instructors, is an illustration of the means of developing leadership.

	First Year Advanced Class Hours	Second Year Advanced Class Hours
Processing, Testing & Orientation	3	1
Leadership, Drill & Exercise of Command	30	30
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Corps of Engineers

The engineer unit has as its aim the instruction and training of engineering students in the mission and functioning of the Corps of Engineers of the Army. The aim of the advanced course is to supplement the technical instruction of the Division of Engineering.

Admission to the engineer unit is limited to those applicants who are enrolled in courses leading to an Engineering, Technical or Scientific degree.

Military engineering subjects included in this course are: bridge design and classification, explosives and demolitions, military roads, military sketching, water supply, camouflage, construction and utilities, and airborne and amphibious operations.

Air Force

Tactics and technique in the advanced course is designed to qualify students for definite assignments in the United States Air Force. Subjects offered to all Air Force students during the

first year advanced course include history, organization, supply, training, and inspection systems of the air force as an introduction to that service. Subjects of a technical nature include courses in navigation, meteorology, communication, transportation, and guided missiles. At the beginning of the second year advanced Air Force program is offered a choice of courses, one being administration and military management, the other, armament. The first of these courses concerns the detailed operation of Air Force units such as personnel management, publication, service records, and functions of management. The armament course consists of a study of aircraft, guns and ammunition, aerial gunsight, cameras, explosives, and the armament officer in tactical operations.

Signal

The Signal Corps has for its aim the instruction and training of students of the engineering departments in the mission and functioning of the Signal Corps in the Army. The aim of the advanced course is to supplement the technical instruction of the engineering departments. The course provides demonstrations and practical problems involving the use of military wire and radio material.

Admission to the Signal Corps unit is limited to those applicants who are enrolled in one of the following curricula: electrical engineering, mechanical engineering, electronics, or any other curricula leading to a Bachelors Degree in which the student is majoring in physics. Typical course subjects include: message center and signal center procedure, Signal Corps photography, field wire, field radio, teletypewriter, and Signal Corps supply.

Infantry

Admission to the infantry unit is not limited to a special curriculum. Any qualified student enrolled in any academic course may make application. The infantry course is primarily concerned with the technique of fire of rifles, machine guns, and mortars, and with infantry tactics. Short courses in organization, troop movement, motors and transportation, and communication are given to enable the student more thoroughly to understand and master the study of tactics. During the first year advanced course consideration is given to direct fire and observation of fire with tactics to include an infantry battalion. During the second year advanced course indirect fire and calculation of firing problems are considered with tactics to include an infantry battalion in special problems such as landing operations, river crossings and jungle fighting. Tactics will be taught largely through student participation in solving map and sand table problems.

DESCRIPTION OF COURSES

Accounting and Finance

PROFESSOR RUSHING. PART-TIME PROFESSOR DUPREE. ASSOCIATE PROFESSORS SMITH, TAYLOR. ASSISTANT PROFESSORS EAVES, GIBSON, HOOPER, WHITTINGTON. PART-TIME INSTRUCTOR McKELVY. PART-TIME LECTURERS BASS, CARR.

ACCOUNTING

The purpose of the department is to offer training to students who wish to specialize in the field of accounting. The Department of Accounting is arranged in two general fields: business accounting and public accounting. Elective courses will be suggested by faculty advisers to equip each student according to the specific line of activity he intends to enter within the chosen major.

The courses offered lay a foundation for broadly-trained accountants. Because the curriculum in business administration requires a broad knowledge of all forms of business procedure, the prospective accountant has only a limited time for the study of his major during the undergraduate period and will need to continue his preparation for the practice of public accountancy after graduation.

FINANCE

Fundamental courses in the field of banking and finance have been arranged into a major for those students who wish to prepare themselves for the numerous opportunities existing in banks, financial organizations, and in the financial departments of business enterprises. Advisers will assist students to plan their courses to fit the individual for his particular activity.

ACCOUNTING

231. Industrial Accounting for Engineers. Cr. 3. I, II.
Intended for engineers interested in the processes and executive uses of industrial accounting. Offers a foundation in basic accounting principles, a treatment of the essentials of cost accounting theory and practice, and training in managerial aspects of accounting.

244-5. Elementary Accounting. Cr. 4. (3-3). I, II.
Introduction to principles of accounting for corporations, partnerships, and sole proprietors. The preparation of financial statements and their analysis and interpretations. Accounting for business in general and a foundation for advanced accounting study. (Three two-hour sessions each week.)

334-5. Intermediate Accounting. Cr. 3. I, II.
Prerequisite: Acct. 244-5. Advanced principles of accounting. Emphasis placed on items of balance sheet, profit and loss, and surplus statements. Study of installment sales, comparative statements and their ratios; statements of application of funds; reserves, budgets, and consolidated statements.

336. Principles of Cost Accounting. Cr. 3. I, II.
Prerequisite: 60 semester hours, including Acct. 244-5. Records and reports for the cost department. Methods of allocating overhead costs. Records and principles for handling material, labor, and indirect costs.

337. Advanced Cost Accounting. Cr. 3. II.
Prerequisite: Acct. 334 and 336. Especial attention will be given to estimate cost accounting, standard cost accounting, and the installation of systems.

338. Budgeting. Cr. 3. II.
Prerequisite: Acct. 245. Coordination of various business activities by means of the budget. Procedures in obtaining and enforcing the budget.

430. Income Tax Accounting. Cr. 3. I.
Prerequisite: Acct. 244-5 and junior classification. The Federal Revenue Acts with reference to taxation of the incomes of individuals, corporations and estates. The preparation of tax returns.

431. Advanced Income Tax Accounting. Cr. 3. II.
Prerequisite: Acct. 430. Advanced phases of income taxation. Tax court and federal court cases and decisions. Procedure in practicing before the tax court. Study and preparation of returns involving gift taxes, estate taxes, inheritance taxes, and social security taxes.

432. Governmental Accounting. Cr. 3. I.
Prerequisite: 60 semester hours, including Acct. 244-5. Application of accounting principles and systems to the requirements of governmental units, municipal, county, state, and federal. Emphasis on budgetary and fund accounts.

433. Petroleum Accounting. Cr. 3. I.
Prerequisite: Acct. 244-5. Accounting for the production, refining, and distribution of oil with emphasis upon production.

434-5. Advanced Accounting. Cr. 3. I, II.
Prerequisite: 90 semester hours including Acct. 244-5 and Acct. 334-5, or consent of instructor. Advanced work in theory and practice. Special accounting aspects of partnerships, ventures, insurance, organizations in financial difficulties, accounting for parent and subsidiaries, foreign exchange, estate accounting, and governmental accounting.

436. Accounting Systems. Cr. 3. II.
Prerequisite: 60 semester hours including Acct. 244-5. Construction of accounting reports, application of principles of system and design to the policies, organization; and operating methods of individual companies. Problems and cases.

437. Principles of Auditing. Cr. 3. I.
Prerequisite: 90 semester hours including Acct. 244-5, Acct. 334-5, and Acct. 336. Auditing procedure, classification of audits, and investigations. Methods of verification of financial statements. Problems and principles of auditing.

438. Advanced Auditing. Cr. 3. II.
Prerequisite: Acct. 437. Review of auditing standards; case studies in auditing procedure. Completion of an audit practice case.

441. Machine Accounting. Cr. 4. (3-3). I, II.
(Formerly Acct. 433 and Sect. Adm. 434). Prerequisite: Junior classification and Acct. 245. Principles of machine methods; tabulation machine cards, punches, verifiers, sorters, tabulators, and interpreters; organization of tabulating machine departments. Practice in the operation of the punch, verifier, sorter, plugboard, and tabulator.

531. C.P.A. Problems. Cr. 3. I.
Prerequisite: Graduate standing, Acct. 334-5, or consent of instructor. Solution of problems given on C.P.A. examinations; a review of accounting theory and practice.

FINANCE

231. Personal Finance. Cr. 3. I, II.
Prerequisite: 30 semester hours. Designed to introduce some of the financial problems of the home and of business. Particular emphasis is placed upon those elements that should be considered by the individual before he invests his money in real estate, personal property, insurance or securities. Also the feasibility of borrowing funds is discussed.

331. Corporation Finance. Cr. 3. I, II.
Prerequisite: 60 semester hours, including Eco. 231-2 and Acct. 244-5. The financial aspects of the modern business corporation; promotion; financial plan; sale of securities; dividend policies, expansion, merger, consolidation; failure and reorganization; public relations.

332. Short-Term Finance. Cr. 3. II.
Prerequisite: 60 semester hours, including Eco. 231-2 and Acct. 244-5. Principles of management of circulating capital; types of credit institutions; commercial banks; finance companies; acceptances; financial aspects of purchasing and selling goods; the money market; investment of short-term funds; foreign exchange.

333. Banking Principles. Cr. 3. I.
Prerequisite: 60 semester hours including Eco. 231-2 and Acct. 244-5. Practical bank operation; organizing a bank; departmental operations; loan and investment administration; small loan department, examinations; regulation; merger; liquidation; deposit insurance.

334. Credits and Collections. Cr. 3. II.
Prerequisite: 60 semester hours, including Eco. 231-2 and Acct. 244-5. Types and analyses of financial statements; credit limits; collection procedure; special problems of installment credit; legal remedies of the creditor.

336. Life Insurance. Cr. 3. I.
Prerequisite: Eco. 231-2 and Acct. 244-5. The economic, business and personal uses of life insurance; classification and analysis of policies, reserves and surrender values; policy loans; rate computation; organization and administration of life insurance companies and agencies; state supervision of the life insurance business.

337. Property and Casualty Insurance. Cr. 3. II.
Prerequisite: Eco. 231-2 and Acct. 244-5. The principles of property and casualty insurance. An analysis of premiums, reserves and policy types. A study of fidelity and surety bonds; liability, compensation and marine insurance. Organization and administration of the company, underwriter, agency and broker.

338-9. Business Law. Cr. 3. I, II.
(Formerly Business 334-5) Prerequisite: 60 semester hours including 6 hours of economics. The ordinary rules of business law. The development of our legal system. The law of persons, torts, contracts, agency, private property, sales, negotiable instruments, insurance, labor, partnerships and corporations. Stress will be placed upon Texas law where it varies from usual practice.

3310. Oil and Gas Law. Cr. 3. II.
General contracts, oil and gas leases and their interpretation, titles, royalty, proration and conservation of oil and gas, regulations governing drilling operations, Government lands, cases on oil and gas.

431. The Federal Reserve System. Cr. 3. I.
Prerequisite: Fin. 333. Organization and development of the federal reserve system; open-market transactions; rediscounts; the transit department; fiscal agency operations; examinations; the board of governors and its powers; industrial advances; federal reserve notes; member bank reserves.

432. Real Estate. Cr. 3. I.
Prerequisite: 60 semester hours. Real estate practice and finance from the standpoint of the broker, business man and property owner. Real estate office organization; leasing and property management; valuation and taxation. The legal, financial economic and social aspects of the real estate field.

434. Investments. Cr. 3. II.
Prerequisite: Fin. 331. Analysis of investment securities; sources of information; classes of investors; institutional investors; diversification; taxation, supervision of investment; portfolio.

531. Current Financial Problems. Cr. 3. I.
Prerequisite: Graduate standing. Solution and presentation of an approved problem involving individual research work in the field of finance.

601. Thesis.

In addition to all courses numbered in the 500 series, courses in this department which may be taken for graduate credit are: Finance 331, 332, 333, 334, 336, 337, 338, 339, 3310, 431, 432, 434, if properly petitioned for and provided additional work or an added problem is done in each course.

532. C.P.A. Problems, Second Course. Cr. 3. II.
Prerequisite: Graduate standing, Acct. 334-5, or consent of instructor. Solution of problems given on C.P.A. examinations; a review of accounting theory and practice. (Continuation of material in Acct. 531).

533. Current Accounting Theory. Cr. 3. II.
Prerequisite: Graduate standing, Acct. 334-5, or consent of instructor. A study of current accounting literature; accounting bulletins of the American Institute of Accountants Commitee on accounting procedure. S.E.C. accounting releases, etc.

601. Thesis.

Courses in this department which may be taken for graduate credit, in addition to Acct. 531, 532, and 533, are: Acct. 336, 337, 338, 430, 431, 432, 433, 434, 435, 436, 437, 438, and 441, if properly petitioned for, and provided additional work or an added problem is done in each course.

Agricultural Economics

PROFESSOR McBRIDE. ASSOCIATE PROFESSORS LEONARD, MARSHALL. ASSISTANT PROFESSOR BENNETT.

The objective of this department is to provide training in the solution of basic economic problems and the business aspects of production and marketing agricultural products. Courses are provided for students who wish preparation for county agent work or vocational agriculture teaching, employment with federal or private agencies dealing with problems of rural life, or for commercial and industrial vocations closely allied with agriculture.

AGRICULTURAL ECONOMICS

235. Fundamentals of Economics. Cr. 3. (3-0). I, II.
Analysis of fundamental economic principles and their application to modern economic problems.

236. Principles of Marketing Agricultural Products. Cr. 3. (3-0) I, II.
Prerequisite: 235: Analysis of the various agents performing the functions in the purchase, sale, and distribution of agricultural products.

322. Marketing Agricultural Products. Cr. 2. (2-0). I, II.
Prerequisite: 236. Problems and practices involved in the marketing of specific agicultural commodities.

323. Advanced Agricultural Economics. Cr. 2. (2-0). I.
Analysis of proportion of factors of production in agriculture.

331. Statistical Problems. Cr. 3. (2-3). I, II.
Prerequisite: Junior standing. Principles involved in the collection, presentation, and interpretation of agricultural data.

332. Advanced Agricultural Statistics. Cr. 3. (2-3). I, II.
Analysis and construction of seasonal and moving averages, trends, curvilinear relationships, sampling, estimates, variance, and the presentation of agricultural statistical reports.
333. Cooperation in Agriculture. Cr. 3. (3-0). I.
Organization and operation of agricultural cooperatives.
411-2. Agricultural Economics Seminar. Cr. 1. (1-0). I, II.
Round table discussion of current economic problems.
421. Land Economics. Cr. 2. (2-0). I.
Land as a factor of production; classification and utilization.
422. Agricultural Prices and Forecasting. Cr. 2. (2-0). II.
Prerequisite: 331. Agricultural prices and forecasting. Original research applied to an agricultural commodity of the student's choice.
425. Farm Laws. Cr. 2. (2-0). I.
Legal problems and practices affecting agriculture. Relations of employer and employee, farm owners and neighbors, farm operators and commission men, farm real estate, lenders and borrowers, and other rights and obligations.
431. Livestock Marketing. Cr. 3. (3-0). I.
Prerequisite: Junior standing in agriculture. Livestock marketing practices and problems.
433. Farm Management and Records. Cr. 3. (2-3). I.
Prerequisite: Junior standing. The organization and management of the individual farm. Field trips to nearby farms.
434. Advanced Farm Management. Cr. 3. (3-0). II.
Prerequisite: 433. Legal problems in farm organization and operation. Administration, finance, contracts, leases, liens, and insurance.
435. International Agricultural Economics. Cr. 3. (3-0). I, II.
Prerequisite: Junior standing. An economic analysis of the conditions under which the world's supplies of agricultural products are obtained; trade routes; trade barriers. Analysis of domestic relationships to world agriculture.
436. Marketing Dairy Products. Cr. 3. (3-0). II.
Economic conditions affecting the marketing and prices of dairy products. Analysis of the various agencies in the marketing channels.
511. Problems. Cr. 1. (1-0).
Prerequisite: Graduate standing. A study of agricultural outlook and similar material.
531. Problems in Land Use. Cr. 3. (3-0).
Prerequisite: Graduate standing. Advanced study in the field of land use and the factors affecting land use.
533. Marketing Problems. Cr. 3. (3-0).
Prerequisite: Graduate standing. Advanced study in the problems and practices in marketing of some selected farm product.
534-5. Research in Agricultural Economics. Cr. 3. (3-0).
Prerequisite: Graduate standing. A selected research problem in agricultural economics, farm management, or rural sociology.
601. Thesis.

RURAL SOCIOLOGY

431. Agricultural Research and Extension and Organization and Methods. Cr. 3. (1-6). I.
Methods and problems, programs for research, extension work, and vocational teaching. A survey of a selected county or region will be made and written by each student.
432. Rural Sociology. Cr. 3. (3-0). II.
A study of rural society and its institutions. Rural leadership. Methods of dealing with the problems involved.
532. Current Problems in Rural Sociology. Cr. 3. (3-0). I, II.
Prerequisite: Graduate standing. Current problems in rural sociology.

In addition to all courses numbered in the 500 series, courses in this department which may be taken for graduate credit are: Ag. Eco. 322, 323, 331, 332, 333, 411, 412, 421, 422, 425, 431, 432, 434, 435, 436; R. S. 431, 432 if properly petitioned for and provided additional work or an added problem is done in each course numbered in the 300 or 400 series, which otherwise carry no graduate credit.

Agricultural Education

PROFESSORS CHAPPELLE, LEACH. ASSOCIATE PROFESSOR HARGRAVE. LECTURERS LINER, TINNEY.

Curriculum in the Department of Agricultural Education is designed to qualify the prospective teacher of vocational agriculture to teach un-

der the Federal Vocational Education (Smith-Hughes) Act, and to supplement the student's instruction in technical and professional agriculture. The satisfactory completion of the requirements will be followed by recommendations to teach vocational agriculture in high schools.

Graduate students who desire to qualify to teach vocational agriculture under the Smith-Hughes Act should so state in submitting application for admission to the Division of Graduate Studies. A statement of courses to be completed for this certification will be furnished upon request.

321. Organization and Administration of Vocational Education in Agriculture. Cr. 2. (2-0). I, II.
Prerequisite: Junior standing in agriculture. Introduction to the teaching of the all-day, day-unit, part-time, and evening-school classes in the high school. Organization and administration of the high school chapter of Future Farmers of America.

421-2. Practice Teaching. Cr. 2. (1-3). I and II.
Prerequisite: Ag. Ed. 321; senior standing in agriculture. Supervised observation and practice teaching in high school vocational agriculture department approved by the Agricultural Education Department. Opportunity for participation in all-day, part-time, and evening classes.

423. Problems. Cr. 2. (2-0). I, II, S.
Prerequisite: Senior or graduate standing and Ag. Ed. 421-2 and Ag. Ed. 431-2. An investigation and study of problems in the field of vocational agriculture of special interest to the individual student. May be repeated for credit.

431-2. Agricultural Education. Cr. 3. (3-0). I and II.
Prerequisite: Ag. Ed. 321, Psy. 231; senior standing in agriculture. Analyzing the vocational agriculture teacher's job. The project method of teaching. The long-time program and annual teaching plan, equipment, reports, daily lesson planning, exhibits and displays.

511. Problems. Cr. 1. (1-0). S.
Prerequisite: Completion of requirements to teach vocational agriculture under the Smith-Hughes Act. Current problems of the teacher in the field of vocational agriculture. May be repeated for credit.

522. Advanced Methods, I. Cr. 2. (2-0). I, S.
Prerequisite: Graduate standing. Advanced methods of teaching vocational agriculture in all-day classes in the high school.

523. Advanced Methods, II. Cr. 2. (2-0). II, S.
Prerequisite: Graduate standing. Advanced methods of teaching vocational agriculture in part-time and evening schools.

524. Advanced Methods, III. Cr. 2. (2-0). II, S.
Prerequisite: Graduate standing. Advanced methods of teaching Future Farmer work.

531. Investigations in the Field of Agricultural Education. Cr. 3. (3-0). I, S.
Prerequisite: Graduate standing and consent of the head of the department. Investigation of a problem in the field of vocational agriculture of special interest to the student; presentation of a paper. May be repeated for credit.

537. Advanced Methods, IV. Cr. 3. (3-0). S.
Prerequisite: Graduate standing and consent of the head of the department. Advanced methods in teaching farm shop to all-day, part-time, and evening classes.

601. Thesis.

Agricultural Engineering

(See Plant Industry)

Agronomy

(See Plant Industry)

Animal Husbandry

PROFESSORS STANGEL, HARBAUGH, MOWERY, ASSOCIATE PROFESSORS FINE*, MATHEWS. ASSISTANT PROFESSORS BAUMGARDNER, BURKHART, TURNER. INSTRUCTOR ANDERSON. PART-TIME INSTRUCTOR MILLER*, LECTURER NEELEY.

The Department of Animal Husbandry, in which students may major as candidates for the Degree of Bachelor of Science in Agriculture, pro-

*On leave 1948-49.

vides instruction in the selection, breeding, feeding, management and marketing of livestock and poultry. Primarily for class instruction, representative breeds of livestock and poultry, along with the necessary building, equipment, and pastures are maintained.

Graduates of the animal husbandry curriculum and its various options, which allow liberal elective credits, find many employment opportunities in addition to livestock farming and ranching for which the curriculum is primarily designed.

All courses numbered in the 500 series are for graduate credit. In addition all 300 or 400 series courses if properly petitioned for, and provided additional work or an added problem is done, may receive graduate credit.

ANIMAL HUSBANDRY

131. General Animal Husbandry. Cr. 3. (2-3). I, II.
An introductory course designed to acquaint the student with the importance of livestock in Texas and United States. Types, market classes and grades of cattle, hogs, horses, sheep and goats, livestock markets. Slaughtering and slaughter by-products. Selection of feeder and market animals.

231. Breeds of Livestock. Cr. 3. (2-2). I, II.
Prerequisite: A.H. 131. Development of the breeds of beef cattle, dairy cattle, dual-purpose cattle, hogs, horses, sheep, and goats. Special emphasis upon the work of recent prominent breeders and the merits of individual animals.

312-3. Advanced Livestock Judging. Cr. 1. (0-3). I, II.
Prerequisite: A.H. 231. Contrasting study and comparative showyard judging and grading of cattle, horses, mules, sheep and swine. Selection of breeding and market animals. Inspection trips to farm herds, flocks and livestock shows.

322. Farm Meats. Cr. 2. (1-3). I, II.
Prerequisite: A.H. 131, 60 semester hours in agricultural curricula. Form, quality, and condition as affecting dressing percentage and quality of carcass. Slaughtering, dressing, cutting and curing. Uses and market demands. Class limited to 16. Special health certificate required of student.

323. Advanced Dairy Cattle Judging. Cr. 2. (1-3). II.
Prerequisite: A.H. 231 and 60 semester hours in agricultural curricula. Major dairy cattle breed characteristics. Showyard classifications. Comparative judging. Field trips to farm herds and dairy cattle shows.

324. Dairy Breeds, Pedigrees and Records, Cr. 2. (2-0). I.
Prerequisite: A.H. 231 and 60 semester hours in agricultural curricula. History, development, foremost breeding establishments, breeders, and individuals. Pedigree compilation and study. Form of production testing.

331. Principles of Feeding. Cr. 3. (2-3). I, II.
Prerequisite: Chem. 341. Chemical composition of plants and animals. Digestibility, energy, and manurial value of feeds. Feeding standards and calculation of rations for maintenance, growth, fattening, milk and wool production.

334. Wool and Mohair. Cr. 3. (2-3). II.
Wool and mohair production and preparation for market. A study of physical and chemical characteristics; sampling, grading, sorting and scouring.

411. Animal Husbandry Seminar. Cr. 1. (1-0). II.
Prerequisite: Senior standing in Department of Animal Husbandry. Assigned subjects. Review of recent investigations. Reports and discussions.

4111. Dairy Husbandry Seminar. Cr. 1. (1-0). II.
Prerequisite: A.H. 428 and 90 semester hours in agricultural curricula. Assigned subjects. Review of recent investigations. Reports and discussions.

412. Dairy Cattle Breeding. Cr. 1. (0-3). II.
Prerequisite: Dairy Husbandry Option and enrollment in A. H. 429. Study of artificial insemination of dairy cattle. Collecting, preparing and shipping of semen.

421. Purebred Herds and Flocks. Cr. 2. (0-6). I.
Prerequisite: A.H. 312-13. Fitting, exhibiting, and judging livestock for show and sale.

422. Animal Breeding. Cr. 2. (2-0). I.
Prerequisite: P.I. 341. Genetics applied to the improvement of farm animals. Fertility and sterility. Systems of breeding.

423. Animal Nutrition. Cr. 2. 2-0). II.
Prerequisite: A.H. 331. Principles of nutrition and their application in the feeding practice. The role of protein, carbohydrates, fat, minerals, and vitamins in the metabolism of farm animals.

424. Beef Cattle Production. Cr. 2. (2-0). II.
Prerequisite: A.H. 331. The beef cattle industry. Breeding, feeding, and marketing. Purebred herd and range management. Cattle ranching. Fitting for show and showing. Disease control. Laboratory practice with farm animals and equipment is done as assigned problems.

425. Horse and Mule Production. Cr. 2. (2-0). I.
Prerequisite: A.H. 331. Review of the horse and mule industry. Breeding, feeding, breaking, training, stabling, harness and harnessing, and shoeing. Fitting for sale and show. Caring for brood mare and foal, stallion and jack. Parasites and diseases. Laboratory practice with farm animals and equipment is done as assigned problems.

426. Sheep and Wool Production. Cr. 2. (2-0). II.
Prerequisite: A.H. 331. The sheep industry. Adaptation of breeds. Breeding, feeding, shearing, and marketing. Farm flock and range management. Fitting for show and showing. Parasites and diseases. Laboratory practice with farm animals and equipment is done as assigned problems.

427. Swine Production. Cr. 2. (2-0). I.
Prerequisite: A.H. 331. The swine industry. Breeding, feeding, housing, marketing. Fitting for show and showing. Parasites, diseases, and sanitation. Laboratory practice with farm animals and equipment is done as assigned problems.

428. Dairy Cattle Production. Cr. 2 (2-0). I.
Prerequisite: A.H. 331. The dairy industry. Feeding for growth, maintenance, and milk production. Handling and marketing milk and animals. Dairy barn construction and sanitation. Advanced registry and herd records.

429. Advanced Dairy Cattle Production. Cr. 2. (2-0). II.
Prerequisite: A. H. 422 and 428. Advanced studies in dairy cattle breeding, nutrition, and management.

438. Range Management. Cr. 3. (3-0). II.
Prerequisite: Agron. 437. The relationship of livestock to range management; history, development, and types of ranges; types and breeds of range livestock; the interrelationship between management of the soil and plant growth, and the management of the animals and their requirements.

441. Livestock Production. Cr. 4. (3-3). II.
Prerequisite: A.H. 331. A modified course composed of portions of A. H. 424, 425, 426, 427, and 428. Problems. Feeds; feeding and managing of beef and dairy cattle, hogs, horses, mules and sheep. For students not following an animal husbandry major.

531-2. Advanced Animal Husbandry. Cr. 3. I, II.
Prerequisite: Graduate standing and the consent of the head of the department. Investigations in the field of animal production and nutrition.

533-4. Animal Husbandry Research. Cr. 3. I,II.
Prerequisite: Graduate standing and consent of the head of the department. Special research in some phase of livestock production which may form the basis of a master's thesis.

601. Thesis.

Poultry Husbandry

231. Farm Poultry. Cr. 3. (2-3). (Formerly P.H. 131). II.
The poultry industry. Classes, breeds and varieties. Judging, culling, breeding, feeding, housing, and marketing. Disease control and sanitation.

324. Advanced Poultry Judging. Cr. 2. (1-3). II.
Prerequisite: P.H. 231. History and characteristics of the standard breeds and varieties of poultry. Scouring and judging of exhibition and utility fowls. Inspection trips to farm flocks and poultry shows.

331. Incubation and Brooding. Cr. 3. (1-6). II.
Prerequisite: P.H. 231. Factors influencing fertility and hatchability of eggs; practical chick embryology; organization and management of commercial hatcheries; brooding requirements of baby chicks; cost of production and methods of marketing.

421. Poultry Production. Cr. 2. (1-3). I.
Prerequisite: A.H. 331. The poultry industry. Brooding, breeding, hatching, housing, feeding and marketing. Disease control and sanitation. Studies of costs of production. Required field trip to visit nearby poultry enterprises.

422. Turkey Production. Cr. 2. (1-3). II.
Prerequisite A.H. 331. The turkey industry. Breeds, breeding, incubation, rearing, housing, feeding, and marketing. Disease control and sanitation. Required field trip to visit nearby turkey farms.

423. Market Eggs. Cr. 2. (1-2). I.
Prerequisite: P.H. 231. Methods of handling market eggs: candling, grading, packing, storing and marketing eggs. This course will aid in qualifying students as government egg graders.

Veterinary Science

331. Anatomy and Physiology. Cr. 3. (3-0). I.
Prerequisite: A.H. 131. The skeletal, muscular, digestive, circulatory, respiratory, and reproductive organs of farm animals. The physiology of the blood lymph, circulatory and respiratory systems; ductless glands, digestion, and organs of elimination.

332. Livestock Diseases and Parasites. Cr. 3. (3-0). II.
Prerequisite: Vet. 331. The common infectious and non-infectious diseases. Common external and internal parasites. Application to personal and professional problems in everyday life. Study, observation, practice with color, texture, line, form neutral value. Prevention, treatment, and sanitation.

333. General Veterinary Science. Cr. 3. (3-0). II.
Prerequisite: 60 semester hours in agricultural curricula. A brief consideration of anatomy and physiology. Livestock sanitation, disease, and parasites. Cannot be counted in fulfilling major requirements in animal husbandry.

Anthropology

(See History and Anthropology)

Applied Arts

PROFESSOR POINDEXTER. ASSISTANT PROFESSORS BEITLER, LOCKARD. INSTRUCTOR ROGERS.

In the Department of Applied Arts, work is offered leading to the Degree of Bachelor of Science in Home Economics with a major in applied arts. The curriculum offers optional courses during the junior and senior years which will prepare the student for special phases of work in the field of applied arts, i.e., homemaking, teaching, appointment to camp, recreational and commercial positions. These options are listed with the curriculum in this catalog. Students should consult the Head of the Department before registering for advanced courses and electives.

In addition to the curriculum for majors in applied arts a minor consisting of 18 hours in the Department of Applied Arts may be taken by any student in the college. The courses to be taken as a minor must be chosen in conference with the Head of the Department.

Courses which may be taken for graduate credit are A. A. 431, 434, 435, 436, 437, if properly petitioned for and provided additional work is done in each case.

The Department of Applied Arts aims to develop judgment and creative ability in the choice and combination of objectives in daily use; to promote understanding and appreciation of aesthetic values, and to afford opportunities for the acquisition of knowledge and skills that may lead to new activities and experiences.

131. Design. Cr. 3. (2-3). I, II.
Study and application of the elements and principles of design.

133. Design. Cr. 3. (1-6). I, II.
Aims to strengthen knowledge of elements and principles of design and to develop some skill in the use of pencil, charcoal, pen and ink, watercolor.

231. Costume Design. Cr. 3. (2-3). I, II.
Prerequisite: A. Arts 131. Elements and principles of design applied to selection of costumes; analysis of personality and figure differences and the choice of specifically becoming line, color, texture, value. Planned to help the individual student with such problems as the selection and wearing of clothes for becomingness, appropriateness, service and economy.

232. Crafts Design. Cr. 3. (1-6). I, II.
Prerequisite: A. Arts 131 or the equivalent. Practice in bookbinding, leather work, and wood carving. Attention given to adapting these crafts to use in homes, public schools, and recreational departments.

233. Textile Design. Cr. 3. (1-6). (formerly 132). I, II.
Prerequisite: A. Arts 131, or previous training satisfactory to the instructor. Application of student's designs to textiles by the following methods: batik, tie-dye, block print, stencil, silk screen printing.

234. Minor Crafts. Cr. 3. (1-6). (formerly 432). II.
Prerequisite: A. Arts 131. An introduction to cord knotting, basketry, puppetry, beading, and other so-called minor crafts. Emphasis on good design and practical use of native materials.

331. Interior Design. Cr. 3. (2-3). I, II.
Prerequisite: A. Arts 131 and junior standing. House plans with emphasis on utility, convenience, and beauty; application of design principles to selection and arrangement of wall coverings, rugs, furniture, curtains, pictures, and accessories.

336. Advanced Costume Design. Cr. 3. (2-3). II.
Prerequisite: A. Arts 131 or the equivalent and A. Arts 231. Greater emphasis placed on developing technical ability and further practice in creative problems.

337. Art Appreciation. Cr. 3. II.
Prerequisite: Not open to freshmen. Aims to establish correct attitudes and set up standards for evaluating objects with reference to beauty, cost, and use.

412. Homes in the United States. Cr. 1. II.
Prerequisite: Junior standing. Study of homes in the United States in relation to exterior and interior design.

431. Wood. Cr. 3. (1-6). I.
Prerequisite: A. Arts 131, 232, or 233 or the equivalent and junior standing. A study of different woods and their suitability for various projects. Fundamentals of wood carving, construction and finishes. Use and care of wood carving tools.

434. Metal and Plastic. Cr. 3. (1-6). (formerly 332). II.
Prerequisite: A. Arts 131, 232, or 233 or the equivalent. Creative problems executed in metal and plastic. Structural processes: raising, bending, riveting, soldering. Decorative processes: etching, saw-piercing, engraving, inlay.

435. Jewelry and Lapidary. Cr. 3. (1-6). (formerly 333). II.
Prerequisite: A. Arts 131, 232, or 233 or the equivalent. Creative problems. Rings, pins, bracelets, earrings, necklaces executed in brass, copper, silver, and gold. Local stones cut and polished.

436. Home Planning. Cr. 3. (1-6). II.
Prerequisite: 9 semester hours including A.A. 331. Junior standing. Study of the philosophy and practice in planning homes. Relation of the plans to the manner of living, locality and building materials.

437. Special Problems. Cr. 3. (1-6) I, II, S.
Prerequisite: 12 semester hours in applied arts or the equivalent; 3 hours must have been taken in the medium chosen for the special problem: textile design, leather, metal, wood, interior design or home planning.

Architecture

PROFESSORS KLEINSCHMIDT, BRADSHAW, ASSOCIATE PROFESSOR LOCKARD. ASSISTANT PROFESSOR HOUGHTON. INSTRUCTORS DEWEESE, JOHNSTON, PARKINSON, SASSER.

The Department of Architecture is a member of the Association of the Collegiate Schools of Architecture. It is affiliated with the Beaux-Arts Institute of Design, the American Federation of Arts, the College Art Association, and it holds valuable teaching aids provided by the Carnegie Foundation.

Curricula open to both men and women lead to:

(1) Bachelor of Architecture, a five-year curriculum for the Design Option or a five-year curriculum for the Construction Option.
(2) Bachelor of Commercial Art, a five-year curriculum.
(3) Bachelor of Arts may be conferred at the completion of the first four years of the commercial art curriculum.

The courses in commercial art are arranged for those who plan to enter professional art or into any one of its many allied fields. The emphasis is placed on a thorough knowledge of theory and aesthetics, and the student is given practical work with the tools and techniques.

The degree in architecture may be obtained with a Design Option or with a Construction Option. During the first year the work in these options is identical—this plan gives the student ample opportunity to appraise the two avenues of development. The curricula are designed for those who intend to become architects, yet either option offered will furnish excellent preparation for entrance into any one of the many branches of the building industry. Standards upheld by various state registration boards are met, and the degree is the logical step toward a license to practice architecture.

In design, the emphasis is placed on general requirements which are fundamental to a comprehensive understanding of the many aspects of the profession. The role of an architect as a coordinator is promoted. Basic work in the scientific fields is required and at the same time there is more drawing and design with the aesthetic approach stressed.

In construction, considerable attention is given to artistic ideals but mainly the factors of safety and economy in building are made significant. This curriculum includes more advanced mathematics and requires some specialization in structural engineering.

Insofar as possible the design work in the department is taught by the program-competition-method in which the students compete with one another in the solving of a wide variety of theoretical and practical

problems. Individual development is encouraged by advice and criticism on a faculty-to-student personal conference level. Lecture and laboratory courses are supplemented with material from a substantial collection of departmental books, periodicals, projection slides and printed plates.

Architectural majors are urged to spend their summer months in an office of a registered architect. A student may be excused from the laboratory period in Arch. 334, or in Arch. 435 upon presentation of satisfactory evidence of one summer's work (three months).

Courses which may be used for graduate credit in this department are 324, 333-4, 420, 423-4, 426-7, 433-4, 436, 439-10, 4311-12, if properly petitioned for and provided additional work or an added problem is done in each course numbered in the 300 or 400 series, which otherwise carry no credit.

121-2. Freehand Drawing, I, II. Cr. 2. (0-6). Each, I and II.
Medium—charcoal. Instruction by personal criticism. Basic work for entering students. From the more elementary work in line drawing, the problems advance into full light and shade. Studies from fragments of antique architectural ornament.

123-4. Elements of Composition, I. Cr. 2. (0-6). I and II.
Occasional lectures. Theory of space design; underlying principles of line and area composition. Problems under individual criticism.

125. Shades and Shadows. Cr. 2. (0-6). I, II.
Exercises in conventional shades and shadows of common geometrical solids, solids of revolution, and simple architectural members.

126. Perspective. Cr. 2. (0-6). I, II.
Prerequisite: Engr. Dwg. 134 or Arch 131. Theory of perspective as applied to common geometrical solids and to problems from architectural practice.

131-2. Elements of Architecture. Cr. 3. (0-9). I and II.
Architectural drawing, lettering, and wash rendering in India ink and monotone; elements of architectural design, walls, doors, windows, colonnades, arcades, mouldings, and vaults.

133. Commercial Lettering. Cr. 3. (0-9). I, II.
Basic for the study of various styles of pen and brush lettering. The use of different alphabets and letter forms in poster and card design. Occasional conjunctive problems with Arch. 124.

221. History of Ancient Architecture. Cr. 2. I.
Technical history of architecture from dawn of civilization to the end of the Byzantine period. Illustrated lectures. Library research.

222. History of Medieval Architecture. Cr. 2. II.
Prerequisite: Arch. 221. Technical history of architecture of the Romanesque and Gothic periods. Illustrated lectures. Library research.

224. Freehand Drawing III. Cr. 2. (0-6). I, II.
Prerequisite: Arch. 121-2. Pencil, pen and ink rendering and sketching of architectural ornaments and fragments, and from life and nature.

225. Freehand Drawing IV. Cr. 2. (0-6). I, II.
Prerequisite: Arch. 224. Beginning course in water color painting from life and from nature.

231-2. Architectural Design, Grade I. Cr. 3. (0-9). I, II.
Prerequisite: Arch. 131-2. Long and short problems under individual criticism dealing in general with the elements of plan and elevation. Sketch problems dealing with composition.

235-6. Elements of Composition, II. Cr. 3. (1-6). I, II.
Prerequisite: Arch. 123-4. A continuation of Arch. 123-4 with more detailed problems in composition.

239-10. Pottery. Cr. 3. (1-6). I, II.
Prerequisite: Arch. 123-4 or equivalent. The technique of making pottery by hand by throwing or by slip; firing and glazing of pottery of different forms and shapes.

320. History of Ornament and Furniture. Cr. 2. I.
Prerequisite: Arch. 323. The study of the development of ornament and furniture from prehistoric through modern times. Illustration by means of lectures and slides, photographs. Library research.

321. History of Early Civilization and Arts. Cr. 2. I.
Prerequisite: Arch. 222. Illustrated lectures dealing with the origins of art and architecture in early civilizations. Three hours a week of library research in anthropology and achaeology as related to the origins of art and architecture.

322. History of Renaissance Architecture. Cr. 2. I.
Prerequisite: Arch. 222. Technical history of architecture of the Italian, French, Spanish, English, and German Renaissance. Illustrated lectures. Library research.

323. History of American and Modern Architecture. Cr. 2. II.
Prerequisite: Arch. 322. History of American Architecture from colonial times to present day. Modern movements in architecture in Europe. Illustrated lectures. Library research.

324. History of Sculpture. Cr. 2. II.
Prerequisite: Arch. 321. Illustrated lectures on the development of sculpture from the Egyptian to the present day. Three hours of library research a week.

326. Constructive Anatomy. Cr. 2. (0-6). I, II.
Prerequisite: Arch. 225. Medium—charcoal and pencil. A thorough preparatory course to life drawing in the fundamentals of the proportion of the human figure.

327. Life Drawing I. Cr. 2. (0-6). I, II.
Prerequisite: Arch. 326. Drawing from the living model in various media. Instruction by personal criticism. Admission to courses in life drawing limited to those students who have satisfactorily completed the preceding courses in freehand drawing or their equivalent.

328-9. Poster Design and Lettering for Public School Teachers. Cr. 2. (0-6). S.
Prerequisite: Junior standing. A course for those who wish to teach integrated art in public schools.

3210-11. Commercial Illustration I. Cr. 2. (0-6). I, II.
Prerequisite: Arch. 235-6. Illustration as applied to advertising and commercial fields. Drawing and painting in various media for designated processes of reproduction. Analysis of advertising value of drawings and force of designs on subject matter. Problems in design of booklets, posters, illustrations.

3216-17. Clay Modeling. Cr. 2. (0-6). I, II.
Prerequisite: Arch. 224. The making of clay models, firing and glazing pottery, plaster casts of simple decorative fragments, and anatomical forms; construction of relief maps.

331-2. Commercial Design I. Cr. 3. (0-9). I, II.
Prerequisite: Arch. 131-2 and 235-6. Specialized industrial design in a variety of materials; textiles, fixtures, furniture, and utensils; full-sized detail and color rendering.

333-4. Building Construction. Cr. 3. (1-6). I, II.
Prerequisite: Arch. 232. Preparation of working drawings and specifications for surburban houses; drawing complete details for buildings, heating, plumbing and structural problems.

335-6. History of Art. Cr. 3. S.
Prerequisite: Junior standing. A general survey of the history of architecture. sculpture, painting, and the minor arts. Course consists of lectures illustrated by means of slides, photographs and facsimile reproductions from the Carnegie Collection and collateral reading. Library research. Open to all students except those majoring in commercial art and architecture, design option.

337-8. Public School Art. Cr. 3. (1-6). S.
Prerequisite: Arch. 123-4; or Applied Arts 131-2; or junior standing. A course in drawing, composition, and color for those who teach art in public schools, made to apply directly to classroom teaching.

351-2. Architectural Design, Grade II. Cr. 5. (0-15). I, II.
Prerequisite: Arch. 231-2. Long and short problems, under individual criticism, dealing with simple architectural composition. Sketch problems dealing with large architectural composition or decorative detail.

420. Professional Practice. Cr. 2. I.
Prerequisite: Junior standing. Office organization, ethics, professional relations.

422. Building Materials and Construction. Cr. 2. I.
Prerequisite: Arch. 333-4. Introduction to the properties and uses of materials of construction. Occasional visits to buildings under construction.

423-4. Life Drawing II, III. Cr. 2. (0-6). I, II.
Prerequisite: Arch. 327. Continuation of Arch. 327.

426-7. Oil Painting or Advanced Water Color. Cr. 2. (0-6). I, II.
Prerequisite: Arch 225. Principles of design related to various types of composition, in conjunction with direct study from the human model, still life, or landscape. Problems in oil or water color may take the form of book illustration, painting or mural decoration.

428-9. History of Painting. Cr. 2. I, II.
Prerequisite: Arch. 324. Illustrated lectures in the development of painting from the Egyptian period to the present modern day developments. Three hours of library research a week.

4210-11. Decorative Figure Drawing. Cr. 2. (0-6). I, II.
Prerequisite: Arch. 424. The drawing and painting of the draped or costumed figure against backgrounds with accessories planned to emphasize beauty and interest in color.

4212-13. Commercial Illustration, II. Cr. 2. (0-6). I, II.
Prerequisite: Arch. 3210-11. A continuation of Arch. 3210-11 with problems in presentation and studio practice; specializaton in illustration with completion of full scale work.

433-4. Commercial Design, II. Cr. 3. (0-9). I, II.
Prerequisite: Arch. 331-2. A continuation of Arch. 331-2 with the execution and supervision of the finished product.

435. Advanced Architectural Construction. Cr. 3. (1-6). I, II.
Prerequisite: Arch. 333-4. A continuation of Arch. 333-4 but as applied to office-building type construction with estimating and specification writing.

436. City Planning. Cr. 3. (1-6). II.
Prerequisite: Arch. 435 and registration in Arch. 352. The theory and problems of city development, community planning, housing, and their drawn and rendered solutions under individual criticism.

437-8. Principles of Drawing and Painting, and Theory of Design. Cr. 3. (1-6). I, II.
Prerequisite: Arch. 225. Aims to give an understanding and apreciation of the fundamental principles governing good drawing and painting throughout the ages. Lectures with laboratory work. Actual drawing and use of color.

439-10. Methods of Teaching Art Integrated for the Elementary School and the High School. Cr. 3. (1-6). S.
Prerequisite: Arch. 335-6, 337-8, Applied Arts 334, or senior standing. Problems on the methods of presenting the study of art to students of elementary and high school levels.

4311-12. Ceramics. Cr. 3. (1-6). I, II.
Prerequisite: Arch. 239-10 or 3216-17. The development of technique of individual glaze formulas and processes of pottery, terra cotta, and various commercial building products.

461-2. Architectural Design, Grade III. Cr. 6. (0-18). I, II.
Prerequisite: Arch. 351-2. Long, short and sketch problems under personal criticism with the more complex kinds of architectural compositions.

483-4. Architectural Design, Grade IV. Cr. 8. (0-24). I, II.
Prerequisite: Arch. 461-2. Long, short, and sketch problems under personal criticism with the more complex kinds of architectural compositions, particularly with subjects involving special character and a decorative and imaginative interest. Second semester devoted to thesis.

411-2. Engineering Seminar. Cr. 1.
Credit for this course may be given as often as successfully repeated. The investigation and study of engineering problems of special interest and value to the students taking the course. Work is in the nature of research. May be taken only with permission of head of the department.

Astronomy

(See **Mathematics**)

Bacteriology

(See **Biology**)

Band

(See **Music and Band**)

Biology

PROFESSORS CROSS, STRANDTMANN, STUDHALTER. ASSOCIATE PROFESSORS LANDWER, SEALEY. ASSISTANT PROFESSORS GUNN, COOK, DUDGEON, CAMP. INSTRUCTORS HOLMAN, WIDMOYER.

Students majoring in botany may minor in zoology, and vice versa, both in undergraduate and in graduate work. Students majoring in botany for the B. A. Degree are expected to complete the following courses in the Biology Department as a minimum: Biology 133-4, Botany 231, 232, 331, 339, 411; 3 semester hours of zoology above the freshman year; and 12 additional hours of courses of junior or senior rank in bacteriology, biology, or botany. Students majoring in zoology for the B. A. Degree are expected to complete the following courses in the Biology Department as a minimum: Biology 133-4, Zoology 234, 241; any two of the following three—Zoology 331, 332, 333; Zoology 411; 3 semester hours of botany above the freshman years; and 12 additional hours of courses of junior or senior rank in bacteriology, biology or zoology.

Students looking forward to a Master's Degree should add enough courses, as electives, in their proposed major and minor subjects to meet the entrance requirements of the Division of Graduate Studies.

At least one course in the field is very strongly recommended for all graduate students majoring in botany or zoology. This work may be

taken from this institution or at one of the mountain, seashore, or other biological field stations.

For detailed information for requirements for the B. S. Degree see Division of Arts and Sciences section of this catalog.

BACTERIOLOGY

131. Bacteriology for Nurses. Cr. 3. (2-3). I, II.
Open only to nurses in training. Bacteria and fungi; and their relation to human diseases, immunity, sanitation, and foods.

231. Bacteriology. Cr. 3. (2-3). I, II.
Open only to students of the Divisions of Agriculture and Home Economics during their sophomore or junior year. Prerequisite: 6 semester hours in the Biology Department. The morphology, physiology, and activities of bacteria and molds, with emphasis on those of soils and of food and dairy products.

321. Bacteriology for Engineers. Cr. 2. (1-3). I.
Prerequisite: Junior classification in the Division of Engineering. A brief introduction to the structure and functions of the various types of bacteria, with emphasis on their relation to water sanitation and sewage disposal.

331-2. Principles of Bacteriology. Cr. 3. (2-3). I, II.
Prerequisite: 12 semester hours in the Department of Biology, Chemistry, Geology, or Physics; prerequisite or parallel: 6 semester hours in chemistry. The morphology, physiology, and classification of bacteria and molds. Bacteria in relation to soils, food and water sanitation, disease, and the problems of immunity.

333. Communicable Disease. Cr. 3. (3-0). I or II.
Prerequisite: 3 semester hours in bacteriology; junior standing. History, prevalence, etiology, sources and modes of infection, laboratory diagnosis, and methods of control of the principal human diseases.

334. Bacteriology of Foods and Food Sanitation. Cr. 3. (2-3).
Prerequisite: 3 semester hours in bacteriology; junior standing. Bacteria and molds in their relations to food spoilage and food sanitation. Offered at intervals.

BIOLOGY

133-4. Botany and Zoology. Cr. 3. (2-3). I, II.
Both botany and zoology are offered each semester; either may be taken first but both must be completed before credit is received toward a degree. Biology 133, botany, emphasizes the flowering plants, bacteria, and fungi. In Biology 134, zoology, emphasis is placed on the vertebrates, protozoa, insects, and certain parasitic forms. In both, general principles and concepts are stressed.

331. Heredity. Cr. 3. (3-0). I.
Prerequisite: 12 semester hours in the Biology Department. Principles of heredity with special reference to practical application in human affairs, hereditary mechanisms, and problems.

332. Teaching of Biology. Cr. 3. (3-0).
Prerequisite: 12 semester hours in the Biology Department; or 6 semester hours in the Biology Department and 6 semester hours in chemistry, geology, geography, or physics; and 6 semester hours in education. Lectures, assigned readings, reports, and laboratory and field problems. May be counted as biology or education. Offered at intervals.

333. Bio-ecology. Cr. 3. (2-3). I.
Prerequisite: 12 semester hours in the Biology Department, or junior standing in the Division of Agriculture. Introduction to the relationship of organisms to their environment. Field trips to nearby points are included at a minimum cost to the student.

334. Bio-ecology. Cr. 3. (2-3). II.
Prerequisite: Biology 333. The biotic community, population studies, and succession. Field trips to nearby points are included at a minimum of cost to the student.

431. Advanced Heredity. Cr. 3. (2-3).
Prerequsite: Biology 331. The nature of the gene, chromosome mechanics, and population genetics. Offered at intervals.

432-3. Advanced Bio-ecology. Cr. 3. (1-6). I, II.
Prerequisite: Biology 333, 334. Critical studies of biotic relationships. Involves the execution by the student of original field problems under direction, and papers written from data obtained. Field trips to nearby points are included at a minimum of cost to the student. Offered at intervals.

533. Plankton. Cr. 3. (1-6).
Prerequisite: Graduate standing in botany or zoology, including Botany 231 and Zoology 234. The collection, preservation, and identification of plankton. Quantitative studies and methods; cyclic variations; economic implications; food chains and food cycles. Offered at intervals.

BOTANY

231. Morphology of the Plant Groups. Cr. 3. (2-3). I.
Prerequisite: Biology 133-4. The morphology of those plant groups not emphasized in Biology 133.

232. Taxonomy. Cr. 3. (2-3). II.
Prerequisite: Biology 133-4. Principles and practice in the classification of the flowering plants.

331. Plant Physiology. Cr. 3. (2-3). II.
Prerequisite: Botany 231-2; or Biology 133-4 and 6 semester hours in horticulture or agronomy; prerequisite or parallel: Chemistry 131. The physiological processes as applied to the seed plants.

339. Plant Anatomy. Cr. 3. (2-3). I.
Prerequisite: Botany 231-2; or Biology 133-4 and 6 semester hours in horticulture or agronomy. Studies of anatomy of the vascular plants.

411. Botany Seminar. Cr. 1. (1-0). I, II.
Prerequisite: Senior or graduate standing in botany or zoology. Critical reveiws of classical and recent literature and reports of original investigations. May be repeated for full credit.

431. Botanical Microtechnique. Cr. 3. (1-6). I.
Prerequisite: Botany 339; or 3 semester hours of botany of sophomore rank and 9 semester hours in horticulture or agronomy. Freehand and microtome sections, staining, and the preparation of permanent slides.

433. Advanced Morphology. Cr. 3. (1-6).
Prerequisite: Botany 231, 331, 339. Morphology of one of the following groups: algae, bryophytes, pteridophytes, gymnosperms, angiosperms. May be repeated with full credit in one of the other groups named. Offered at intervals.

435. Advanced Taxonomy. Cr. 3. (1-6).
Prerequisite: Botany 232, 331, 339; or Botany 232 and 9 semester hours in horticulture or agronomy. A critical study of classification and nomenclature as applied to vascular plants. Offered at intervals.

436-7. Plant Geography. Cr. 3. (3-0). I, II.
Prerequisite: 6 semester hours in botany of junior rank; or Biology 133-4 and 12 semester hours in zoology, geology, geography, horticulture, or agronomy. Geographic distribution of plants, types of vegetation, origin and composition of the floras of North America, some applied problems of plant geography. Field trips to nearby sections of the country are included as feasible at a minimum of cost to the student.

438. Morphology of Fungi. Cr. 3. (2-3).
Prerequisite: Botany 331, 339; or Botany 232 and 9 semester hours in horticulture or agronomy. Morphology and taxonomy of the fungi as a basis for plant pathology. Offered at intervals.

531. Problems in Botany. Cr. 3. (1-6).
Prerequisite: Graduate standing in botany. Selected problems in morphology, anatomy, ecology, taxonomy, or possibly others. May be repeated for full credit in another field or with new materials in the same field. Offered at intervals.

534. Advanced Plant Anatomy. Cr. 3. (1-6).
Prerequisite: Botany 339 and graduate standing in botany. Advanced anatomy of vascular plants. Offered at intervals.

535. Field Botany. Cr. 3.
Prerequisite: Graduate standing in botany. Readings, reports, and field work on assiigned problems. The cost of field trips is held to a minimum. May be repeated for full credit with new materials. Offered at intervals.

536. Taxonomy of Grasses. Cr. 3. (1-6).
Prerequisite: Botany 232 and graduate standing in botany. Classification of grasses with emphasis on pasture and range plants. Offered at intervals.

601. Thesis.

Zoology

135-6. Human Anatomy and Physiology. Cr. 3. (2-3). I, II.
Open only to nurses in training. The elements and fundamental principles of human anatomy and physiology. May not be used as part of the requirements for a major in zoology.

234. Invertebrate Morphology. Cr. 3. (2-3). I.
Prerequisite: Biology 133-4. Structure, function and history of invertebrates, with emphasis on forms not stressed in Biology 134.

235-6. Anatomy, Physiology, and Hygiene. Cr. 3. (2-3). I, II.
Prerequisite: Sophomore standing in college. Gross anatomy of the mammalian body; the various physiological processes; the fundamental principles of hygiene and sanitation; the fundmentals of heredity and evolution. May not be used as part of the requirements for a major in zoology.

241. Comparative Vertebrate Anatomy. Cr. 4. (2-6). II.
Prerequisite: Biology 133-4. Structure, function, and history of the vertebrates, with emphasis on the dogfish and cat.

331. Animal Histology. Cr. 3. (1-6). I.
Prerequisite: Zoology 234, 241. The study of normal animal tissues.

332. Comparative Vertebrate Embryology. Cr. 3. (1-6). II.
Prerequisite: Zoology 234, 241. The embryological development of different vertebrate forms with emphasis on the pig and chick.

333. Parasitology. Cr. 3. (2-3). I or II.
Prerequisite: Zoology 234, 241. Internal and external parasites, their life histories and host relationships.

334. Entomology. Cr. 3. (2-3). I or II.
Prerequisite: Zoology 234, 241; or Biology 133-4, and 6 semester hours sophomore rank in the Division of Agriculture. Structure and classification of insects.

411. Zoology Seminar. Cr. 1. (1-0). I, II.
Prerequisite: Senior or graduate standing in zoology or botany. Critical reviews of classical and recent literature and reports of original investigations. May be repeated for full credit.

435. Cytology. Cr. 3. (2-3). I or II.
Prerequisite: Biology 331. A study of the cell and its application to heredity.

436. Zoological Microtechnique. Cr. 3. (1-6). II.
Prerequisite: 12 semester hours of zoology above the freshman year. Preparation and interpretation of permanent microscopic slides.

437. Mammalogy. Cr. 3. (1-6).
Prerequisite: Senior standing in zoology. Readings, reports, and field work on assigned problems. The cost to the student of field work is held to a minimum. Offered at intervals.

531. Problems in Zoology. Cr. 3. (1-6).
Prerequisite: Graduate standing in zoology. Selected problems in morphology, anatomy, ecology, taxonomy, or possibly others. May be repeated for full credit in another field or with new materials in the same field. Offered at intervals.

535. Field Zoology. Cr. 3.
Prerequisite: Graduate standing in zoology. Readings, reports and field work on assigned problems. The cost of field trips is held to a minimum. May be repeated for full credit with new materials. Offered at intervals.

601. Thesis.

Courses numbered in the 400 and 500 series may be counted for a graduate major in botany or zoology. If a petition is approved and provided additional work is done in each course, the following courses may be counted: Bacteriology 331-2, 333, 334; Biology 331, 333, 334; Botany 331, 339; Zoology 331, 332, 333.

Botany

(See Biology)

Chemistry and Chemical Engineering

PROFESSOR GOODWIN, ASSOCIATE PROFESSOR OBERG. PROFESSORS CRAIG, DENNIS. ASSOCIATE PROFESSORS JONES, SLAGLE. ASSISTANT PROFESSORS SOUTHALL, WATSON. INSTRUCTORS BROCK, CROCO, MENAUL, PLEMMONS, STUART. LECTURER DODGE.

The Department of Chemistry and Chemical Engineering offers curricula leading to three degrees. For those students who desire the maximum flexibility in their choice of courses, the Bachelor of Arts Degree is recommended. Those who are preparing for professional work in medicine or in the teaching of science may find this curriculum preferable. The curriculum leading to the Bachelor of Science Degree is designed to give the student fundamental work in the various fields of chemistry, supporting work in mathematics and physics, and introductory courses in the fields of biology and geology. Upon completion of this curriculum the student is prepared for industrial work or for graduate study.

The third curriculum leads to the Degree of Bachelor of Science in Chemical Engineering. Chemical engineering is that branch of engineering concerned with the development and application of manufacturing processes in which chemical and certain physical changes of materials are involved. These processes may usually be resolved into a coordinated series of unit physical operations and chemical processes.

The work of the chemical engineer is concerned primarily with the design, construction, and operation of equipment and plants in which these unit operations and processes are applied. Chemistry, physics, and mathematics are the underlying sciences of chemical engineering, and economics is its guide in practice.

CHEMISTRY

131-2. General Chemistry. Cr. 3. (2-3). Each, I, II.
Meets twice each week in recitation, once each week in laboratory, and once each week in lecture and requires three hours per week in preparation. Prerequisite to all other courses in chemistry. Metals and non-metals and the underlying principles of chemistry. Together with Chem. 220, this course satisfies pre-medical requirements for general chemistry.

220. Qualitative Analysis. Cr. 2. (1-3). I, II.
Section I. Chemical Section. Prerequisite: Chem. 131-2, although 132 may be taken in parallel with special permission. The qualitative separation of basic radicals and simple acidic radicals with full consideration of underlying principles.
Section II. Agricultural Section. Prerequisite: Chem. 131-2. Qualitative principles as in Section I but applicaton directed toward more practical problems.

235. Hydrocarbon Chemistry. Cr. 3. I.
Prerequisite: Chem. 131-2 and sophomore standing in petroleum engineering. The study of hydrocarbons, with particular reference to petroleum, natural gas, and synthetic fuels.

242. Inorganic Chemistry. Cr. 4. (3-3). II.
Prerequisite: Chem. 220. Inorganic materials and principles based on inorganic preparations carried out in the laboratory. These preparations may vary from year to year.

246. Analytical Chemistry. Cr. 3. (2-6). II.
Prerequisite: Chem. 131-2 and sophomore standing in petroleum engineering. Theory and methods of analysis of fuels, gases, petroleum products, water and emulsions.

322. Power Plant Chemistry. Cr. 2. (1-3). II.
Prerequisite: Chem. 131-2. Cannot be counted in fulfilling the major requirements in chemistry. Materials commonly used in a power plant—water and fuels. Practical tests of such materials in the laboratory. For engineers other than chemical engineering students.

331-2. Quantitative Analysis. Cr. 3. (3-6). I, II.
Prerequisite: Chem. 131-2, 220, and 242. Chem. 220 and 242 may be taken parallel by sophomore chemical engineering students. Gravimetric and volumetric methods of quantitative analysis. Recommended for the development of laboratory technique. Satisfies pre-medical requirements. Seniors or graduates other than chemistry majors, with B average, may take Chem. 332 without having had Chem. 331. Requires no outside preparation.

341. Organic Chemistry. Cr. 4. (3-3). I, II.
Prerequisite: Chem. 131-2. The study of the compounds of carbon as a background for courses in physiological chemistry, feeds and feeding, nutrition, etc. Primarily for students in agriculture and home economics. May be used only where a one-semester course in organic chemistry is required. Not open to majors or minors in chemistry.

342. Physiological Chemistry. Cr. 4. (3-3). II.
Prerequisite: Chemistry 341 or equivalent. An elementary course in physiological chemistry.

343-4. Organic Chemistry. Cr. 4. (3-3). I, II.
Section I. Industrial Section. Prerequisite: Junior standing in chemistry. The compounds of carbon. Provides a thorough foundation course in organic chemistry for engineers, and candidates for the Bachelor of Science Degree.
Section II. Biological Section. Prerequisite: Chem. 131-2 and 220. A similar course to Section I save that emphasis is placed on physiological aspects. Designed for candidates for the Bachelor of Arts Degree, for pre-medical students and for those interested in nutrition. Satisfies pre-medical requirements.

346. Physical Chemistry. Cr. 4. (3-3). II.
Prerequisite: Chem. 235, 246, 5 semester hours in calculus, sophomore physics, and junior standing in petroleum engineering. A survey of the modern concept of solids, liquids, and gases, and the laws regarding their physical and chemical behavior. Physico-chemical measurements.

411-2. Chemistry Seminar. Cr. 1. I, II.
Required of all candidates for any degree with a chemistry major. Usually reserved for the senior year. Open to juniors with permission of the head of the department. May be counted for credit as often as taken.

434. Organic Preparations. Cr. 3. (0-9). II.
Prerequisite: Consent of instructor. The synthesis of organic materials with special attention to technique and yields.

435. Senior Chemistry—Advanced Quantitative Analysis
Cr. 3. (1-6). II.
Prerequsite: Senior standing in chemistry. The analysis of water, foods, feeds, rocks, alloys, etc. with emphasis on instrumental methods.

436. Senior Chemistry—Biological Chemistry. Cr. 3. (2-3). I.
Prerequisite: Senior standing in chemistry. The chemistry of carbohydrates, proteins, lipids, enzymes and other constituents of living systems.

437. Senior Chemistry—Biological Chemistry. Cr. 3. (2-3). II.
Prerequsite: Senior standing in chemistry. A study of biochemical processes and their regulation.

438. Senior Chemistry-Advanced Physical Chemistry. Cr. 3. II.
Prerequisite: Senior standing in chemistry. May be taken with Chem 442. Thermodynamics, solutions, atomic theory and valence, reaction kinetics, and other advanced topics.

441-2. Physical Chemistry. Cr. 4. (3-3). I, II.
Prerequisite: Chem. 220, 242, 331-2, 343-4, 5 semester hours in calculus, 6 semester hours in physics, and consent of the instructor; 343-4 may be taken parallel. The modern theories of chemistry and the methods of physico-chemical measurements.

511-2. Graduate Seminar. Cr. 1. I, II.
Prerequisite: Graduate standing in chemistry. A seminar for staff members and graduate students. With the consent of the Head of the Department a student may take this course more than once for additional credit. Every graduate student majoring in chemistry must take this course at least once.

5315. Spectrographic Analysis. Cr. 3. (2-3). I.
Prerequisite: Graduate standing. Quantitative spectrographic analysis.

5321-2. Advanced Organic Chemistry. Cr. 3. I, II.
Prerequisite: Graduate standing in chemistry and Chem. 441-2. The theories of organic chemistry.

5323. Qualitative Organic Analysis. Cr. 3. (1-6). I.
Prerequisite: Graduate standing in chemistry. The identification of individual unknowns and the separation and identification of the components of mixtures.

5324. Quantitative Organic Analysis. Cr. 3. (0-9). II.
Prerequisite: Graduate standing in chemistry. The quantitative analysis of organic compounds of carbon, hydrogen, nitrogen, sulphur, halogens, etc.

5331. Advanced Biological Chemistry. Cr. 3. (3-0). I.
Prerequisites: Graduate standing in chemistry, Chemistry 436, 437, and 441-2 (Chemistry 441-2 may be taken in parallel). Selected topics in biological chemistry.

5334. Biochemical Techniques. Cr. 2. (0-6). II.
Prerequisite: Graduate standing in chemistry, Chemistry 436, 437. Various advanced biochemical techniques.

5341-2. Advanced Physical Chemistry. Cr. 3. I, II.
Prerequisite: Graduate standing. A review of the field of physical chemistry.

537-8. Advanced Work in Specific Fields. Cr. 3-6. I, II.
Prerequisite: Chem. 441-2 and graduate standing. Course and credit depends upon interests of student. All registration must be approved by the head of the department. Offered on demand.

601. Thesis.

Courses of the senior and graduate level will be offered at such times as student demand for them warrants.

CHEMICAL ENGINEERING

234. Engineering Materials and Calculations. Cr. 3. II.
Prerequisite: Sophomore standing in chemical engineering. An introduction to the equipment and calculations of chemical engineering. The problems involve material and heat balance.

331-2. Principles of Chemical Engineering. Cr. 3. I, II.
Prerequsite: Ch. E. 234, calculus, and Chem. 441-2 may be taken in parallel. Flow of fluids; heat transfer; principles of the basic unit operations of chemical engineering.

421. Fuels and Combustion. Cr. 3. (1-3). II.
Prerequisite: Chem. 331-2 and Chem. 343-4. The composition utilization, and analysis of solid, liquid, and gaseous fuels.

425-6. Unit Operations Laboratory. Cr. 2. (0-6). I, II.
Prerequisite: Ch. E. 331-2. Laboratory experiments on the unit operations of chemical engineering. With written reports.

431-2. Chemical Technology. Cr. 3. I, II.
Prerequisite: Chem. 331-2 and Chem. 343-4. The technology of the more important inorganic and organic chemical industries, including the unit processes and unit operations involved.

434. Chemical Engineering Thermodynamics. Cr. 3. II.
Prerequisite: Ch. E. 331-2. A problem course in chemical process calculations and thermodynamics.

437. Advanced Chemical Engineering. Cr. 3. I.
Prerequisite or parallel: Ch. E. 332. The economics of chemical engineering and advanced problems on selected unit operations.

531. Chemical Engineering Design. Cr. 3. (1-6). II.
Prerequisite: Ch. E. 431-2 and Ch. E. 438 or equivalent. The design of the complete plant. Plant location, equipment design or selection, plant layout, building requirements, and estimation of the cost of the plant are included.

532. Organic Unit Processes. Cr. 3. I.
Prerequisite: Chem. 343-4. A detailed study of the major organic unit processes. Equipment, reaction theory, and the unitary aspects of each organic unit process are considered.

536. Distillation and Absorption. Cr. 3. II.
Prerequisite: Ch. E. 431-2 and Ch. E. 438 or equivalent. Advanced problems and design calculations. Includes distillation of multi-component mixtures and gas absorption with simultaneous chemical reaction.
537-8. Advanced Work in Special Fields. Cr. 3-6. I, II.
Prerequisite: Graduate standing. Course and credit depends on interests of student. All registration must be approved by the Head of the Department. Offered on demand.
601. Thesis

Child Development And Family Relations

PROFESSOR CALLAN. ASSISTANT PROFESSOR CAMP. INSTRUCTOR CASKEY.

Students are prepared through the study of the development of the child in infancy and early childhood for vocations of home making; teaching home economics; and major students are equipped to direct nursery schools. The nursery school provides a laboratory for student observation and participation. Parent education and family relations are integral parts of the child development program. Courses which may be used for graduate credit: Ch. D. 432, 435; Fam. Rel. 433, if properly petitioned for and additional work done.

131. Introduction to Child Guidance. Cr. 3. (2-3). I, II.
Elementary understanding of the young child at various levels of development; practical techniques of guidance. Nursery school used as laboratory.
231. Development in Infancy. Cr. 3. II.
Prerequisite or parallel: Zool. 235-6. Psy. 230 or 231. Development of the child during the pre-natal period and infancy.
431. Development of Learning in Young Children. Cr. 3. (2-3). I, II.
Prerequisite: Ch. D. 131. Psy. 230 or 231. Growth in physical, mental, social and emotional areas. Nursery school used as laboratory.
422. Nursery School Education. Cr. 3. (2-3). II.
Prerequisite: Ch. D. 431; Prerequisite or parallel: Nutr. 333 or 334. Nursery school administration and organization. Methods of teaching in nursery school. Nursery school used as laboratory.
433. Family Relations. Cr. 3. I, II.
Prerequisite: Psy. 230 or 231 and junior standing. Factors which contribute to successful family life in mate selection and marriage adjustment.
435. Student Teaching in Nursery School. Cr. 3. (1-6). II.
Prerequisite: Ch. D. 432; H. E. Ed. 431; at least 102 grade points. Supervised observation and teaching the nursery school.

Civil Engineering

PROFESSORS MURDOUGH, ADAMS, McREE. ASSOCIATE PROFESSORS DECKER, HARDING, WHETSTONE. INSTRUCTORS ANDERSON, GILBERT, HICKERSON, JACKSON, ODLE, OVERBY. PART-TIME INSTRUCTORS BOWDEN, GRIGGS, IGO, WESTBROOK.

The courses offered by the department fall into two classes: service courses, such as surveying, applied mechanics, and fluid mechanics, which are required in many engineering curricula; and courses which serve students majoring in civil engineering, and in closely allied fields.

The curriculum in civil engineering follows the pattern developed through usage by engineering colleges throughout the nation, and is designed to develop in the student the basic fundamentals of engineering as particularly applied to civil engineering. Opportunities are offered for some specialization in highway engineering, in structures, or in sanitary engineering.

Courses which may be used for graduate credit:

In addition to all courses numbered in the 500 series, courses in this department which may be taken for graduate credit are: 411, 423, 424, 425, 431, 432, 433, 434, 435, 437, 438, 439, 4312, 4313; 4314, if properly petitioned for and provided additional work or an added problem is done in each course numbered in the 300 or 400 series which otherwise carry no graduate credit.

231-2. Plane Surveying. Cr. 3. (2-3). I, II.
Prerequisite: Math. 131. The use and adjustment of surveying instruments; plane surveys with transit and tape; profiles and cross sections; computations from field notes; the mathematics of curves as applied to railroads and highways, with field practice; earthworks, mass diagrams.

310. Testing Laboratory. Cr. 1. (0-3). II.
Prerequisite: Registration in C. E. 333. Standard tests and reports on steel, iron, and wood specimens; the physical properties of cement and concrete.

311. Highway Laboratory. Cr. 1. (0-3). II.
Prerequisite: C. E. 335. Standard tests of road building materials.

312. Fluid Mechanics Laboratory. Cr. 1. (0-3). I, II.
Prerequisite: Registration in C. E. 339.

320. Structures. Cr. 2. (1-3). I.
Prerequisite: C.E. 331. Graphic statics, stresses in framed structures by graphical and analytical methods, design of wood roof truss.

330. Structures. Cr. 3. II.
Prerequisites: Registration in C. E. 333. Moment and shear curves; influence lines, stresses in framed structures; moving loads systems; beam design.

331. Applied Mechanics-Statics. Cr. 3. I, II.
Prerequisite: Math. 251. Resultants of coplanar and non-coplanar force systems; equilibrium of force systems, friction, centroids, moments of inertia. Slide rule is required.

332. Applied Mechanics-Kinematics and Kinetics. Cr. 3. I.
Prerequisite: C. E. 331. Motion of the particle and of rigid bodies; kinetics of translation, rotation, and plane motion; work, energy; impulse, momentum.

333. Applied Mechanics-Strength of Materials. Cr. 3. II.
Prerequisite: C. E. 331. Stresses and strains in elastic bodies subjected to tension, compression, and shear; bending and torsion; deflection of homogeneous beams; column theory; combined stresses.

334. Surveying. Cr. 3. (2-3). I, II.
Prerequisite: C. E. 231. Topographic mapping, stadia, and plane table; astronomical determination of azimuth, latitude, time; elements of photogrammetry, plane coordinates.

335-6. Highway Engineering. Cr. 3. I, II.
Prerequisite: C. E. 231. Fundamentals of highway location, design, construction, and maintenance. Traffic control and traffic regulations. History and development of transportation. Highway administration and finance.

337-8. Structural Mechanics. Cr. 3. I, II.
Prerequisite: Math. 131. Statics, strength of materials and structural design. For students of architecture design option, and others who desire a brief and general presentation of the material.

339. Fluid Mechanics. Cr. 3. I, II.
Prerequisite: Registration in C. E. 332. Dynamics of viscous and non-viscous fluids, impulse and momentum, pipe flow, fluid resistance.

3310. Municipal Sanitation. Cr. 3. (2-2). I.
Prerequisite: Junior engineering standing. General principles of sanitation. Microscopy of water and sewage.

411. Soil Mechanics and Foundations Laboratory. Cr. 1. (0-3). I.
Prerequisite: C. E. 4312, or parallel. Laboratory tests of soil as an engineering material. (Not offered in 1949-50).

420. Hydraulics. Cr. 2. I.
Prerequisite: C.E. 331. Mechanics of water at rest and in motion. (Not offered after 1949-50).

423. Economics of Highway Design. Cr. 2. (0-6). I.
Prerequisite: C. E. 335. Economics of design applied to various highway projects and problems.

424. Materials. Cr. 2. (1-3). I.
Prerequisite: Junior engineering standing. The properties and tests of materials of engineering, with special reference to concrete materials.

425. Materials. Cr. 2. (1-3). II.
Prerequisite: C. E. 333. The properties and tests of materials of engineering, with special reference to wood and steel.

426. Municipal Sanitation. Cr. 2. I.
Prerequisite: Junior standing or consent of instructor. General principles of sanitation as applied to the community. (Not offered after 1949-50).

431. Reinforced Concrete. Cr. 3. I.
Prerequisite: C. E. 333. Study and application of the theory of reinforced concrete design.

432. Reinforced Concrete. Cr. 3. II.
Prerequisite: C. E. 431. Continuation of C. E. 431.

433. Structures. Cr. 3. (2-6). I.
Prerequisite: C. E. 330, 333. Design and detail of steel structures.

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

435. Traffic Safety Education. Cr. 3. S.
Prerequisite: State driver's license and senior standing. Safety education as applied to traffic regulations, traffic control, studies of methods of accident prevention, of automobile operation and automobile safety inspection. Emphasis placed on methods of presentation of material to high school students. May be counted as education. (Education 4310).

437. Water Supply and Treatment. Cr. 3. (2-3). I.
Prerequisite: C. E. 420. Consumption of water; quality; sources of supply-streams, lakes, impounding reservoirs, wells; design and construction of supply lines and distribution system, water treatment plants.

438. Sewerage and Sewage Treatment. Cr. 3. (2-3). II.
Prerequisite: C. E. 420, C. E. 431. Quantity of sewage-both storm and sanitary; design and construction of sewage systems; sewage treatment and disposal.

439. Law and Ethics in Engineering. Cr. 3. I, II.
Prerequisite: Senior standing in engineering or approval of head of department. Professional and industrial problems, contracts, specifications, ethics of engineering.

4310. Airplane Structures. Cr. 3. I.
Prerequisite: C. E. 333. Stress analysis and design of elastic materials as applied to airplane structures.

4312. Soil Mechanics and Foundations. Cr. 3. II.
Prerequisite: C. E. 333. Physical and mechanical properties of soils; theories of stress, settlement, displacement and consolidation; stability of earth masses; structural applications to embankments and retaining walls; bearing capacity and settlement of structures. (Not offered in 1949-50).

4313. Water Purification. Cr. 3. I.
Prerequisite: Registration in C. E. 437. The methods used in the treatment of municipal water supplies and the design of structures necessary for such treatment. (Not offered in 1949-50).

4314. Sewage Treatment. Cr. 3. II.
Prerequisite: C. E. 431 and registration in C. E. 438. The methods used in the treatment of municipal sewage and the design of structures necessary for such treatment. (Not offered in 1949-50).

411-2. Engineering Seminar. Cr. 1. I, II.
Credit for this course may be given as often as successfully repeated. Investigation and study of engineering problems of special interest and value to students taking the course. Work is of the nature of research. May be taken only with permission of head of the department. Offered only to students of senior standing.

Clothing And Textiles

PROFESSOR ERWIN. ASSOCIATE PROFESSOR BUSTER. ASSISTANT PROFESSORS BIBB, KINCHEN, WRIGHT.

The Department of Clothing and Textiles endeavors to train in a thorough understanding of basic principles and concepts in the selection, use and care of fabrics and of making them into garments and household furnishings according to standards consistent with time, money and energy available. Students who wish to teach should choose electives in home economics education. To enter such professions as merchandising and dress designing electives should form a continuity approved by the Head of the Department.

Courses which may be taken for graduate credit are: 531, 532, 533, 601, and, if petitioned for at the beginning of the semester with a planned additional project, 331, 332, 334, 336, 431, 432, 433 435.

131. Basic Textiles. Cr. 3. (2-3). I, II.
Problems in selection and maintenance of fabrics, ready-made clothing and home furnishings. Judging fabric quality; evaluating consumer literature, terms, labels, laws and advertising.

132. Basic Clothing Problems. Cr. 3. (1-6). I, II.
Use of the machine and commercial patterns. Making a dress and blouse. Planning a harmonious and economical wardrobe.

134. Sewing Techniques. Cr. 3. (1-6). I, II.
Prerequisite: Cloth. 132. Practice in machine and hand sewing. Emphasis on machine adjustment, attachments, accuracy, pressing and decorative details. Organization of work, short cuts and other aids toward speed consistent with precision standards.

135. Fashion in Dress. Cr. 3. II.
Assembling garments and accessories suitable for different occasions and personalities. Psychology of dress selection. Re-styling and fitting ready-mades. Principles of good shopping.

232. Dressmaking. Cr. 3. (1-6). I, II.
Prerequisite: Cloth. 131, 132; A.A. 231. Principles of dressmaking applied to a wool coat and a silk or rayon dress. Emphasis on precision and management. Considerable attention to pattern alteration, fitting, pressing and finishes of self material.

233. Clothing Demonstrations. Cr. 3. I, II.
Prerequisite: Sophomore standing. Demonstrations and discussions by instructor and students without laboratory to develop the theory and principles of dressmaking. Some garments and projects completed outside of class. Study of factors resulting in mediocre versus high class garments. Easy methods for obtaining professional finishes stressed. Emphasis on appreciation of standards and a planned procedure before beginning to sew. Elective for teachers, commercial demonstrators, and students who have had sewing experience and who need review in the latest methods.

311. Historic Textiles. Cr. 1. I.
Prerequisite: Clothing, textiles, history, or art satisfactory to the instructor. Study of tapestries. Oriental rugs, paisley shawls, Navajo blankets and other historic and contemporary textiles.

321. Children's Clothing. Cr. 2. (1-3). II.
Prerequisite: Cloth. 132. Selecting, constructing and assembling wardrobes suitable for infants and children of all ages.

331. Tailoring. Cr. 3. (1-6). I.
Prerequisite: Cloth. 232, 333. Techniques of constructing and pressing tailored garments. Time and cost studies.

332. Advanced Dressmaking. Cr. 3. (1-6). II.
Prerequisite: Cloth. 232, 333. Construction and designing of garments by modeling on a dress form, with some adaptations from commercial and flat-patterns. Emphasis on absolute perfection of fit and sewing, and the use of unusual and textured materials.

333. Pattern Designing. Cr. 3. (1-6). I, II.
Prerequisite: Cloth. 131, 232. Principles of fitting and special needs for common figure difficulties. Corrected pattern used as a foundation pattern in designing and cutting free-hand patterns. Practical methods of designing details in blouses, sleeves, skirts, and collars. For teachers, homemakers, prospective fashion designers.

334. Family Clothing Problems. Cr. 3. (2-3). I, II.
Prerequisite: Cloth. 232 and Eco. 231 or 235. Developing a spending pattern to satisfy the needs of the family based on the family income. Assembling and maintaining wardrobes consistent with the needs and desires of each age group. Selecting quality grades in relation to use. Application of modern theories to the construction of a child's garment. Speed problems.

335. Weaving Crafts. Cr. 3. (1-6). I.
Prerequisite or parallel: Cloth. 131 and A.A. 131. Hand weaving. Preparing warp, threading loom, dyeing yarn for luncheon sets, drapery, rugs, upholstery, and coatings. Study of primitive textile industry and relation to modern weaving. Application to teaching in camps and elementary grades.

336. Textile Appreciation. Cr. 3. II.
Shoppng for yard goods and ready-made clothing; recent trends and new developments in textiles. Emphasis on recognizing quality, on evaluating real worth of fabrics in terms of cost, and on developing a philosophy of buying and using textiles. Wearability and performance studies included.

431. Textile Economics. Cr. 3. (2-3). I, II.
Prerequisite: Cloth 131 and Eco. 231. A study of the range in quality of household textiles as bedding and floor coverings and of other fabrics. Methods of selecting the quality suited to specific needs. Care and maintenance of houshold articles and clothing. Interpretation of specifications, standards, labels, trade-marks, performance tests and existing laws concerning the sale of certain commodities. Evaluation of consumer literature.

432. Advanced Textiles. Cr. 3. (2-3). II.
Prerequisite: Cloth 131, economics and senior standing in home economics. Technical information necessary for thorough knowledge of textile buying. Effect of fiber content, construction, and finish on the quality, use, serviceability and cost of fabrics. Recent trends in textiles, research studies and specific problems in the field of clothing and textiles. Practice in standard methods of testing textiles. Offered in alternate years.

433. History of Costume. Cr. 3. II.
Prerequisite: Advanced standing and history courses satisfactory to instructor. A study of historic and national costumes with their contribution to the development of dress. Special emphasis on historic and modern fashion influences. Offered in alternate years.

435. Home Furnishings. Cr. 3. (1-6). I, II.
Prerequsite: Senior standing, Eco. 231, Cloth 232, and A.A. 331, or parallel. Purchase, use, care, and construction of household linens, curtains, rugs, upholstery, and slip covers. Refinishing furniture.

436. Textile Merchandising. Cr. 3. (2-3). I.
Prerequisite: Junior standing and Cloth. 131. Study of factors influencing values in merchandising that consumers want and retailers look for in buying. Identification of fibers, fabrics, qualities, and brands of piece goods; care, use, and display of merchandise. Familiarity with technical terms, current fashion trends, labels, legislation. Offered in alternate years.

531. Advanced Garment Fitting. Cr. 3. (1-6). II, S.
Prerequisite: Cloth. 333. Open to graduate students with experience in teaching clothing. Advanced study of pattern making and alteration. Techniques, principles, and high standards for fitting. Methods of fitting oneself, re-styling old garments, altering ready-to-wear. Classroom methods of handling these problems. Offered in alternate summers.

532-3. Special Problems in Clothing. Cr. 1-6. I, II.
Prerequisite: Graduate standing in home economics and advanced clothing courses approved by head of department. Study and discussion of current problems in clothing and textiles of importance in the personal and professional advancement of class members. Independent projects in construction, teaching, purchasing, using or distributing clothing and textiles.
601. Thesis.

Dairy Manufactures

PROFESSORS WILLINGHAM, HARMON*. INSTRUCTORS CARDWELL, DENISON. LECTURER TINNEY.

The Department of Dairy Manufactures offers courses in the fundamentals of the science of dairying. Special technical courses are offered which prepare the student to become a general dairy plant operator; dairy, food and sanitary inspector; dairy products salesman, and technical dairy laboratory control operator. The curriculum is so arranged that electives may be pursued in other fields closely allied with the dairy industry. The department maintains a dairy plant with modern equipment for laboratory instruction in market milk, cheese, butter, ice cream, condensed milk, and laboratory control of dairy products. Complete laboratory facilities are maintained for making analysis of dairy products. Individuals within the State of Texas may avail themselves of this service at the actual cost of performing the tests.

In addition to all courses numbered in the 500 series, courses numbered in the 300 and 400 series may be taken for graduate credit, if properly petitioned, and provided additional work or a problem is performed.

DAIRY MANUFACTURES

131. Principles of Dairying. Cr. 3. (2-3). I, II.
A general survey of the field of dairying; composition of milk; milk analysis; milk production and processing.
222. The Dairy Industries. Cr. 2. (2-0). I, II.
Prerequisite: D. M. 131. Developing of the dairy industries; relationship to agriculture; promotion; policies; regulations.
321. Testing Dairy Products. Cr. 2. (1-3). I.
Prerequisite: D. M. 131, Chem. 132. Chemical and physical tests used in the manufacture of dairy products; laboratory control methods for the dairy plant.
323. Judging Dairy Products. Cr. 2. (1-3). I.
Commercial grades and classification of dairy products; practice in judging milk, butter, cheese, and ice cream; student contests.
331-2. Market Milk. Cr. 3. (3-0) I, (2-3) II.
Prerequisite: D. M. 131, Bact. 231. The fluid milk industry; milk and public health; city, state, and federal regulations and ordinances; production, transportation, handling, retailing, wholesaling of milk; cost studies; processing; field trips.
333. Domestic Dairying. Cr. 3. (2-3). S.
For Home Economics students. Food value, production and uses of dairy products, with emphasis on quality; testing and scoring of milk, butter, cheese, and ice cream.
334. Fundamentals of Dairy Science. Cr. 3. (2-3). I.
Prerequisite: D. M. 131, Chem. 132. Chemical and physical principles of basic importance in the manufacture of dairy products.
335. Dairy Bacteriology. Cr. 3. (2-3). II.
Prerequisite: D. M. 131, Bact. 231. Study of organisms in milk and dairy products; methods of control.
336. Food Industries. Cr. 3. (3-0). I.
Prerequisite: 60 semester hours in agricultural curricula. Growth and development of the various types of food processing industries; types and classes of food products processed; personnel requirements; pure food requirements; economic aspects of combination food processing plants.
337. Dairy Plant Equipment. Cr. 3. (3-0). II.
Prerequisite: D. M. 131. Application of the physical principles of heat and power to operation of dairy plant equipment; practical design of dairy plants; construction materials; dairy refrigeration; water problems; steam and water fittings; plumbing; sewage disposal; and steam boilers.
411. Dairy Seminar. Cr. 1. (1-0). II.
Prerequisite: Senior standing in the department. A review of scientific literature; papers and reports; class discussion.
412. Starters and Cultured Milk. Cr. 1. (0-3). I.
Prerequisite: D. M. 335. Bacteriology of starters and fermented milks; technique of preparing cultures for use in dairy manufacturing operations.

* On Leave.

413. Advanced Judging of Dairy Products. Cr. 1. (0-3). II.
Prerequisite: D. M. 323. Commercial grades and classification of dairy products; practice in judging milk, butter, cheese and ice cream; student contests.

420. Dairy Products Merchandising. Cr. 2. (2-0). I.
Prerequsite: D. M. 131. Special practices, organization, ethics, and methods of merchandising dairy products.

421. Creamery Management. Cr. 2. (2-0). II.
Prerequisite: D. M. 131. Organization and control of the dairy plant from a business standpoint; duties of plant manager, and relationship of manager to the business; required field trip.

422. Condensed and Powdered Milk. Cr. 2. (2-0). II.
Prerequisite: D. M. 131. The manufacture of condensed milk and milk powder, malted milk, milk casein, commercial buttermilk and whey; supplemented by field trips.

431. Cheese Making. Cr. 3. (2-3). I.
Prerequisite: D. M. 131, Bact. 231. Foreign and domestic varieties of plain and fancy cheese; manufacture of soft cheese and the more common varieties of semi-hard and hard cheeses; required field trip.

432. Dairy Industry Problems. Cr. 3. (3-0). S.
Prerequisite: 21 hours in the department and consent of head of department. Investigation of special problems in the field of dairy industry in which the student has a special interest.

433. Ice Cream Making. Cr. 3. (2-3). II.
Prerequisite: D. M. 131. Problems of the ice cream industry; ingredients; standardization and calculation of mixes; processing; cost studies; supplemented by field trips.

435. Dairy and Food Inspection. Cr. 3. (2-3). II.
Prerequisite: D. M. 131. Municipal, state, and federal dairy and food regulations; methods used in inspection in field and laboratory; analysis of dairy and food products; required field trip.

436. Food Beverages. Cr. 3. (2-3). II.
Prerequisite: D. M. 335. Preparation and sales of food beverages; fruit juices, carbonated drinks, milk drinks; flavoring materials; formulae; standards and methods of laboratory control.

441. Butter Making. Cr. 4. (2-6). I.
Prerequisite: D. M. 131, Bact. 231. Problems of the butter industry; manufacture of sweet and sour cream butter; plant practice in the manufacture of butter; supplemented by field trips.

512. Advanced Dairy Products Quality Control. Cr. 1. (0-3). S.
Prerequisite: Graduate standing in agriculture. Judging quality in dairy products; discussion of problems relative to quality control, especially milk, butter, cream, cheese and ice cream.

531-2. Dairy Manufactures Research. Cr. 3. (0-9). I, II.
Prerequisite: Graduate standing in agriculture and consent of head of department. Scientific research in one of the following fields in the dairy industry; market milk, butter, cheese, ice cream, dairy bacteriology, condensed milk or milk powder.

533-4. Dairy Manufacturing Problems. Cr. 3. (0-9). I, II.
Prerequisite: Graduate standing in agriculture and consent of head of the department. Selection of a problem in dairy manufacturing industries; outlining of problem; review of available literature; securing data; and compilation of results.

601. Thesis.

Economics And Management

PROFESSOR WIESEN. ASSOCIATE PROFESSORS ANDERSON, CLOVER, MIZE. ASSISTANT PROFESSORS HARDING, MOORE. INSTRUCTORS GREEN, HUBBARD, OCKER, SHEEHAN.

ECONOMICS

The purpose of the courses in economics is to provide a general training or background for students in specialized professional or vocational fields and for those desiring a cultural training in the foundations of our economic institutions, ideas, and policies. Specialized curricula are available for those interested in public administration or international trade. Generalized courses of study are provided to meet the need of those interested in a broadened understanding of the organization and practices of private business and its relations to government policy as a basis of further training in particular lines of business activity. All major study programs are flexible enough to permit a wide selection of courses in other departments of the division and college.

MANAGEMENT

Management has become an important field of specialization in modern industry The courses offered in this department provide basic training for those students desiring to enter this comparatively new and growing profession.

ECONOMICS

231-2. Principles of Economics. Cr. 3. I, II.
Prerequsite: 30 semester hours. Modern economic society and modern economic problems. Forms of business organizations, prices, money, banking, transportation, taxation, interest, profits, labor problems, proposed economic reforms.

233. Aviation. Cr. 3.
Aviation consisting of ground school instruction and flight training leading to private license from Civil Aeronautics Administration. There will be a maximum of 50 hours of ground school instruction and a maximum of 20 hours dual and 25 hours of solo flight instruction.

235. Principles of Economics. Cr. 3. I, II.
Prerequisite: 30 semester hours. The same general subject matter as 231-2 condensed into one semester.

326. Petroleum Economics. Cr. 3. II.
Prerequisite: Eco. 235. Theory and problems particularly applicable to the economics of the petroleum industry.

331. Intermediate Economic Principles. Cr. 3. I.
Prerequisite: 60 semester hours including Eco. 231-2. A study of the operation of the modern economic system. Primary consideration is given to the determination of prices of products and productive agents under conditions of competition, imperfect competition, and monopoly.

332. Public Utility Economics. Cr. 3. I, II.
Prerequisite: 60 semester hours including Eco. 231-2. Principles and problems of public utilities, financing, ownership, and public relatons. Problems of valuation, rate of return, and rate structures. Regulation versus government ownership.

333. Public Expenditures. Cr. 3. I, II.
Prerequisite: 60 semester hours including Eco. 231-2. Analysis of the economic aspects of government finance; principles, policies, and problems of public expenditures, nation, state, and local. Public borrowing, debts, and financial administration. Special attention to present-day problems.

334. Taxation. Cr. 3. II.
Prerequisite: 60 semester hours including Eco. 231-2. Federal, state, and local taxation. The history, development, and present status with emphasis on sales, income, property, inheritance, and business taxes. Special studies devoted to Texas tax problems.

335. Transportation Economics. Cr. 3. I.
Prerequisite: 60 semester hours including Eco. 231-2. Development of the transportation system; rivers, canals, toll-roads, railroads, highways, air. Government regulation of transportation agencies. Rate making valuation, financing, consolidations. Present tendencies.

337. Economic Systems. Cr. 3. II.
Prerequisite: 60 semester hours including Eco. 231-2. A survey of the control of economic institutions for the welfare of the general community. The main principles of a planned economy and existing economic systems.

338. Foreign Trade. Cr. 3. I.
Prerequisite: 60 semester hours, including Eco. 231-2. Principles of international trade; balance of payments; trade policies and agreements; international market studies.

339. Latin America and the United States. Cr. 3. II.
Prerequisite: 60 semester hours, including Eco. 231-2. A study of the economics of Latin American countries and their economic relations with the United States.

3312. Economics of Labor. Cr. 3. I.
Prerequisite: 60 semester hours, including Eco. 231-2. A survey of labor economics embracing the theory of wages, the problems of unemployment, economic insecurity, industrial disputes, industrial accidents, development and aims of labor unions, and employers' associations.

432. Foreign Market Surveys. Cr. 3. I.
Prerequisite: 60 semester hours, including Eco. 231-2. Intensive study of foreign markets which are of particular significance to the United States. For international trade majors only.

433. International Economic Relations. Cr. 3. II.
Prerequisite: 90 semester hours, including 12 hours in economics. Comparison of domestic and international economic relations. Political obstacles to international trade. The tariff and commercial treaties. International monetary problems. Financing foreign trade. Foreign loans.

434. Air Transportation. Cr. 3. II.
Prerequisite: 60 semester hours, including 6 hours of economic principles, and Mkt. 332. A course devoted exclusively to air transportation, including economic characteristics of the air transportation industry, regulation, types of service, rates for persons and property, labor relations, and its development.

436. Development of Economic Doctrines. Cr. 3. II.
Perequisite: 60 semester hours including Eco. 231-2. The evolution of economic thought. A study of the basis, nature, and effects of economic doctrines from ancient times through the modern period.

437. Current Economic Problems. Cr. 3. I.
Prerequisite: 60 semester hours including Eco. 231-2. Fundamental problems of economic life today and proposed solutions. A critical examination of the present economic policies of government and industry. Individual research encouraged.

438. Research in Economics and Business. Cr. 3. (2-3). I, II.
(Formerly Business 438). Prerequisite: 90 semester hours, including 3 hours of statistics. Research methods used in the field. A definite problem will be undertaken for actual experience on the part of students.

4310. Advanced Economic Principles. Cr. 3. I, II.
Prerequisite: 90 semester hours, including 12 hours in economics. An analysis of contemporary economic principles and thought concerning the production and distribution of goods and services. A thorough examination of the fundamental laws of economics as applied to present-day problems and conditions.

531. Economic Research. Cr. 3. I.
Prerequisite: Graduate standing. Solution and presentation of an approved problem involving individual research in the field of economics and business.

532. Seminar in Current Economic Trends. Cr. 3. I.
Prerequisite: Graduate standing and 12 hours of economics.

533. Seminar in Recent Economic Theory. Cr. 3. II.
Prerequisite: Graduate standing and 12 hours of economics.

534. Seminar in Public Finance. Cr. 3. I.
Prerequisite: Graduate standing and 12 hours of economics including Eco. 333 or Eco. 334.

535. Readings in Economics. Cr. 3. II.
Prerequisite: Graduate standing and 12 hours of economics.

601. Thesis.

Courses which may be used for graduate credit are: 332, 333, 334, 335, 3312, 337, 338, 433, 434, 436, 437, 4310, if properly petitioned for and provided additional work or an added problem is done.

MANAGEMENT

231. Business Organization and Management. Cr. 3. I, II.
Prerequisite: Eco. 231-2 and Acct. 244-5, or concurrent enrollment therein. The course is an introduction to management; a study of the fundamental principles of business management, including the organization and promotion of an enterprise, operation, managerial controls, and external relations.

331. Industrial Management. Cr. 3. I.
Prerequisite: 60 semester hours, including Eco. 231-2. The course deals with the executive problems of production, types of executive control, and principles of scientific management; problems in plant location, selection of physical properties, layout, methods of control, and policies of manpower management.

332. Management of Small Business Enterprise. Cr. 3. II.
Prerequisite: 60 semester hours, including Mgt. 331 or concurrent enrollment therein. This course is a problem course involving the application of fundamental principles of management to small-scale enterprise situations; organization, financing, property control, production control, management of manpower, advertising and sales management, and coordination of activities.

333. Labor Problems. Cr. 3. I.
Prerequisite: 60 semester hours, including Eco. 231-2. A study will be made of the major labor problems of this country and the measures designed to meet them. Emphasis will be given to the social security movement and to the place of labor organizations in the solutions of problems of workers.

334. Personnel Administration. Cr. 3. II.
Prerequisite: 60 semester hours, including Eco. 231-2. A study will be made of the principles and problems of personnel administration; employee selection, training, placement, service-rating, promotion and transfer, and employee services. Special attention will be given to problems of wages and incentive plans, working hours, and labor turnover. (Formerly Mgt. 432.)

431. Office Management. Cr. 3. I.
Prerequisite: 60 semester hours, including Sec. Ad. 114 and 6 hours in economics. The course is a study of the standards of office practice, wage payment plans, selection and training of office workers, office planning, techniques of office methods, and duties and responsibilites of the office manager.

433. Labor Relations. Cr. 3. II.
Prerequisite: 60 semester hours, including Mgt. 333. A study will be made of the problems of labor relations with particular emphasis on labor legislation; background of Labor legislation by Federal Government, Sherman Act, Railway Labor Act, National Labor Relations Act, Fair Labor Standards Act, other federal laws, state labor laws, and collective bargaining standards and practices.

434. Job Evaluation and Wage Administration. Cr. 3. II.
Prerequisite: 60 semester hours, including Mgt. 334. The course will deal with various methods of job evaluation for worker placement and wage determination, principles of compensation methods, types of wage incentives, wage plans, and control of labor costs.

435. Employee Supervision. Cr. 3. I.
Prerequisite: 60 semester hours, including Mgt. 334. The relation of the supervisor to his subordinates and to higher management will be studied; cooperation, loyalty, leadership, planning of group work, and the use of the tools of supervision. Particular attention will be given to inducting and training new employees, rating, discipline, problems of absenteeism, and maintenance of morale.

436. Problems in Office Management. Cr. 3. II.
Prerequisite: 60 semester hours, including Mgt. 431. Intensive study will be made of office organization and administration; the standardization of office practices and procedures, layout, personnel selection and training, special records and reports, budgetary controls, and development of systems and controls to meet special problems in business offices.

Education And Psychology

PROFESSORS GARLIN, BARNETT, JACKSON. ASSOCIATE PROFESSORS COOPER, SHAVER, TRUE. ASSISTANT PROFESSOR McDONALD. INSTRUCTOR CASKEY.

DEPARTMENTAL MAJORS

Major requirements: Students may major in either education or psychology. Education majors are available in two fields; namely, secondary education and elementary education. Students interested in secondary school teaching will complete 30 semester hours in education and psychology, including the following courses or their equivalent: Education 131, 138, 234, 235, 331 or 430 or 431, 3316; Psychology 230 or 231, 335, 333 or 431. Students interested in elementary school teaching will complete 39 semester hours in education and psychology, including the following courses or their equivalent: Education 131, 138, 236, 237, 331 or 430 or 431, 3317, 4311 or 339; Psychology 230 or 231, 331, 333 or 431. Psychology majors will complete 30 semester hours in psychology. With special permission, certain education courses may apply on the psychology major. For certificate requirements see Appendix.

EDUCATION

125. Penmanship. Cr. 2. S.
Comparison of cursive and manuscript writing in the elementary grades.

131. Introduction to Education. Cr. 3. I, II, S.
Survey of the general field of education.

138. Career Guidance in Education. Cr. 3. I, II, S.
Guidance opportunities with reference to choosing teaching as a profession.

234. Principles of Secondary Education. Cr. 3. I, II, S.
Prerequisite: Sophomore classification. Basic principles underlying the organization and program of the secondary school.

235. High School Methods. Cr. 3. I, II, S.
Prerequisite: Sophomore classification. Study and analysis of methods of teaching used in junior and senior high schools.

236. Basic Skills in the Elementary Grades. Cr. 3. I, S.
Prerequisite: Sophomore classification. Methods and materials in the teaching of arithmetic, writing and spelling.

237. The Language Arts. Cr. 3. II, S.
Prerequisite: Sophomore classification. Methods and materials in teaching the language arts, with special reference to reading, and written and oral composition.

238. Methods and Materials in the Social Studies in the Elementary Grades. Cr. 3. II, S.
Prerequisite: Sophomore classification. Principles, procedures, and materials in developing social, economic, and geographical concepts and relationships.

314. Reading Clinic. Cr. 1. S.
Prerequisite: 12 hours in education and psychology and junior classification. Techniques in diagnosing pupil reading difficulties.

321. Principles of Education. Cr. 2. S.
Prerequisite: 12 hours in education and psychology and junior classification. Brief survey of the general principles involved in the process of education. Credit may not also be received for Ed. 331.

322. Problems in Secondary Education. Cr. 2. S.
Prerequisite: 12 hours in education and psychology, including a course in secondary education, and junior classification. Selected problems in secondary education, including both administration and method. Credit may not also be received for Ed. 332.

325. The Junior High School. Cr. 2. S.
Prerequisite: 12 hours in education and psychology and junior classification. Brief survey of the origin, functions, organization and curriculum of the junior high school. Credit may not also be received for Ed. 335.

326. Educational and Vocational Guidance. Cr. 2. S.
Prerequisite: 12 hours in education and psychology and junior classification. Survey of the principles and methods of guidance. Credit may not be received for Ed. 336.

3210. Children's Literature. Cr. 2. S.
Prerequisite: 12 hours in education and psychology, including a course in elementary education, and junior classification. Survey of recent trends in literature for children with special emphasis upon the works of living authors. Credit may not also be received for Ed. 3310.

3214. Duties of School Principals. Cr. 2. S.
Prerequisite: 12 hours in education and psychology and junior classification. Designed to meet the needs of both secondary and elementary school principals. Credit may not also be received for Ed. 3314.

331. Principles of Education. Cr. 3. I.
Prerequisite: 12 hours in education and psychology and junior classification. The biological, psychological, sociological, and historical bases of education and their application to educational practice. Credit may not also be received for Ed. 321.

332. Problems in Secondary Education. Cr. 3. II.
Prerequisite: 12 hours in education and psychology, including a course in secondary education, and junior classification. Problems covering the various phases of secondary education, including both administration and method. Credit may not also be received for Ed. 332.

333. Education of Exceptional Children. Cr. 3.. S.
Prerequisite: 12 hours in education and psychology and junior classification. Survey course in the education of exceptional children.

335. The Junior High School. Cr. 3. I, S.
Prerequisite: 12 hours in education and psychology and junior classification. Detailed analysis of the origin, organization, and program of the junior high school. Credit may not also be received for Ed. 325.

336. Educational and Vocational Guidance. Cr. 3. S.
Prerequisite: 12 hours in education and psychology and junior classification. Principles, methods, and organization of guidance. Credit may not also be received for Ed. 326.

338. Every Teacher's Problems. Cr. 3.
Prerequisite: 12 hours in education and psychology and junior classification. Professional, classroom, and personal problems of the teacher. Designed to meet the needs of administrators, elementary and secondary school teachers.

339. Unit Teaching. Cr. 3. II.
Prerequisite: 12 hours in education and psychology and junior classification. Unit theory and technique and application to the construction of units.

3310. Children's Literature. Cr. 3. I, S.
Prerequisite: 12 hours in education and psychology, including a course in elementary education, and junior classification. Introduction to literature, both new and old, prose and poetry, for children under 12, including standards for judging and criteria for selecting books. Credit may not also be received for Ed. 3210.

3311. Remedial Reading in the Elementary School. Cr. 3. S.
Prerequisite: 12 hours in education and psychology, including a course in elementary education, and junior classification. Analysis of reading difficulties and remedial programs.

3314. Duties of School Principals. Cr. 3. S.
Prerequisite: 12 hours in education and psychology and junior classification. Organization and administration of a school building unit. Designed to meet the needs of both secondary and elementary school principals. Credit may not also be received for Ed. 3214.

3315. Visual-Audio Aids in Education. Cr. 3. II, S.
Prerequisite: 12 hours in education and psychology and junior classification. Covers both the administration and method of visual-audio aids, on both secondary and elementary levels.

3316. Observation and Practice. Cr. 3. I, II, S.
Prerequisite: 18 hours in education and psychology, including 6 hours in secondary education or consent of instructor. Relates to junior and senior high school teaching.

3317. Observation and Practice. Cr. 3. I, II, S.
Prerequisite: 18 hours in education and psychology, including 6 hours in elementary education or consent of instructor. For elementary teaching.

425. Co-Curricular Activities. Cr. 2. S.
Prerequisite: 12 hours in education and psychology and junior classification. A study of co-curricular activities in both secondary and elementary schools.

4212. Evaluation of Secondary Schools. Cr. 2. S.
Prerequisite: 18 hours in education and psychology or consent of instructor. Survey course in high school evaluation, using the criteria of the Cooperative Study of Secondary School Standards.

4213. Evaluation of Elementary Schools. Cr. 2. S.
Prerequisite: 18 hours in education and psychology or consent of instructor. Review of efforts to evaluate the elementary school with emphasis on current procedures.

430. Sociological Principles of Education. Cr. 3. II, S.
Prerequisite: 12 hours in education and psychology and junior classification. Detailed study of the sociological principles underlying elementary and secondary education.

431. Education in the United States. Cr. 3. I, S.
Prerequisite: 18 hours in education and psychology or consent of instructor. Detailed study of educational history, theory, and practice in the United States.

432. Public School Administration. Cr. 3. II.
Prerequisite: 18 hours in education and psychology. Detailed analysis of the principles and problems involved in the organization and administration of a school system.

433. Public School Relations. Cr. 3. I.
Prerequisite: 18 hours in education and psychology. Organization of the program, media of approach to the public, and appraisal of the program.

434. Supervision of Instruction. Cr. 3. II.
Prerequisite: 18 hours in education and psychology. Principles, planning, organization, and techniques of supervision on both the secondary and elementary levels.

436. The High School Curriculum. Cr. 3. I, S.
Prerequisite: 12 hours in education, including a course in secondary education, and junior classification. Development, present status, reorganization, and administration of the high school curriculum.

437. Workshop on Educational Leadership and Supervisory Techniques. Cr. 3. S.
Prerequisite: 18 hours in education and psychology and junior classification. Workshop designed specifically for those responsible for educational leadership in smaller independent school districts and county school systems.

4311. Problems of the Elementary Curriculum. Cr. 3. I.
Prerequisite: 18 hours in education and psychology, including 6 hours in elementary education. Curriculum construction and reorganization.

4315. Remedial Instruction in the Secondary School. Cr. 3. S.
Prerequisite: 12 hours in education and psychology and junior classification. Causes and treatment of pupil difficulties in mastering the tools of learning.

4316. Workshop in Curriculum and Instruction. Cr. 3. S.
Prerequisite: 18 hours in education and psychology. For experienced teachers and administrators, both elementary and secondary, to study cooperatively problems actually encountered in the field. Additional work in this field is offered in Ed. 4317.

4317. Workshop in Curriculum and Instruction. Cr. 3. S.
Prerequisite: 18 hours in education and psychology. For experienced teachers and administrators, both elementary and secondary, to study cooperatively problems actually encountered in the field. Additional work in this field is offered in Ed. 4316.

531. Educational Research. Cr. 3. I, S.
Prerequisite: Graduate classification and 18 hours in education and psychology. Study and application of methods of educational research.

532. Philosophy of Education. Cr. 3. S.
Prerequisite: Graduate classification and 18 hours in education and psychology. Analysis of major social philosophies and their application to the field of education.

533. The Activity Program in the Elementary School. Cr. 3. I, S.
Prerequisite: Graduate classification and 18 hours in education and psychology. Theory and practice of the activity program.

534. Modern Trends in Education. Cr. 3. II, S.
Prerequisite: Graduate classification and 18 hours in education and psychology. Current educational trends; their origins, present functions, and future implications.

535. Business Administration of Schools. Cr. 3. S.
Prerequisite: Graduate classification and 18 hours in education and psychology. Organization and operation of the business affairs of a school system.

536. Educational Statistics. Cr. 3. S.
Prerequisite: Graduate classification and 18 hours in education and psychology. Analysis and application of statistical procedures as applied to educational and psychological data.

537. Student Counseling. Cr. 3. S.
Prerequisite: Graduate classification and 18 hours in education and psychology, including a course in testing. Techniques and problems incident to counseling secondary and elementary school students.

538. Adult Education. Cr. 3. I, S.
Prerequisite: Graduate classification and 18 hours in education and psychology. Covers the administration as well as the method of adult education.

539. Seminar. Cr. 3. S.
Prerequisite: Graduate classification and 18 hours in education and psychology. Readings, reports, and discussions, covering problems of administration as well as of method.

5310. Practicum in Vocational Counseling. Cr. 3. II.
Prerequisite: Graduate classification, Psychology 333 and 431 and Education 537, or equivalent courses, and consent of instructor. Experience in interviewing, testing, counseling, and preparing case reports.

601. Thesis.

PSYCHOLOGY

230. Introduction to Psychology. Cr. 3. I, II, S.
Prerequisite: Sophomore classification. Introduction to the study of mental processes.

231. Educational Psychology. Cr. 3. I, II, S.
Prerequisite: Sophomore classification. Principles of psychology as applied to the educational process.

232. Psychology of Modern Elementary Education. Cr. 3. II.
Prerequisite: Sophomore classification. Psychological principles as applied to educational practice at the elementary level.

323. Measurements in Education. Cr. 3. S.
Prerequisite: 12 hours in education and psychology, including Psy. 230 or 231, and junior classification. Brief survey of tests and interpretation of test scores. For both high school and elementary teachers. Credit may not also be received for Psy. 333.

331. Child Psychology. Cr. 3. II, S.
Prerequisite: 12 hours in education and psychology, including Psy. 230 or 231, and junior classification. Study of child development from birth to early adolescence.

333. Measurements in Education. Cr. 3. I, S.
Prerequisite: 12 hours in education and psychology, including Psy. 230 or 231, and junior classification. Analysis of types of tests and interpretation of test scores. Credit may not also be received for Psy. 323.

335. Psychology of Adolescence. Cr. 3. I, II, S.
Prerequisite: 12 hours in education and psychology and junior classification. Study and analysis of adolescent development.

338. Psychology Applied to Business. Cr. 3. II.
Prerequisite: 3 hours of psychology and junior classification. Psychological principles applied to advertising, salesmanship, employment, and industry.

431. Mental Testing. Cr. 3. II, S.
Prerequisite: 12 hours in education and psychology, including Psy. 230 or 231, and junior classification. Nature of intelligence, development of mental tests, and application of mental tests at various educational levels. For both high school and elementary teachers.

433. Mental Hygiene. Cr. 3. I.
Prerequisite: Psy. 230 or equivalent and junior classification. The genesis of adequate personality. Discussions, case studies and term paper.

434. Social Psychology. Cr. 3. II.
Prerequisite: Psy. 230 or equivalent and junior classification. Principles of psychology applied to group behavior. Survey of experimental work and reports on current problems.

435. Psychology of the Abnormal. Cr. 3. II.
Prerequisite: 3 hours of advanced psychology and junior classification. Personality deviations and maladjustments, causes and characteristics of the neuroses and psychoses.

436. Personality and Character Development. Cr. 3. S.
Prerequisite: 6 hours of psychology and junior classification. Principles of normal personality and character development; the integration of developmental factors.

530. Practicum in Intelligence Testing. Cr. 3. I.
Prerequisite: Graduate classification, Psy. 431, and consent of instructor. Practice emphasizing the use of the Stanford-Binet and the Wechsler-Bellvue Tests on 20 or more cases each.

Courses which may be used for graduate credit:

In addition to all courses numbered in the 500 series, courses in this department which may be taken for graduate credit are: Ed. 314, 321, 322, 325, 326, 3210, 3214, 331, 332, 333, 335, 336, 338, 339, 3310, 3311, 3314, 3315, 425, 4212, 4213, 430, 431, 432, 433, 434, 436, 437, 4311, 4315, 4316, 4317; Psy. 323, 331, 333, 335, 431, 433, 434, 435, 436, if properly petitioned for and provided additional work or an added problem is done in each course numbered in the 300 or 400 series, which otherwise carry no graduate credit.

Electrical Engineering

PROFESSORS BULLEN, SMITH. ASSOCIATE PROFESSORS BENNETT, HOUSTON. ASSISTANT PROFESSORS STENIS, WUKASCH. INSTRUCTORS BLACKWELL, LEE, STRIBLING, WADE. LECTURER MINTER.

Electrical engineering is one of the newest branches of engineering.

The branch has developed so rapidly, and the applications of electricity have become so broad, that many subdivisions in electrical engineering now exist, offering opportunity and vocations in a variety of engineering endeavors. Graduates in electrical engineering find employment in such fields as manufacturing, public utilities, business, contracting, sales, research, teaching, design, construction, application, transportation, illumination, and communication.

Specialization in any of these fields usually follow graduation. Some degree of specialization is provided in the senior year by the offer of two options, the Communications Option and the Power Option. The purpose of the course is to give comprehensive training in the principles of electricity required for a thorough understanding of electrical circuits, apparatus, and machinery.

The curriculum has been revised to include instruction in engineering electronics and radio. Laboratories are equipped with the latest types of radio, electronics equipment, and machines. Experimental verification of the theory studied in the classroom is carried out in the laboratory. The curriculum is broadened by the inclusion of courses in chemical, civil, industrial and mechanical engineering, in addition to the course in electrical engineering.

Courses which may be used for graduate credit:

In addition to all courses numbered in the 500 series, courses in this department which may be taken for graduate credit are: Electrical engineering majors may use E. E. 336, 410, 4210-11, 4214, 433, 435, 4310-11 and E. Sem. 411-2, provided these courses have not been used as electives or required courses for undergraduate credit. In addition, E.E. 322, 323, 324, 325, 332, 334, 336, 410, 4210-11, 4212-13, 4214, 4215-16, 433; 435; 4310-11; 4312-13 may be used by students majoring in other departments, if properly petitioned for and provided additional work or an added problem is done in each course numbered in the 300 or 400 series which otherwise carries no graduate credit.

221-2. Electrical Engineering Laboratory. Cr. 2. (0-6). I, II.
Prerequisite: Registration in E. E. 231-2. A laboratory course to accompany E. E. 231-2. Three hours per week is assembled and 3 hours nonassembled.

231-2. Principles of Electrical Engineering. Cr. 3. I, II.
Prerequisite: Parallel enrollment in calculus. Lectures, recitations, and problems on the fundamental principles of electric, magnetic, and dielectric circuits. Magnetic properties of iron and steel. Induced and generated electromotive forces. Forces on conductors. Electric and magnetic fields. Conduction in solids and liquids.

233. Elements of Radio. Cr. 3. (2-3). I, II.
Prerequisite: Math 121 or 130, 131. A fundamental course in radio to furnish the background of basic principles for more advanced work. Open to any college student. This is not a required course and can be given only on the basis of sufficient registration.

234. Elements of Radio. Cr. 3. (2-3). I, II.
Prerequisite: E. E. 233 or consent of instructor. Application of the basic principles covered in E. E. 233 to circuits, including rectifiers, oscillators, modulators, amplifiers, receivers, transmitters, etc. Open to any college student. This is not a required course and can be given only on the basis of sufficient registration.

322. Alternating Current Circuits Laboratory. Cr. 2. (0-6). I.
Prerequisite: Registration in E. E. 332. A laboratory course to accompany E. E. 332. Three hours per week of the laboratory is assembled and 3 hours nonassembled.

323. Electronics Laboratory. Cr. 2. (0-6). II.
Prerequisite: Registration in E.E. 325. A laboratory course to accompany E.E. 325. A laboratory study of the operating characteristics of representative types of modern vacuum tubes, both radio and industrial types. Three hours per week of the laboratory is assembled and three hours non-assembled.

324. Communication Circuits Laboratory. Cr. 2. (0-6). II.
Prerequisite: Registration in E. E. 334. A laboratory course to accompany E. E. 334. Three hours per week of the laboratory is assembled and three hours non-assembled.

325. Electronics. Cr. 3. II.
Prerequisite: E. E. 332. Basic theory underlying the operation of representative types of modern vacuum tubes. Consideration is given to both radio and industrial types of tubes.

332. Alternating Current Circuits. Cr. 3. I.
Prerequisite: E. E. 231-2. Lectures, recitations, and problems dealing with the fundamental principles of alternating current circuits.

334. Communication Circuits. Cr. 3. I.
Prerequisite: E. E. 332. Lectures, recitations, and problems dealing with telephone communication. Includes transmission theory, electric networks, filters, loading coils, repeaters, and carrier systems.

335. Wiring and Illumination. Cr. 3. II.
Prerequisite: Math. 132, 6 semester hours of physics. Standard methods of wiring circuits; the general theory and modern methods of illumination. For architectural engineering students.

336. Illumination. Cr. 3. (2-3). II.
Prerequisite: Junior standing or consent of instructor. Fundamental principles and modern practice of illumination. Offered when demand justifies.

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

412-3. Electrical Engineering Laboratory. Cr. 1. (0-3). I, II.
Prerequisite: Registration in E. E. 426-7 or 438-9. For civil, chemical, industrial, mechanical, and textile engineerng students.

426-7. Elements of Electrical Engineering. Cr. 2. I, II.
Prerequsite: Phys. 235, Math. 251. Recitations and problems dealing with the elementary principles of direct and alternating current circuits and machinery. For civil, chemical, and textile engineering students.

428-9. Engineering Electronics. Cr. 2. I, II.
Prerequisite: E. E. 325, 323. Registration in E. E. 4215-16. A study of basic principles and engineering applications of electronic apparatus. A representative crossection of electronic apparatus is available for theoretical study and laboratory testing. Emphasis is placed on theory and basic principles of operation.

4210-11. Radio Engineering Laboratory. Cr. 2. (0-6). I, II.
Prerequisite: E. E. 325. Registration in E. E. 4310-11. A laboratory course to accompany E. E. 4310-11. Three hours per week of the laboratory is assembled and 3 hours nonassembled.

4212-13. Electrical Machinery Laboratory. Cr. 2. (1-3). I, II.
Prerequisite: Registration in E. E. 4312-13. A laboratory course to accompany E. E. 4312-13. Machines are operated and tested in the laboratory and results compared with theroetical characteristics previously derived.

4214. Advanced Circuit Theory. Cr. 2. I.
Prerequisite: E. E. 332. Involves a study of non-sinusoidal wave analysis and complex circuit calculations. Symmetrical components are introduced ni connection with polyphase transformers and machinery. Transient phenomena as applied to switching and commutation is considered.

4215-16. Engineering Electronic Laboratory. Cr. 2. (0-6). I, II.
Prerequisite: Registration in E. E. 428-9. A laboratory course to accompany E. E. 428-9. Representative types of electronic tube circuits and apparatus are studied and tested in the laboratory, giving weighted consideration to both basic principles of operaton and current industrial applications. Three hours per week of the laboratory is assembled and 3 hours nonassembled.

433. Transmission. Cr. 3. II.
Prerequisite: Registration in E. E. 4312-13. Theory and problems involved in the transmission of electrical energy.

435. Advanced Illumination. Cr. 3.
Prerequisite: E. E. 335 or E. E. 336, or consent of instructor. Quantitative and qualitative considerations in interior lighting design. Mathematical treatment of illumination determinations. Economic considerations in light production. Offered when demand justifies.

438-9. Elements of Electrical Engineering. Cr. 3. I, II.
Prerequisite: Phys. 235, Math. 251. Recitations and problems dealing with the principles of direct and alternating current circuits and machinery. For industrial and mechanical engineering students.

4310-11. Radio Engineering. Cr. 3. I, II.
Prerequisite: E. E. 333. A course considering theory, design, and service of radio equipment of all types extending from broadcast frequencies to the ultra-highs. Maxwell's equations presented early in the second semester to form a sound basis for comprehensive study of ultra-high frequency phenomena.

4312-13. Electrical Machinery. Cr. 3. I, II.
Prerequisite: E. E. 332. Theory and operation of power machinery. Includes transformers, d. c. machines, synchronous alternators, induction motors, and converters. Theoretical calculations of operating characteristics are derived by equivalent circuit solutions and graphical construction.

411-2. Engineering Seminar. Cr. 1. (0-3). I, II.
Credit for this course may be given as often as successfully repeated. The investigation and study of engineering problems of special interest and value to the students taking the course. Work is of the nature of research. May be taken only with permission of head of the department.

521-2. Advanced Electronic Laboratory. Cr. 2. (0-6). I, II.
Prerequisite: B. S. in E. E. or consent of instructor. Designing, constructing, setting up, and testing of electronic equipment (industrial, radio, radar, and special equipment used in the study and testing of electron tubes). Special emphasis is given to the principles of electronic control of industrial apparatus.

523. Symmetrical Components Laboratory. Cr. 2. (0-6). I.
Prerequisite: Registration in E. E. 533 or consent of instructor. Experiments in the determinaiton of sequence components of machine reactance. The application of both the symmetrical component and cross-field theory is developed in experiments on capacitor and other types of single-phase motors.

526. Controls and Servo-Mechanisms Laboratory. Cr. 2. (0-6). II.
Prererquisite: B. S. in E. E. or consent of instructor. Experiments are conducted in the operation of automatic controllers for a-c and d-c motors, voltage regulators for generators, selsyns and other elements of servo-mechanisms. The magnetic oscillograph is used in a variety of experiments.

531-2. Electron Tubes. Cr. 3. (3-0). I, II.
Prerequisite: E. E. 428-9, E. E. 4215-16, or consent of instructor. Electromagnetic field theory; analysis of electron tube behavior, with emphasis upon potential fields and the motion of electrons.

533. Symmetrical Components. Cr. 3. (3-0). I.
Prerequisite: B. S. in E. E. or consent of instructor. The theory of the method of symmetrical components is reveiwed and supplemented in detail; related components are described, and the method is applied to the calculation of voltages and currents in complex systems under conditions of fault or unbalanced loading. The symmetrical component impedances of machines are defined and calculated, also the zero sequence impedance of lines and cables. The network analyzer is investigated.

535. Protection of Electric Power Systems. Cr. 3. (3-0). II.
Prerequisite: E. E. 533 or consent of instructor. The cause and nature of static and dynamic system over-voltages is introduced as a background for developing methods of minimizing system disturbance. Protection factors to be considered are: system grounding, the Peterson Coil, lightning arresters, expulsion gaps, insulation coordination, and the relation of impulse to sustained dielectric strength. Systems of relaying and the application of circuit breakers are studied.

601. Thesis.

Engineering Drawing

(See **Industrial Engineering**)

Engineering Orientation

111. Engineering Orientation. Cr. 1. (2-0) . I, II.
Relationship of student to college; development of correct study habits; study and preparation of time and expense budgets; moving pictures showing phases of work in the various engineering departments. Required of all freshman engineering students during their first semester. One hour of preparation a week required.

English

ASSOCIATE PROFESSOR CAMP. PROFESSORS ALLEN, CUNNINGHAM*, DOAK, GATES, MILLS, SMALLWOOD, STROUT. ASSOCIATE PROFESSORS GUNN, MURPHY, TEAGUE. ASSISTANT PROFESSOR CARTER. INSTRUCTORS COBB, GAHRING, GREEN, HARRISON, LEWIS, MILES, NALL, RAFFANIELLO, ROLLINS, RUSSELL, WELLBORN, WELLS, WILSON.

Requirements and prerequisites:

English 131-2 is a requirement for students in all divisions and a prerequisite for all sophomore-level courses. Six hours of sophomore English are required of all students except those of the Divisions of Engineering** will take 6 hours, English 235-6 or 237-8.
and Agriculture who are required to take 3 hours of English, English 233 and 234 respectively. English 233 and 234 cannot be substituted for required English courses by students in other divisions. For the selection of sophomore English courses see the Description of Courses below. For all advanced courses English majors must have completed English 131-2 and 235-6 or their equivalents; all other students must have completed 131-2 and 235-6 or 237-8. Majors in journalism who minor in English will take four advanced English courses (12 semester hours above sophomore level) instead of the usual two advanced courses required for minors.

* On leave 1948-49.
** Students in the Department of Architecture (Design and Commercial Art Option) will take 6 hours. Eng. 235-6 or 237-8.

There is now available an interdepartmental major which emphasizes the historical, economic, and cultural development of the United States, chiefly through the study of American literature and American history. The complete curriculum will be found in the Division of Arts and Sciences section of this catalog.

A student must make at least C on an advanced course in English if he wishes to have it count toward a major or minor in English. In all English courses, regardless of rank, a student must demonstrate an adequate command of correct and effective English or receive an F in the course.

English majors in their freshman year should elect History 133-4 (English History) instead of History 131-2.

Courses which may be taken for graduate credit:

1. All courses numbered in the 500 series.
2. The following undergraduate courses if they are properly petitioned for and if additional work is done in each: 332, 336, 3316, 3317, 3318, 3322, 431, 434, 4310.
3. The following undergraduate courses if they are properly petitioned for and if additional work is done in each may be counted as a corresponding 500 course: 330 for 530; 432-3 for 533; 435-6 for 538; 437 for 533; 4315 for 537; 333, 338, 3320, 4320, and 4321 for 536.

The following undergraduate courses may not be taken for graduate credit: 3310, 3311, 3315, 3323, 438, 4313, 4316, 4317.

131-2. English Composition. Cr. 3. Each, I, II.
Essentials of correctness and effectiveness in general writing. Text studies, lectures, readings, themes, tests, and conferences.

233. Technical Writing. Cr. 3. I, II.
Essentials of correctness and effectiveness in technical writing. Regular themes, reports, and a long term report. Some reading in standard English and American literature. Required of sophomore engineering students, except those in the Department of Architecture, Design and Commercial Art Options.

234. Special Work on Correct Usage. Cr. 3. I, II.
Themes, reports and much practical experience in writing. Required of sophomores in the Division of Agriculture.

235-6. Survey of English Literature. Cr. 3. I, II.
The historical development of English literature from "Beowulf" to the present day. Required of English majors and recommended for English minors and for majors in foreign languages, history, and journalism.

237-8. Types and Masterpieces of Literature. Cr. 3. I, II.
A study of the chief literary types illustrated from the masterpieces of English, American, modern European, and classical literature. Required as the sophomore course in English for students in the Divisions of Arts and Sciences, Business Administration, and Home Economics, and in the Department of Architecture (Design and Commercial Art Options) except English majors and those electing English 235 and 236. English majors may not substitute English 237-8 for English 235-6 without the approval of the Chairman of the Department of English.

330. Chaucer. Cr. 3. I.
Selected works of Geoffrey Chaucer, with special consideration of his art in relation to the art and life of the fourteenth century.

332. History of the English Language. Cr. 3. II.
A study of the principal changes which the English language has undergone from the beginnings to the present and the relation of these changes to the cultural development of the English-speaking people.

333. American Prose. Cr. 3. II.
Selections of literary significance from the prose works of Byrd, Franklin, Paine, Washington, Trumbull, Irving, Emerson, Thoreau, Channing, Alcott, Lowell, Parkman, Lincoln, Mark Twain, Howells, Burroughs, Wilson, Adams, Santayana, and others.

336. Eighteenth Century English Poetry and Prose. Cr. 3. II.
English literature from 1660 to 1780, exclusive of the drama and the novel. Selected works of Dryden, Bunyan, Pepys, Defoe, Addison, Steele, Pope, Swift, Johnson, and others.

338. American Poetry. Cr. 3. I.
Selections from the works of Freneau, Bryant, Whittier, Emerson, Poe, Longfellow, Lowell, Holmes, Whitman, Lanier, Dickinson, and others.

3310. The Teaching of English in the Secondary School. Cr. 3. S.
Prerequisite: 18 semester hours in English; Education 234-5; Psychology 335. In exceptional instances, Psychology 335 may be taken parallel with English 3310 or in the semester following. Problems of teaching English in secondary schools; effective methods; material and equipment; classroom observation and demonstration. May be counted as English or as education by English majors.

3311. The Nature of Literature. Cr. 3. I.
A careful study of representative poems, plays, and novels to determine something of the method by which thought and experience find expression in literature.

3315. The Short Story. Cr. 3. I.
Samplings of the work of outstanding writers, together with a study of patterns and some attention to the writing of the short story.

3316. The American Novel. Cr. 3. I.
Lectures on the development of the American novel from Brockden Brown to the present. Selected novels of James, Howells, Garland, Wharton, Lewis, Peterkin, Tarkington, Hergesheimer, Ferber, Cather, and Dreiser.

3317. The English Novel from Lyly to Scott. Cr. 3. II.
Lectures on the development of the English novel. Representative examples of Elizabethan fiction and the novels of Defoe, Richardson, Fielding, Smollett, Sterne, Jane Austen, and Scott.

3318. English and Foreign Fiction from 1825 to 1910. Cr. 3. I.
Representative novels of Dickens, Thackeray, the Brontes, Hardy, Meredith, Balzac, Flaubert, Zola, Tolstoy, Dostoevski and Turgenev.

3320. American Drama. Cr. 3. I.
Representative plays of Godfrey, Tyler, Dunlap, Boucicault, Howard, Belasco, Thomas, Fitch, O'Neill, Kaufman, Rice, Anderson and others. Considerable emphasis on the contemporary period.

3322. Modern British and American Poetry. Cr. 3. II.
The major poets and poetic movements from Hardy and Robinson to the present.

3323. Masterpieces of World Literature. Cr. 3. I.
A study in English of some of the great books of the western world. Selections from the Homeric poems, the Greek dramatists, Vergil, Dante, Petrarch, Boccaccio, Shakespeare, Cervantes, Moliere, and the Bible.

431. Restoration and Eighteenth Century Drama. Cr. 3. II.
Sentimental comedy, bourgeois tragedy, comedy of manners, ballad opera, and other dramatic types.

432. Shakespeare. Cr. 3. I.
A close reading of the following plays: "The Comedy of Errors", "Richard II", The First Part of "Henry IV", "Romeo and Juliet", "The Merchant of Venice", "Much Ado About Nothing", "Hamlet", "Macbeth", "Antony and Cleopatra", and "The Tempest".

433. Shakespeare. Cr. 3. II.
A close reading of the following plays: "The Two Gentlemen of Verona", "Richard III", Henry V", "Julius Caesar", "As You Like It", "Twelfth Night", "Measure for Measure", "Othello", King Lear", and "The Winter's Tale."

434. Milton and His Age. Cr. 3. I.
The social, political, and religious conditions in the time of Milton. A careful reading of Milton's life and early poems and an intensive study of "Paradise Lost", "Paradise Regained", and "Samson Agonistes".

435. English Romanticism. Cr. 3. I.
Selections from the works of the Pre-Romanticists. The poetry and poetic principles of Wordsworth and Coleridge.

436. The Later Romantic Poets. Cr. 3. II.
Selections from the poetry of Scott, Byron, Shelley and Keats; biography and background.

437. English Drama from the Beginnings to 1642. Cr. 3. II.
The development of tragedy, comedy, and chronicle history from the early types of drama in England.

438. Nineteenth Century English Prose. Cr. 3. I.
Selections from the chief Romantic and Victorian prose writers, with special emphasis on Lamb, Hazlitt, DeQuincey, Carlyle, Arnold, and Stevenson.

4310. The Major Victorian Poets. Cr. 3. I.
Selections from the poetry of Tennyson, Robert Browning, Elizabeth Barrett Browning, Arnold, Dante Gabriel Rossetti, Christina Rossetti, Morris, Swinburne, and Meredith.

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

4315. Tudor Poetry and Prose. Cr. 3. II.
The Elizabethan lyric and narrative poets and prose writers: More, Marlowe, Bacon, Sidney, Spenser, Shakespeare, Daniel, Drayton, Donne, Campion, Jonson, and others.

4316. The Structure of the Novel. Cr. 3. II.
Lectures on the principles of craftmanship which make for effective fiction. Reading from a selected list of novels.

4317. Modern European Drama. Cr. 3. II.
Representative plays of such writers as Ibsen, Strindberg, Tolstoy, Chekhov, Hauptmann, Wedekind, Becque, Hervieu, Maeterlinck, Galsworthy, Barrie, and Shaw. Some consideration of more recent dramatists.

4320. American Literature and its Backgrounds. Cr. 3. I.
The Puritan influence, the Age of Reason, and the Romantic Movement up to Whitman.

4321. American Literature and its Backgrounds. Cr. 3. II.
The works of Whitman nad the rise of Realism and Naturalism. A continuation of 4320, but either part may be taken separately.
4322. Life and Literature of the Southwest. Cr. 3. S.
This course may be counted as either English or history and is the same course as listed under History 4322.
510. Methods of Literary Research. Cr. 1. I, S.
Required of all English graduate students, preferably at the beginning of their graduate work. Compilation of bibliographies;; examination and evaluation of primary and secondary sources; problems of interpretation, style, and organization presented by the research paper in the field of literary studies.
530. Middle English Literature. Cr. 3. II.
Teutonic, Celtic, and Classical-Christian origins of medieval literature in English. Studies in the romance, allegory, didactic verse, with special attention to the "Sir Gawain" poet, "Piers Plowman", and to problems in the interpretaiton of Chaucer.
533. Elizabeth Drama. Cr. 3. II.
534. Old English. Cr. 3. I.
536. Studies in American Literature. Cr. 3. II.
537. Spenser. Cr. 3. II.
538. Studies in the English Romantic Poets. Cr. 3. II.
539. American Critical Theories. Cr. 3. I.
5311. Literary Criticism. Cr. 3. II.
5319. Studies in Shakespeare. Cr. 3. II.
The nature and content of the course will vary to meet the needs of the students enrolled.
601. Thesis.

Family Relations

(See Child Development and Family Relations)

Finance

(See Accounting and Finance)

Foods And Nutrition

PROFESSORS MICHIE, WEEKS. ASSOCIATE PROFESSORS LAMB, TWYFORD. ASSISTANT PROFESSOR BUTTRILL. INSTRUCTOR HATTOX.

In the Department of Foods and Nutrition, work is offered leading to the Degree of Bachelor of Science in Home Economics with a major in foods and nutrition.

The curriculum offers optional courses during the junior and senior years which will prepare the student for special phases of work in the field of foods and nutrition, i. e., homemaking, teaching foods and nutrition, appointments in dietetics, social welfare, commercial food service and research. These options are listed with the curriculum in this catalog.

In addition to work offered for the undergraduate degree, the Department of Foods and Nutrition gives graduate work leading to the Degree of Master of Science.

Discussion of graduate work including admission, divisions and departments offering graduate work, and graduate degrees given, will be found in this catalog under the Division of Graduate Studies.

Courses which may be taken for graduate credit, in addition to all courses numbered in the 500 series, are Nutr. 431, 432, 433; Foods 331, 335, 433, if properly petitioned for and provided additional work is done in each case.

FOODS AND COOKERY

131. Elementary Food Preparation and Serving. Cr. 3. (2-3). I, II.
The principles of cookery with an introduction to the planning and serving of meals in the home; a study of consumer problems as related to food.
132. Elementary Food Preparation. Cr. 3. (2-3). I, II.
The scientific principles underlying food preparation; problems of buying, phases of production and manufacture as they relate to the cooking of foods. Some experimental work.

135. Food Preparation and Selection (for Nurses.) Cr. 3. (2-3). I, II.
Principles of food preparation, selection and service with emphasis on the nutritive value of foods. The course is based on normal family meals with applications to the needs of nursing.

232. Meal Planning and Table Service. Cr. 3. (1-6). I, II.
Prerequisite: Foods 132. The planning and service of luncheons, suppers, dinners, buffet meals and teas. Food combinations in relation to the nutritive and aesthetic aspects of menu planning. Economics of food purchasing and compiliation of food budgets.

233. Food Selection and Serving. Cr. 3. (2-3). II.
The planning, preparation and serving of family meals including meals for special occasions as buffet meals, teas, and dinners. Food budgets and the economics of food purchasing. Open to men and women not registered as home economics students.

331. Food Demonstration. Cr. 3. (2-3). I.
Prerequisite: Foods 232, Nutr. 334. Procedure in demonstrating before audiences of different sorts. Especially for prospective teachers and home demonstration agents.

332. Food Purchasing. Cr. 3. (2-3). I.
Prerequisite: Foods 132. Food purchasing with emphasis on the relation of the producer to the consumer, on food legislation, and on methods of reducing food costs. Visits to local markets. Economy of time, labor, money, and equipment.

333. Experimental Cookery. Cr. 3. (1-6). II.
Prerequisite: Foods 232, Nutr. 334, and junior standing in foods and nutrition. Experimental work in the field of cookery. Factors influencing food preparation. Testing recipes, developing proportions for new recipes.

335. Food Preservation. Cr. 3. (1-6). I.
Perequisite: Junior or senior standing in Department of Foods and Nutrition. Adaptation of newer scientific methods to food preservation. Intensive practice in canning, preserving, and pickling meats, fruits, vegetables. Especially for home demonstration agents and vocational home economics teachers.

433. Advanced Food Preparation and Serving. Cr. 3. (1-6). II.
Prerequisite: Foods 232, 332, Nutrition 334, and senior standing; open to juniors upon recommendation of head of department. Experience in preparation of unusual types of foods and meals for special occasions. Designed to develop a more cosmopolitan attitude toward food. Opportunity is given for practice in preparing and serving groups with ordinary home and laboratory equipment.

531. Research Methods in Cookery. Cr. 3. (1-6). S.
Prerequisite: Foods 333 and graduate standing. A study of some problems of food preparation and their solution. Laboratory experience in solving current problems in food preparation methods; egg and milk cookery, emulsions, jellies, preparation and freezing of foods, batters and doughs, fats and oils, meats, special problems.

NUTRITION AND DIETETICS

333. Elementary Nutrition and Food Selection. Cr. 3. II.
Prerequisite: Sophomore standing or above. Fundamental principles of nutrition and the relation of food selection to health. Emphasis is placed on the planning of dietaries to meet the individual requirement and to the selection of foods from the standpoint of economics and physical efficiency. Open to men and women not registered in the Department of Foods and Nutrition.

334. Elementary Nutrition. Cr. 3. (2-3). I, II.
Prerequisite: Foods 132, Chem. 131-2, Zool. 235-6. The essentials of an adequate diet. The food requirements of persons of different ages and the nutritive values of common food materials. Experimental work with laboratory animals.

431. Nutrition in Disease. Cr. 3. (2-3). II.
Prerequisite: Nutr. 432 or parallel. Adaptations of diet to disorders of nutrition. Specific diseases, the prevention and care of which are largely influenced by diet.

432. Nutrition. Cr. 3. (2-3).
Prerequisite: Nutr. 334 and Chem. 341 or 343-4. Nutritive requirements from infancy to old age. Emphasis upon the functions of the nutrients and their relation to the chemistry and physiology of living tissues.

433. Nutrition of Children. Cr. 3. (2-3). I.
Prerequisite: Nutr. 334. A study of the principles of child nutrition; the methods of judging nutrition; the causes and effects of malnutrition; the responsibility of the home, the school, and the community for the improvement of the nutritional status of children. Field work dealing with problems of child nutrition is required.

531. Techniques of Nutrition Research. Cr. 3. (1-6). I.
Prerequisite: Nutr. 432 and graduate standing. Training in methods of research in nutrition; food analysis, dietary studies, bioassay methods.

532. Studies in Energy Metabolism. Cr. 3. (1-6). II.
Prerequisite: Nutr. 432 and graduate standing. Principles and techniques involved in studies of energy metabolism; practice in determining basal metabolism, computing the results and presenting the findings; experience in the determination of energy value of foods.

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

601. Thesis.

Foreign Languages

PROFESSORS QUALIA, GATES, GORDON. ASSOCIATE PROFESSORS HAMILTON, HENNINGER. ASSISTANT PROFESSORS HAMLETT, REYNOLDS, STREHLI. INSTRUCTORS ALEXANDER, REMMLER, SADLER, TUCKER.

The Department of Foreign Languages offers instruction in German, French, Latin, Spanish, Portuguese, and Greek. Sufficient work is offered for a major in Spanish and French. Courses leading to the Degree of Master of Arts are offered in Spanish.

Students following a major in one foreign language are strongly urged to pursue work in a second foreign language and in English. Other fields which may be effectively combined with a foreign language are speech, social sciences, and journalism.

Students majoring in a foreign language must offer 36 semester hours, if they satisfy the language requirements for a degree in the same language. Students are urged to satisfy their foreign language requirement in another language, however. In this case, 24 semester hours are sufficient for a major.

Those expecting to major in foreign languages should consult with the Head of the Department.

Students wishing to prepare for government service either at home or in foreign fields should consult with the head of the department. In addition to determining languages to be studied, it is necessary to select certain courses in literature, history, government, economics, typing, and shorthand.

FRENCH

131-2. A Beginning Course in French. Cr. 3. I, II.
Grammar, reading, and oral practice.

231-2. Grammar, Reading, Composition, and Conversation. Cr. 3. I, II.
Prerequisite: French 131-2, or two units of high school French.

331-2. A Rapid Reading Course. Cr. 3. I, II.
Prerequisite: French 231-2 or equivalent. For third-year science students and others who wish to acquire facility and ease in reading modern French. Enough grammar and composition to build a solid foundation.

431-2. The Modern Drama. Cr. 3. I, II.
Prerequisite: French 331-2 or its equivalent. The drama from 1636 to 1900. Offered in alternate years; not offered in 1949-50.

433-4. The Literature of the Nineteenth Century. Cr. 3. I, II.
Prerequisite: French 331 or its equivalent. A study of the prose and poetry of the nineteenth century, exclusive of the drama. Offered in alternate years.

435-6. Readings in French Literature. Cr. 3. I, II.
Prerequisite: French 331-2 or the equivalent. Directed study with individual conferences and written reports to enable students majoring in French to investigate those periods of French literature not treated in other courses. Required of students majoring in French.

GERMAN

131-2. A Beginning Course in German. Cr. 3. I, II.
Grammar, reading, and oral practice.

231-2. Grammar, Reading, Composition, and Conversation. Cr. 3. I, II.
Prerequisite: German 131-2, or two units of high school German or the equivalent. Reading of standard literary texts. Grammar review with oral and written practice.

233-4. Scientific German. Cr. 3. I, II.
Prerequisite: German 131-2, or two units of high school German or the equivalent. The reading of specially prepared scientific texts in German with grammar review to assist in the interpretations. For pre-medical and science students in general.

331-2. Contemporary Literature. Cr. 3. I, II.
Prerequisite: German 231-2 or 233-4, or the equivalent. Reading of representative short stories, novels, dramas, and lyrics. Composition based on readings. Conducted chiefly in German.

GREEK

131-2. A Beginning Course in Greek, Cr. 3. I, II.
Forms, word formation, the fundamentals of syntax, and easy reading.

LATIN

A student credited with four admission units in Latin should take Latin 331-2.

131-2. A Beginning Course in Latin. Cr. 3. I, II.
Forms, word formation, the fundamentals of syntax, and easy reading. Especially recommended for students preparing for law or medicine, as well as those electing Latin for degree requirements.

133. Latin Terminology. Cr. 3. I.
Practical Latin especially for students majoring in scientific or professional courses who have had no Latin. The minimum essentials of Latin grammar; emphasis on word analysis by study of root words, prefixes, and suffixes. Word lists, charts, and myths relative to special subjects.

231-2. Reading and Composition. Cr. 3. I, II.
Prerequisite: Latin 131-2 or two units of high school Latin. Selections from Caesar, Cicero, and Virgil. A review of Latin grammar; informal instruction in mythology and antiquities.

331-2. Virgil's **Aeneid**, Introduction to Horace, Cicero's **De Senectute**, the **Phormio** of Terence. Cr. 3. I, II.
Prerequisite: Latin 231-2 or four units of high school Latin.

431-2. Senior Reading. Cr. 3. I, II.
Prerequisite: Latin 331-2. Medieval Latin. A survey of Ovid's works with emphasis on the "Metamorphosis". Offered when demand justifies.

433-4. Advanced Reading. Cr. 3. I, II.
Prerequisite to be determined by the instructor. Offered at intervals, when demand justifies.

PORTUGUESE

131-2. A Beginning Course in Portuguese. Cr. 3. I, II.
Grammar, reading and oral practice.

231-2. Grammar, Reading, Composition, and Conversation. Cr. 3. I, II.
Prerequisite: Portuguese 131-2. Grammar, reading, composition, and conversation, taught by reference to the history, geography, culture, and economic conditions of Portuguese-speaking countries with special reference to Brazil.

SPANISH

131-2. A Beginning Course in Spanish. Cr. 3. I, II.
Grammar, reading and conversation.

231-2. Grammar, Reading, Composition, and Conversation. Cr. 3. I, II.
Prerequisite: Spanish 131-2, or two units of high school Spanish.

331-2. Contemporary Literature. Cr. 3. I, II.
Prerequisite: Spanish 231-2, or three or four units of high school Spanish. Spanish literature from the beginning of the Romantc Movement to the present. Reading of representative novels, dramas, and lyrics. Collateral readings and composition based on readings. Conducted chiefly in Spanish. Spanish 331-2 and Spanish 333-4 may not both be counted toward a degree.

333-4. Introduction to Latin-American Life and Literature. Cr. 3. I, II.
Prerequisite: Spanish 231-2, or three or four units of high school Spanish. The history, geography, literature, customs, and economic conditions of Spanish-American countries. Conducted in Spanish. Spanish 331-2 and Spanish 333-4 may not both be counted toward a degree.

431-2. The Modern Novel. Cr. 3. I, II.
Prerequisite: Spanish 331-2 or its equivalent. Certain nineteenth century novels representing the various tendencies and regions. Lectures. Written reports. Conducted chiefly in Spanish. Offered in alternate years; not offered in 1949-50.

433-4. The Modern Drama. Cr. 3. I, II.
Prerequisite: Spanish 331-2 or its equivalent. The drama from the Romantic Movement to the present. Conducted chiefly in Spanish. Offered in alternate years; offered in 1949-50.

435. Teachers' Course in Methods of Teaching Spanish. Cr. 3. S.
Prerequisite: Spanish 331-2 and 6 semester hours of education. Preparation for teaching Spanish in high school. Scientific and practical methods with as much practice work as possible. Required of those preparing to teach Spanish.

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

438. The Drama before Lope de Vega. Cr. 3.
Prerequisite: Spanish 331-2 or the equivalent. The development of drama in Spain from medieval times to Lope; emphasis on the immediate predecessors of Lope. Offered at intervals, when demand justifies.

4310-11. Spanish Civilization. Cr. 3. S.
Prerequisite: Spanish 331-2 or the equivalent. An outline study of the various phases of Hispanic civilization: history, arts, language, literature. Offered in summers in Mexico City. Offered in summer 1950.

4312-13. The Prose of the Golden Age. Cr. 3. I, II.
Prerequisite: Spanish 331-2. The important prose writers from 1499 to 1650. Reading of representative works, lectures, collateral reading, and reports. Conducted chiefly in Spanish. Offered in alternate years; not offered in 1949-50.

4314-15. The Drama of the Golden Age. Cr. 3. I, II.
Prerequisite: Spanish 331-2 or its equivalent. The drama of the seventeenth century. Reading of representative plays, lectures, discussion, collateral reading, and reports. Conducted chiefly in Spanish. Offered in alternate years; offered in 1949-50.

4316-17. A Survey of Spanish Literature. Cr. 3. I, II.
Prerequisite: Spanish 331-2. The history of Spanish literature from the twelfth to the nineteenth century. Emphasis upon the principal movements and the works of outstanding writers. Readings, lectures, and written reports. Conducted chiefly in Spanish. Especially recommended for students who expect to teach Spanish. Required of all candidates for the Master of Arts Degree with Spanish major.

4318. Contemporary Drama. Cr. 3. S.
Prerequisite: Spanish 331-2 or the equivalent. Intensive study of some representative dramas of living authors and rapid reading of others. Written reports. Offered at intervals, when demand justifies.

4320. Contemporary Spanish Novel. Cr. 3.
Prerequisite: Spanish 331-2 or the equivalent. Intensive study of some representative novels of living authors and rapid reading of others. Written reports. Offered at intervals, when demand justifies.

4324. Readings in Latin-American Literature. Cr. 3.
Prerequisite: Spanish 333-4 or its equivalent. Lectures, collateral readings, reports. Conducted mainly in Spanish. Offered at intervals, when demand justifies.

4325. Readings in Latin-American Literature. Cr. 3.
Prerequisite: Spanish 333-4 or its equivalent. Lectures, collateral readings, reports, Conducted mainly in Spanish. Offered at intervals, when demand justifies.

5312-13. Studies in Spanish and Spanish-American Literature. Cr. 3-6.
Prerequisite: The consent of the head of the department. The nature and content of this course will vary to meet the needs of the individual student. Credit given as often as course is repeated.

601. Thesis.

Courses which may be used for graduate credit:

In addition to all courses numbered in the 500 series, courses in this department which may be taken for graduate credit are: Spanish 431-2, 433-4, 435, 436-7, 438, 4310-11, 4312-13, 4314-15, 4316-17, 4318, 4320, 4324-25; French 431-2, 433-4, 435-6, if properly petitioned for and provided additional work or an added problem is done in each course numbered in the 400 series, which otherwise carry no graduate credit.

French

(See Foreign Languages)

Geography

(See Geology)

Geology

PROFESSORS SIDWELL, PATTON, ROBINSON. INSTRUCTORS ALEXANDER, LANGSTON*. LECTURERS BRAND, DENNIS, IRVIN, KEESEE, RENFROE, WARN.

An important function of the Department of Geology is to train students for work in the petroleum industry. To this end thorough training is offered in all of the branches of geology connected with the petroleum industry. Students who wish to enter geological work in the petroleum industry should take the curriculum in petroleum geology outlined on page 89 of this catalog. Students desiring to take geology as a science credit should register for Geology 131-2.

131-2. General Geology. Cr. 3. (3-2). I, II.
Physical and historical geology. Present day geologic processes followed by applications of these principles to the interpretation of the geologic record. A foundation course for further work in geology. May also serve for cultural purposes.

231-2. Mineralogy. Cr. 3. (2-3). I, II.
Prerequisite: Geol. 131-2, Chem. 131-2. Methods of identification of minerals: blowpipe and analysis; occurrence and properties of minerals.

* On leave 1948-49.

233. General Geology for Engineers. Cr. 3. (2-3). I.
Prerequisite: Sophomore standing. Similar to Geol. 131-2 but a shorter course adapted to the special needs of engineering students other than petroleum engineering students; especially for students in civil engineering.

235. Advanced General Geology. Cr. 3. (2-3). I.
Prerequisite: Geol. 131-2. A study and analysis of land forms and of processes responsible for them.

236. Advanced Historical Geology. Cr. 3. (2-3). II.
Prerequisite: Geol. 131-2; Geol. 235. Historical geology of North American continent with emphasis on stratigraphy and life succession.

333-4. Petrography and Petrology. Cr. 3. (1-6). I, II.
Prerequisite: Geol. 131-2, 231. Study and classification of rocks without the use of the microscope. Methods of optical mineralogy in identifying rock-forming minerals by means of the petrographic microscope. Study and identification, by use of the petrographic microscope, of the mineral grains commonly occurring in sediments. Study of rocks in thin section under the microscope; methods of quantitative mineralogical classification of rocks.

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

337. Ground Water. Cr. 3. I.
Prerequisite: Geology 231-2. Principles of the occurrence, recharge, movement and discharge of ground water.

338. Metallic Ores or Non-Metallic Deposits. Cr. 3. II.
Prerequisite: Geol. 231-2. Principles of the occurrence, processes, and structure of metallic ore deposits. Offered in alternate years. Metallic ore deposits in 1949-50.

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

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

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

435. Index Fossils. Cr. 3. (1-6). I.
Prerequisite: Geol. 335-6. The stratigraphy and different horizon markers of the different systems with practice in making and identifying field collections.

436. Micropaleontology. Cr. 3. (1-6). II.
Prerequisite: Geol. 335-6. Foraminifera and other microfossils of the oil bearing strata of Texas; methods of collection and preparation.

437-8. Sedimentation. Cr. 3. (2-3). I, II.
Prerequisite: 24 semester hours in geology. Advanced investigation. The processes and results of sedimentation, analytic laboratory work in sediments. Special attention to subsurface methods. Occasional laboratory exercises substituted for lectures.

4310-11. Vertebrate Paleontology. Cr. 3. I, II.
Prerequisite: 12 hours of geology or 12 hours of geology and anthropology. History of the vertebrates with special emphasis upon (a) the early reptiles; (b) the mammals; (c) the relationship of vertebrate history to earth history as a whole.

4312-13. Sedimentation for Petroleum Engineers, Cr. 3. I, II.
Prerequisite: Senior standing in petroleum engineering. Study of sedimentation as applied to problems of petroleum engineering.

4314-15. Stratigraphy of Mid-Continent Area. Cr. 3. I, II.
Prerequisite: 24 semester hours in geology. Advanced studies in stratigraphic methods and techniques. Methods of correlation with emphasis upon use of subsurface data. Stratigraphic principles applied to detailed study of surface and subsurface formations of Texas, Oklahoma, New Mexico, Arkansas, Louisiana, and Kansas.

511-2. Research Methods. Cr. 1. I, II.
Prerequisite: Graduate standing in geology and consent of head of department. Methods of outline and attack; reconnaissance of the problem; main objective; tangential objectives; nature of evidence; states of knowledge; permissible conclusions. Preparation of effective reports and technique of publication. Analysis of selected scientific articles. Practical experience with chosen problems.

531-2. Advanced Sdeimentation. Cr. 3. I, II.
Prerequisite: Graduate standing in geology and consent of head of the department. Individual investigation to determine the characteristics of sediments in the different environments; emphasis on relation of disastrophism and climate on origin of sediments. Offered in alternate years.

533-4. Structure of Oil and Gas Reservoirs. Cr. 3. I, II.
Prerequisite: Graduate standing in geology and consent of head of the department. One hour conference each week and six hours of library work. Detailed examination of the form and cause of selected productive structures. With the facts derived from published reports of field studies, the student will be encouraged to set up many hypotheses and to select those of greatest value. Offered in alternate years; offered in 1948-49.

535-6. Advanced Work in Specific Fields. Cr. 3-6. I, II.
Prerequisite: Graduate standing in geology and consent of head of the department. Course and credit depend upon preparation and need of the student and the work done. Each course taken under these numbers will regularly carry a subtitle describing the course.

5313-14. Stratigraphy of the United States. Cr. 3. I, II.
Prerequisite: Graduate standing in geology and consent of head of the department. A survey of formations of economic importance in the United States with study of the principles of correlation and their application. Offered in alternate years. Offered in 1948-49.

5317-18. Seismology. Cr. 3. (1-6). I, II.
Prerequisite: 24 semester hours in geology and graduate standing. Principles of seismology; operation and use of seismograph instruments; principles of interpretation of seismograms; operation of seismological observatory; study and interpretation of records of local and major earthquake shocks throughout the world as recorded by the instruments of the college seismological observatory; study and interpretation of data furnished by cooperating seismological stations affiliated with the U. S. Coast and Geodetic Survey.

601. Thesis.

GEOGRAPHY

231-2. Principles of Geography. Cr. 3. I, II.
Geographic factors especially as they affect the activities of man. Special emphasis upon relief, climate industries, communication, and political conditions. Not accepted in fulfillment of science requirements. Accepted in fulfillment of social science requirements.

Courses which may be used for graduate credit:

In addition to all courses numbered in the 500 series, courses in this department which may be taken for graduate credit are: Geol. 333-4, 335-6, 363, 411-2, 413-4, 431-2, 433, 434, 435, 436, 437-8, 4310-11, if properly petitioned for and provided additional work or an added problem is done in each course numbered in the 300 or 400 series which otherwise carry no graduate credit.

German

(See Foreign Language)

Government

PROFESSORS DAVIS, JACKSON. ASSOCIATE PROFESSOR ABERNETHY. INSTRUCTORS ADAMS*, DAULEY, KENNEDY, MACK, ODEN, TITUS. PART-TIME LECTURER DENTON.

For graduation from Texas Technological College, at least one course in government is required. The Department of Government endeavors to give all students a basic understanding of governmental processes and to help in preparing them for responsible citizenship, intelligent voting, and successful leadership in public affairs.

A major containing a well-rounded program is offered in government. It is based on the principles of a liberal education, with emphasis on the theory and practice of governments. Students interested in preparing for government service may take advanced courses in all levels of American government with emphasis upon the field of their special interest. Courses of study are also provided for those students who wish to enter the foreign service as a career.

The Department of Government serves in an advisory capacity for pre-law students. Each student having such interest is guided carefully toward fulfilling the entrance requirements for law school and is given the best possible preparatory background for his future work.

Govt. 131-2 or Govt. 230 is required of all students in the college for graduation. Govt. 231 is recommended to follow Govt. 230, although in some departments it is not required for graduation.

Students majoring in government should take certain basic courses in all fields of government. At the beginning of the junior year several

* Leave of Absence 1948-49.

alternative fields of emphasis are offered from which the student may choose. They are:

American Government (National, State, and Local)
International Relations (Foreign Service)
Public Administration (Government Service—National, State, Local)
Political Theory (European, American, Modern)
Pre-Law

131. American Government, National. Cr. 3.
The constitution, principles, organizations, and actual working of the national government. Emphasis upon the duties and obligations of citizenship.

132. American Government, State. Cr. 3.
The constitutions and framework of the governments of the states with emphasis on Texas.

230. American Government, Organization. Cr. 3.
A study of the constitutions and organization of the governments of the United States, the states in general, and Texas in particular. Required of students whose departments require only 3 hours of government. Credit will not be given for both Govt. 230 and 131.

231. American Government, Functions. Cr. 3.
A study of the functions and services of the governments of the United States, the states in general, and Texas in particular. This course will follow the work given in the first semester and will be taken by most students who take 6 hours in government.

232. Modern Governments. Cr. 3.
Prerequisite: 6 semester hours in American government. A comparative study of selected European governments.

331. Local Government. Cr. 3.
Prerequisite: 6 semester hours in American government. The machinery of city and county government; the forms—both new and old—of municipal government; interdepartmental relations and the relation of local government to state.

332. Local Administration. Cr. 3.
Prerequisite: 6 semester hours in American government. Chief problems of present-day local administration; special stress placed upon administration of Texas cities and counties.

334. American Political Parties. Cr. 3.
Prerequisite: 6 semester hours in American government. Party history, functions. organization, finance, campaign methods and elections.

335. American Foreign Relations. Cr. 3.
Prerequisite: 6 semester hours in American government. Control and conduct of the relations of the United States with the outside world.

336. American Diplomacy. Cr. 3.
Prerequisite: 6 semester hours in American government and 6 hours of history. Foreign policies of the United States.

337. Public Administration, Organization. Cr. 3.
Prerequisite: 6 semester hours in American government. Principles of administrative organization; structure of all units of government; powers, duties, and responsibilities of officers; administrative reorganization.

338. Public Administration, Procedure. Cr. 3.
Prerequisite: 6 semester hours in American government. Problems of national, state. and local units of government, including cost of government, budgeting, accounting and reporting, purchase and supply, personnel, promotion and demotion, and removal and retirement.

3311. Political Institutions. Cr. 3.
Formerly 231. Prerequisite: 6 semester hours in American government. The origin, development, and functions of political institutions in connection with consideration of political theories.

3312. Government and Labor. Cr. 3.
Prerequisite: 6 semester hours in American government and 6 hours of economics. The role of government in the field of labor. Legislative, administrative and judicial policies relating to labor problems and labor-management disputes.

431-2. American Constitutional Law. Cr. 3.
Prerequisite: 6 semester hours in American government. Interpretation of the Constitution of the United States based principally upon Supreme Court decisions. The leading cases in American constitutional law analyzed.

433. European Political Ideas. Cr. 3.
Prerequisite: 6 semester hours in American government. A study of the political ideas expressed by the greatest thinkers from ancient time to the present, with emphasis upon reading from the classics.

434. American Political Ideas. Cr. 3.
Prerequisite: 6 semester hours in American government. The lives and ideas of leading political thinkers of the United States from the colonial period to the present.

435. International Organization. Cr. 3.
Prerequisite: 6 hours of American government. A study of international organizations and agencies with emphasis on the modern time.

436. International Law. Cr. 3.
Prerequisite: 6 hours in American government, and 3 hours in American or European history. The fundamental principles of international law with special emphasis upon American interpretations and American contributions to the growth of the law.
437. Political Geography. Cr. 3.
Prerequisite: 6 semester hours in American government. Geographic factors in political problems and in the development of political institutions; the main problems of politics in their relation to world geography.
438. World Politics. Cr. 3.
Prerequisite: 6 semester hours in American government. Problems and issues which have arisen in the family of nations; organizations and efforts to cope with these problems; the principles of international conduct.
531. Seminar.
Prerequisite: Senior or graduate standing. For individual student needs. Readings, research, reports, and discussions in particular assigned fields. May be repeated in different fields of study.
532. Reading and Research.
Prerequisite: Graduate standing. For individual student needs. The number of semester hours credit determined by the amount, nature, and character of work done. May be repeated in different fields of study.
535. The Technique of Research. Cr. 3.
Prerequisite: Graduate standing. Bibliography, sources, methods of gathering material, evaluation, elimination, assimilation, organization, and composition. Lectures, projects and readings.
601. Thesis.

Courses which may be used for graduate credit:
In addition to all courses numbered in the 500 series, courses in this department which may be taken for graduate credit are 331, 332, 334, 335, 336, 337, 338, 3311, 3312, 431, 432, 433, 434, 435, 436, 437, 438, if properly petitioned for and provided additional work is done in each course numbered in the 300 or 400 series.

Greek

(See **Foreign Language**)

History And Anthropology

PROFESSORS HOLDEN, EAVES, KINCHEN, McKAY*, WALLACE.
ASSISTANT PROFESSOR VERNON. LECTURERS
KAMMERDIENER, LOWREY.

All courses numbered above 300 are advanced. Prerequisites for such courses for history and anthropology majors are Hist. 131-2 or 133-4, and 231-2. For students wishing to take advanced courses in history or anthropology for electives no prerequisites are required unless specified. Thirty-six hours, including Anthro. 331 and 332, are required for majors.

Prerequisite for courses above 500 is graduate standing.

HISTORY

131-2. History of Civilization. Cr. 3. Each, I, II.
Rise of civilization in Egypt, Babylonia, and Crete; its expansion to Western Europe through Greece and Rome; ancient religions and the beginning of Christianity; the medieval church; feudalism; crusades; Renaissance; Protestant revolt; rise of the modern state; industrial revolution; World War I, background of World War II. First semester, prior to 1350 A. D.; second semester, since 1350 A. D.
133-4. Economic and Political History of England. Cr. 3. Each, I, II.
Economic, legal, and cultural development of the English people.
231-2. Economic and Political History of the United States. Cr. 3. Each, I, II.
Prerequisite: for pre-law and English majors, Hist. 133-4; for history majors, either Hist. 131-2 or 133-4. Discovery, colonization, colonial institutions; Revolution; Confederation; Constitution: growth of nationalism; slavery; expansion; sectionalism; Civil War; Reconstruction; new industrial and social problems; domestic and foreign problems.
330. Teaching History in High Schools. Cr. 3. S.
Modern technique of teaching history in junior and senior high schools. Credited either as history or education

* On leave, 1948-49.

331. Greek Civilization. Cr. 3. I.
Especial emphasis on Greek contributions to Western civilization.
332. Roman Civilization. Cr. 3. II.
Especial emphasis on Roman contributions to European culture.
333. Renaissance and Reformation. Cr. 3. I.
Emphasis on the emergence of modern thought and institutions.
334. French Revolution and Napoleon. Cr. 3. II.
Nationalism; enlightened despotism; the Metternich system.
335. Geopolitics of World War II. Cr. 3. I, S.
History of events leading to the present world situation.
336. Tudor England. Cr. 3. I.
Establishment of a strong monarchy; break with the Roman Church; rise of sea power.
337. Stuart England. Cr. 3. II.
Contest between king and Parliament; civil war; Commonwealth and Restoration; supremacy of Parliament; colonial policies.
338. Eighteenth Century England. Cr. 3. I.
Rise of the cabinet; colonial supremacy; Whig versus Tory; industrial revolution.
339. Nineteenth Century England. Cr. 3. II.
Napoleonic struggle; reforms; Irish question; development of the Commonwealth.
3311. The Canadian Dominion. Cr. 3. S.
Evolution of the Dominion; relationship with the other dominions in the British Empire.
3313. Europe from 1815 to 1918. Cr. 3. I.
Congress of Vienna to Treaty of Versailles.
3314. Europe since 1919. Cr. 3. II.
World War II and its aftermath.
3315. Japan and China. Cr. 3. II.
Japan's imperialistic policy; World War II and its aftermath in the Far East.
3316. British Empire. Cr. 3. II, S.
Evolution of the British Empire, and its recent transformation in the present Commonwealth of British Nations.
3319. Twentieth Century Britain. Cr. 3. S.
Political and social reform; education; labor movement; effect of Wars I and II.
430. English Colonial America Cr. 3. S.
Exploration; settlement; development of American institutions and culture.
433. The American Revolution. Cr. 3. I.
Causes; progress; French aid; Loyalists; finances; Treaty of 1783.
434. Early American Constitutional Development. Cr. 3. II.
Confederation; Constitution; governmental organization; amendments.
435. Anglo-American Diplomacy. Cr. 3. S.
Relationships from independence to the present.
436. The Federalist and Republican Periods. Cr. 3. I.
Rise of nationalism; economic and political issues.
437. The Jacksonian Period. Cr. 3. II.
Rise of Jacksonian democracy; social and economic movements.
438. History of Texas to 1846. Cr. 3. I.
Exploration; colonization; revolution; the Republic.
439. History of Texas, 1846-1900. Cr. 3. II.
Social and economic movements; emphasis on development of West Texas.
4310. Expansion of the United States. Cr. 3. S.
Purchase of Louisiana; acquisition of Florida; annexation of Texas; Oregon controversy; Mexican cession; Gadsden Treaty; purchase of Alaska; acquisition of our insular possession.
4311. The Civil War. Cr. 3. I.
The Old South; slavery; secession; economic resources; foreign relations; military movements.
4312. Reconstruction. Cr. 3. II.
Economic status of South; reconstruction policies; radical rule and overthrow.
4313. History of the United States, 1877-1898. Cr. 3. I.
Social adjustments; rise of big business; tariff.
4314. History of the United States, 1898-1918. Cr. 3. II.
Spanish-American War; progressivism; World War I.
4315. Constitutional Development in Texas, Cr. 3. S.
Detailed study of the six constitutions of Texas.
4316. History of the United States. 1919-1932. Cr. 3. I.
Post-war readjustment; Republican rule; economic policies; agricultural life in the 1920's.
4317. History of the United States since 1933. Cr. 3. II.
Election of 1932; New Deal; life in the 1930's.
4319. Latin American Diplomacy. Cr. 3. S.
From Latin American independence to the present.

4320. Social History of Texas, 1821-1860. Cr. 3. S.
Amusements; architecture; religion; transportation; immigration; journalism; dueling; temperance and literature of the colonial period; the republic and early statehood.

4321. Recent History of Texas, 1900-1940. Cr. 3. S.
Emphasis on social and economic movements.

4322. Life and Literature of the Southwest. Cr. 3. S.
This course is also listed as English 4322.

4323. History of South America. Cr. 3. I.
Exploration; colonization; independence.

4324. History of South America. Cr. 3. II.
Political development; social and economic problems; recent movements.

4325. History of Spanish North America. Cr. 3. I.
Exploration; colonization; independence.

4326. History of Spanish North America. Cr. 3. II.
Politics; church and state; reforms; present trends.

530. Seminar in History. Cr. 3. I, II, S.

535. Technique of Research. Cr. 3. I, S.

601. Thesis.

ANTHROPOLOGY

331-2. Anthropology. Cr. 3. I, II.
Development of man from his origin; races; special reference to prehistoric races of North and Central America.

334-5. The American Indian. Cr. 3. I, II.
Customs, institutions, and contributions of the native races of America; their relations with the Anglo-Americans historically traced.

336-7. Mexican Archaeology. Cr. 3. S.
A field course in Old Mexico. Lectures, reading, research, excavation, and visits to archaeological ruins in the vicinity of Mexico City.

431-2. Field and Museum Technique. Cr. 3. I, II.

433-4. Southwestern Archaelogy. Cr. 3. S.
A field course; lectures, research and excavation.

531-2. Seminar in Anthropology. Cr. 3. I, II.

Courses which may be used for graduate credit:

In addition to all courses numbered in the 500 series, courses in this department which may be taken for graduate credit are: Hist. 331, 332, 333, 334, 335, 336, 337, 338, 339, 3311, 3313, 3314, 3315, 3316, 3319, 430, 433, 434, 435, 436, 437, 438, 439, 4310, 4311, 4312, 4313, 4314, 4315, 4316, 4317, 4319, 4320, 4321, 4322, 4323, 4324, 4325, 4326; Anthro. 334-5, 336-7, 431-2, 433-4, if properly petitioned for and provided additional work or an added problem is done in each course numbered in the 300 or 400 series, which otherwise carry no graduate credit.

Home Economics Education

PROFESSOR ADAMS. ASSOCIATE PROFESSOR CLEWELL. ASSISTANT PROFESSOR NEBBITT. LECTURER GRAVES.

The curriculum in the Department of Home Economics Education meets the requirements for the Vocational Certificate of Approval for Homemaking Education, the six-year high school certificate, and the special certificate to teach home economics.

Candidates for the Vocational Certificate of Approval for Homemaking Education must have some actual homemaking experience.

Courses which may be used for graduate credit in addition to all courses numbered in the 500 series are: 432, 434, 435, 441, if properly petitioned for and provided additional work or an added problem is done in each course numbered in the 400 series, which otherwise carry no graduate credit.

111. Introduction to Home Economics. Cr. 1. I, II.
A basic course for all curricula in the Division of Home Economics. Units offered include the relationship of the student with her college; the development of good habits of study; student budgeting of time and money; special emphasis on individual counselling and vocational guidance. Required of all home economics freshmen.

331. Principles of Teaching Home Economics. Cr. 3. I, II.
Prerequisite: Junior standing in the Division of Home Economics and the approval of department head; Ed. 234 or parallel. An introduction to teaching home economics; professional development; principles of learning; methods and techniques in presenting the various types of lessons; collection and organization of teaching materials; the year-round program and its relation to the community. Home experiences; opportunities to visit selected types of home economics programs.

332. Methods of Teaching Home Care of the Sick and Home Safety. Cr. 3. S.
Prerequisite: Junior standing. H. E. Ed. 331. Designed to help teachers meet the need for applying techniques in teaching home care of the sick, home safety and the common home health emergencies.

411. Home Economics Lectures. Cr. 1. I, II.
Prerequisite: Senior standing in home economics. Reports and discussions on assigned topics based on recent literature and research. Counseling; occupational guidance. Aspects of professional preparation and development.

412. Supervised Observation in Home Economics. Cr. 1. I, II.
Prerequisite: 90 hours in home economics curricula and the approval of department head. Guided observation of vocational homemaking programs as a basis for analyzing the application of educational principles to homemaking instruction. Evaluation of methods used in teaching.

431. Methods of Teaching Home Economics. Cr. 3. I, II.
Prerequisite: Ed. 234, H. E. Ed. 331, senior standing. Philosophy of homemaking education; national vocational acts; the vocational homemaking program in Texas; current influences and needs; the whole school program and the community; planning space and equipment; business management; records and reports; evaluation of teaching; club programs; extra-class activities. Visiting selected types of vocational homemaking programs.

432. Problems in Teaching Clothing. Cr. 3. I, II.
Prerequisite or parallel: H. E. Ed. 431; Cloth. 334 or 431, senior standing. Methods used in teaching clothing. Demonstrations and projects. Preparation of illustrative materials, scales, exhibits.

434. Methods of Teaching Applied Art in the Homemaking Curriculum. Cr. 3. S.
Prerequisite: H. E. Ed. 331. Methods of incorporating the teaching and application of art into the vocational homemaking program.

435. Methods for Adult Leadership. Cr. 3. II.
Prerequisite: Senor standing; H. E. Ed. 331, 431. A survey of community programs for home and family life education. Emphasis on the techniques and problems in the promotion and organization of programs of homemaking education for adults and out-of-school groups.

441. Student Teaching in Home Economics. Cr. 4. (2-10). I, II.
Prerequisite: H. E. Ed. 431; Nutr. 334; Cloth. 232. Supervised observation and teaching and participation in the various phases of vocational homemaking programs.

532. The Development of the Homemaking Program. Cr. 3. S, II.
Prerequisite: Graduate standing. Philosophy and development of the home economics movement; the curriculum; major trends in the field; evaluation of current home economics literature; administrative problems in developing the program.

534. Techniques of Research. Cr. 3. I, II.
Prerequisite: Graduate standing and the consent of the head of the department. Registration in this course enables the graduate student to carry on such research as will qualify for a required master's thesis.

536. Problems. Cr. 3. S, I.
Prerequisite: Graduate standing: H. E. Ed. 431 and H. E. Ed. 441. Study of individual and group problems according to special interests and needs of the class.

537. Techniques of Supervision. Cr. 3. S.
Prerequisite: Graduate standing. Responsibilities and techniques of supervision with special reference to democratic procedures in an education program. Designed for teachers of successful experience. Field contacts with various types of programs.

601. Thesis.

Home Management

PROFESSOR WEEKS. ASSISTANT PROFESSOR DREW.

The Department of Home Management aims to give students an appreciation of the value of good management in the various phases of home life, as well as to provide means of developing skill in homemaking activities. Residence in the Home Management House gives opportunity for securing experiences in the managerial and social problems of homemaking.

Courses which may be taken for graduate credit in addition to those numbered in the 500 series are H. Mgt. 433, 434 if properly petitioned for and provided an additional problem is done.

332. General Home Management. Cr. 3. I, II.
Prerequisite: Junior or senior standing. Management of household activities to save time and energy; finance management; family housing; the philosophy of homemaking.

431. Housing, House Care, and Management. Cr. 3. (2-3). I, II.
Prerequisite: H. Mgt. 332. Housing as it affects the family and community; problems relating to the physical care of the house including cleaning, storage, home safety, laundering, operation and maintenance.

432. Residence in Home Management House. Cr. 3. I, II.
Prerequisite: H. Mgt. 332, 12 hours in Department of Foods and Nutrition. Living in Home Management House for a minimum of six weeks under supervision. Food preparation and service, housekeeping, household finance, entertaining and group relationships, including care of an infant. Students pay a fixed sum for room and board.

433. Household Equipment. Cr. 3. (2-3). I.
Prerequisite: H. Mgt. 332. Selection, operation and care of household equipment, both large and small, including electric, non-electric and gas.

434. Consumer Problems. Cr. 3. II.
Prerequisite: Eco. 231, junior or senior standing. A survey of the forces which today affect consumer choices. Development of practical principles for better buying and use of household commodities. Evaluation of agencies concerned with this movement.

Horticulture

(See Plant Industry)

Industrial Engineering and Engineering Drawing

PROFESSORS ST. CLAIR, PERRYMAN. ASSOCIATE PROFESSOR PENICK. ASSISTANT PROFESSOR ATKINSON. INSTRUCTOR JENKINS.

INDUSTRIAL ENGINEERING

Industrial engineering is that branch of engineering which specializes in the location, design, construction, operation, and equipment of industrial plants.

The demand for graduates in this branch of engineering has greatly increased during the past few years and the need for such training was emphasized during World War II.

The curriculum covered by this major enables a graduate to enter the employ of the average industrial concern on the same basis as a graduate in electrical or mechanical engineering. After his basic training he is in a position to enter any one of a number of fields such as production, purchasing, personnel, time study, design, etc.

The student obtains instruction in the basic branches of electrical, civil, mechanical, and chemical engineering, as well as the more special branches of industrial engineering.

An examination of the curriculum indicates that emphasis is placed on plant design, location, type of building and machinery, safety, methods of organization, and the proper personnel for operation of a particular industry.

Courses which may be used for graduate credit:

In addition to all courses numbered in the 500 series, courses in this department which may be taken for graduate credit are: I. Engr. 331, 332, 333, 336, 421-2, 432-3, 435, and 436, if properly petitioned for and provided additional work or an added problem is done in each course numbered in the 300 or 400 series, which otherwise carry no graduate credit.

316. Personnel Administration. Cr. 1. I.
Prerequisite: Junior standing. Relation of capital and labor; relation of various departments of an industrial organization; relation to foreman and workmen. Procedure of interviewing, hiring, transfer, and discharge.

331. Time and Motion Study. Cr. 3. (2-3). II.
Prerequisite: Junior standing or permission of head of department. Methods of taking and analyzing time and motion studies; setting of standard times; calculation of wage incentives; analysis of studies of representative processes. Technique of stop watches studies-allowances-fatigue-problems.

332. Management—Production Planning and Control. Cr. 3. I, II.
Prerequisite: Junior standing. Basic principles of management. Standard methods of planning, scheduling, and controlling processes in modern industrial plants. Machine capacity analysis. Typical production problems.

333. Manufacturing Methods. Cr. 3. I.
Prerequisite: Junior standing in engineering. Methods of manufacture used in various industries such as paper, Portland cement, steel and iron, sulphur, automobiles, airplanes, petroleum, meat packing, etc. Study of types of machines, character of buildings. Brief history of each industry up to most modern methods, also nature of working conditions, hazards, annual value of product. Centers of each industry.

336. Tool Design. Cr. 3. (1-6). II.
Prerequisite: Junior standing in engineering and at least parallel registration in C.E. 333; and 7 hours credit in engineering drawing. Study of types and characteristics of tools best suited for work in different metals. Speeds most satisfactory for various metals—depth of cuts. Tools for various types of machines and jobs will be designed—also jigs, fixtures, dies, gages, etc.

421-2. Chemical Plant Design. Cr. 2. (0-6). I, II.
Prerequisite: E. Dr. 121. Concurrent with or following Chem. 431-2 and C. E. 333. Chemical engineering equipment and its arrangement in various types of chemical plants. Drawings, calculations, and sketches used to solve assigned problems in design of machinery and apparatus, selection and specification of equipment, and layout of chemical plants.

431. Purchasing and Industrial Engineering Problems. Cr. 3. (2-3). II.
Prerequisite: Senior standing in engineering. General methods of purchasing; specifications; quotations; relation of price and quality; sources of supply. Problems involving operating efficiencies and minimum production costs. Maintenance of industrial plants and equipments. Special industrial engineering problems.

432-3. Industrial Plant Design. Cr. 3. (1-6). I, II.
Prerequisite: Senior standing in industrial engineering. In the form of a seminar. A complete industrial plant will be designed, covering location, capacity, material routing, type of buildings, machinery, shipping, sanitary and safety working condition.

435. Industrial Safety Engineering. Cr. 3. II.
Prerequisite: Senior standing in engineering, or experience in industry covering at least six months. History of safety movement especially as applied to industry. Cost of accidents; methods of teaching and enforcing safety; fundamentals of machine guarding; safety organization; accident rates; accident investigations and reports; protective equipment; fire protection; health hazards; first aid. Reports required from students on observed hazards.

436. Principles of Engineering Economics. Cr. 3. I.
Formerly 423. Prerequisite: 3 hours, principles of fundamentals of economics. Available means from which to judge the trend of business as indicated by government reports; planning economy studies to solve engineering problems; interest—the time element in economy techniques for economy studies; getting results from economy studies; problems in application of principles of engineering economy.

ENGINEERING DRAWING

The courses offered in engineering drawing are fundamental for all courses in engineering. The aim of these courses is to prepare the student to use, intelligently and skillfully, standard drawing instruments and equipment of a design and plant layout man.

Approved drawing equipment is required in all courses.

111. Engineering Drawing. Cr. 1. (0-3). S.
This course is for students who have completed only 2 semester hours of engineering drawing in a junior college, or other college where the course content has been equivalent to only 2 semester hours of E. Dr. 131. Course content will cover those subjects ordinarily not covered in his previous work.

121. Engineering Drawing. Cr. 2. (0-6). I, II.
(Formerly 133). Prerequisite: E. Dr. 131, or equivalent. Intersections, developments, dimensioning, slant lettering, oblique drawings, elementary working drawings.

131. Engineering Drawing. Cr. 3. (1-6). I, II.
(Formerly 132). The essentials of drafting including freehand sketching, use of instruments, vertical lettering, engineering geometry, orthographic projection, sections, isometric drawings. In lecture, problems are given in solid geometry.

134-5. Graphic Arts. Cr. 3. (1-6). I, II.
The use of instruments, lettering, architectural geometry, geometry in design, orthographic projection, sections, auxiliary views, the meaning of "scale", dimensioning, elementary application of graphic arts, intersections, developments, mechanical pictorial methods, working drawings.

221. Machine Drawing. Cr. 2. (0-6). I, II.
Prerequisite: E. Dr. 121, or the equivalent. Application of the graphic language to engineering purposes, engineering sketches, machine fastenings, conventional practice, machine details, detail and assembly drawings.

222. Descriptive Geometry. Cr. 2. 1-3). I, II.
Prerequisite: E. Dr. 131, or the equivalent. Theory of engineering drawing which provides training in exact thinking. Point, line, and plane problems, tangent planes, intersections and developments, single and double curved surfaces, and warped surfaces; practical problems.

223. Agricultural Drawing. Cr. 2. (0-6). II.
Not open to freshmen. Orthographic projection, lettering, graphic charts, freehand sketching, and the reading of drawings related to agriculture and agricultural engineering.

322. Advanced Machine Drawing. Cr. 2. (0-6). I.
Prerequisite: E. Dr. 221 and 222. Training in making drawings of more complicated machines than is given in the freshman and sophomore years. Practice in making mechanical drawing of a quality of a draftsman by industrial concerns.

Institutional Management

PROFESSOR CRADDOCK. PART-TIME INSTRUCTOR SCHULZ.

The curriculum in the Department of Institutional Management is planned for those students who desire training for such positions as managers of lunchrooms, dietitians in hospitals or other institutions. The curriculum in foods and nutrition should be followed, the students selecting the Institutional Management Option in the junior and senior years.

432. Large Quantity Cookery. Cr. 3. (1-6). I.
Prerequisite: Foods 232 and junior standing. A study of menu making, preparation of food in large quantity cookery, and practical experience in food purchasing.

435. Organization and Administration. Cr. 3. (1-6). II.
Prerequisite: Foods 232 and Inst. Mgt. 432. A study of organization and administrative problems such as time study, employer-employee relationship, budget making, and other factors leading to the establishment of standards for effective management of institutions.

436. Institutional Housekeeping. Cr. 3. (1-6). II.
Prerequisite: Junior standing. Problems in the selection, operation, and arrangement of institutional household equipment. The cleaning and care of the building, sanitation, plumbing, ventilation, etc.

Journalism

PROFESSOR HORNE. ASSISTANT PROFESSORS ALLEN, SCHOOLEY. INSTRUCTOR WATSON.

Students majoring in journalism are required to complete 36 hours in journalism; for a minor, a minimum of 18 semester hours, at least 6 of which must be of junior or senior rank. Minor subject must be approved by Head of Department. Work of D grade will not be accepted for credit on major requirements. Sophomore classification is prerequisite for any course in journalism except Journ. 131-2. Hours required for graduation: 127. Students who have not had typewriting in high school must take at least one semester in college without credit.

131. Printing. Cr. 3. (1-6). I.
Elementary hand composition, imposition, and study of good workmanship; technical terms employed in the printing industry; printing plant procedures.

132. Printing. Cr. 3. (1-6). II.
Prerequisite: Jour. 131. Advanced composition and imposition; study of printing materials, cost-finding, shop management. Particular attention given problems involved in the operation of a weekly newspaper plant.

231-2. Newspaper Reporting and Writing Cr. 3. I, II.
An introduction to journalism; the problems and methods of gathering and writing news. Practice assignments in class.

330. Typography. Cr. 3. I.
Mechanics of printing and publishing; choice of type and its arrangement; engravings; the assembling of engravings and type; the make-up of newspaper, magazine, and book pages; and the typography of advertisements. Harmonious relationship between type, paper, ink, and engravings. Plates and plate making, duplicating processes and presses.

331. Special Feature Articles. Cr. 3. I.
The feature article, with regard to field, subject material, appeal and purpose, type and style. Special emphasis on news features.

332. Magazine Article Writing. Cr. 3. II.
Technique and procedure in writing for current magazines; what to write about; where and how to get facts and how to arrange them; preparation of the whole article; study of markets.

333. Problems of the Community Newspaper. Cr. 3. II.
Problems of the weekly and small daily newspaper; organization, sources of income and expenditure, advertising and circulation, news services, salaries and wages, unions, publishers' associations, and general business problems.

334. Sports Writing. Cr. 3. II.
Prerequisite: Junior standing. A course designed to give persons interested in athletics a basis for preparing printable stories on sports events. Practice in writing. The course is recommended to physical education majors who expect to become coaches.

335. History of American Journalism. Cr. 3. I.
The origin and growth of the American newspaper from the colonial sheet to the metropolitan journal of today; biographical study of American journalists; individual study and research.

336-7. Advanced Reporting. Cr. 3. (1-6). I, II.
Consideration of news, news sources, news value, newspaper style, and the writing of various types of news stories. Assignments on the college newspaper, and the Avalanche-Journal publications.

338-9. News Editing. Cr. 3. (1-6). I, II.
A laboratory course in newspaper desk work, including copyreading, the writing of headlines, and make-up. Desk assignments on the college newspaper and Avalanche-Journal. Copy of the various press associations will be available for class use.

3310. Agricultural and Home Economics Journalism. Cr. 3. II.
Prerequisite: Junior standing. A course designed to give agricultural and home economics students brief preparation in the principles of gathering and writing news stories, features and magazine articles in their respective fields. Lectures on editing and marketing copy, and use of radio by county agents included.

3312. Basic Photography. Cr. 3. (1-6). I.
History of photography. Lecture and laboratory course covering the fundamentals of photographic processing, including developing, printing and enlargement. Introduction to news and feature pictures and the use of press camera.

3313. Press Photography. Cr. 3. (1-6). II.
Varied assignments of picture coverage, stressing staff photography work. Lecture and laboratory course covering picture processing and technical training in the use of the press camera.

3314. Advanced Press Photography. Cr 3. (1-6). I.
Reportorial duties with the camera for newspaper and magazine publication. Study of picture markets and practice and study in picture editing. Prerequisite: Jour. 3312 and Jour. 3313.

3315. Advanced Press Photography. Cr. 3. (1-6). II.
Advertising and layout studied in connection with photography. Editing news and feature pictures. Prerequisite: 9 hours of photography.

3318. Radio News. Cr. 3. I.
Prerequisite: Junior standing and completion of Journ. 231-2. Training in radio news writing and practice in preparation of copy for both wire and local news reports; interviews; commentaries. Speech 335 recommended.

3319. Radio Advertising and Continuity Writing. Cr. 3. II.
Prerequisite: Junior standing. Application of the techniques of writing advertising copy to radio presentation. Practice in writing of comercials and sustaining continuity. Speech 335 recommended.

430. Principles of Journalism. Cr. 3. II.
Prerequisite: Senior standing in journalism. The freedom of the press, the ethics of magazine and newspaper publication, the relation of the press to society, and the law of libel.

431. Critical Writing. Cr. 3. I.
Journalistic criticism, including literature, painting, music, plays, motion pictures, and other forms of art. For students seeking general culture as well as for those preparing for newspaper department work.

432. High School Publications. Cr. 3 S.
Prerequisite: Senior standing in journalism. The problems confronted by a publications supervisor in organizing and maintaining high school newspapers and yearbooks, functions of high school publications, organization and training of the staff, and editorial and business problems.

434. Editorial Writing. Cr. 3. I.
Prerequisite: Senior standing in journalism. Theory and practice of editorial writing; the types of editorials; a study of contemporary editorials with analysis of style, content, and purpose; technique and much practice.

435-6. Advertising. Cr. 3. I, II.
Prerequisite: Jour. 330, 6 semester hours of economics. The principles of advertising and its relation to business activity. Research, campaigns, media, appropriations, rate structure, advertising services, records, copy, layouts and the problems of typographical reproduction. (Candidates for the BBA degree may receive credit for 435 as an elective in commerce without the prerequisite.)

English 3315. The Contemporary Short Story. II.
(May be counted as a course in journalism. For description, see Department of English.)

Courses in this department which may be taken for graduate credit are: 331, 332, 430, 432, 434, 435-6, if properly petitioned for and provided additional work or an added problem is done in each course.

Latin

(See Foreign Language)

Management

(See Economics and Management)

Marketing and Secretarial Administration

ASSOCIATE PROFESSORS TERRELL, GOLDEN. ASSISTANT PROFESSORS HARRIS, LEIFESTE. INSTRUCTORS ALFREY, BLACKWELL, MARTIN**, MAUZEY*, QUICKSALL.

MARKETING

The major objective of the curriculum in marketing is primarily to provide professional training for young men and young women who choose to follow careers in the realm of merchandising of goods and/or services.

A secondary objective is to offer an opportunity for students of other employments and interests to secure training which will aid them in their respective endeavors.

Students are trained in theoretical and practical methods and techniques of modern merchandising institutions. This includes specific study of such phases as marketing functions, installment-plan selling, retail and wholesale businesses, manufacturers' agents, and other selling agencies, types of other middlemen, commodity and securities exchanges, hedging, legal aspects of marketing, policies, and the relative efficiency of the various methods of marketing.

Attention is given to the structural organization, operation, and place of the organized exchanges and markets in current business. Study is made of the interpretation of market quotations and reports, and in their use by business institutions.

Specialized courses are provided for those interested in merchandising as a career. The student may be advised to take certain courses in other departments when it is believed that those courses will better prepare him for his chosen field of acitivity.

SECRETARIAL ADMINISTRATION

Students in the Department of Secretarial Administration are urged to acquire skills in typewriting and shorthand early in their college work in order that advanced work may be devoted to courses in principles, theory, and application. Those students desiring to major in the department who have not had typewriting must take one unit of high school typewriting in the Extension Division before they will be admitted to the Secretarial Administration Department.

The purpose of the work in the Department of Secretarial Administration is to provide professional training rather than purely vocational training. Opportunity is provided for acquiring adequate skill in secretarial courses while at the same time obtaining a general college education. Secretarial work should be regarded by ambitious young people as a means to an end rather than as an end itself. Technical skills are considered a desirable means of entering business, as well as being careers in themselves.

MARKETING

332. Principles of Marketing. Cr. 3. I, II.

Prerequisite: 60 semester hours including Eco. 231-2. Marketing structures and agencies. Types of middlemen and marketing institutions Current marketing practices. Distribution of raw materials and finished products.

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* Resigned, effective February 1, 1949.

** Spring semester only, 1948-49.

333. Marketing Problems. Cr. 3. II.
Prerequisite: Mkt. 332. Actual marketing cases and problems. Marketing costs, analysis of operating statements, production policy, brand policy, various channels of distribution, sales promotion, sales policies, price determination, price policies, and operating control will be studied.

346. Statistics. Cr. 4. (3-3.) I, II.
Prerequisite: 60 semester hours including 6 hours of mathematics. Sources of business statistics with a survey of methods of their collection, analysis, presentation, and interpretations. Includes methods of sampling, construction of graphs, uses of averages, dispersion, index numbers, correlation, probability, estimates, and their use in business institutions and by business people.

431. Commodity Marketing. Cr. 3. I.
Prerequisite: Mkt. 332. A specialized study of problems involved in marketing commodities of the student's choice.

432. Economics of Advertising. Cr. 3. II.
Prerequisite: Mkt. 332. A study of advertising from the point of view of the needs of business men. The course is designed to acquaint students in business with the tools and techniques of advertising and the use of advertising as a selling force. This includes a study of the media available, the publicity budget and relation of the publicity department to other departments of the business, also the techniques of testing and measurement for the purpose of elimination of waste and increase of profits.

433. Salesmanship. Cr. 3. I.
Prerequisite: Mkt. 332. Practices involved in selling goods and services. Stress will be placed upon principles involved in selling other than over the counter. Methods used by salesmen.

434. Distributive Marketing. Cr. 3. II.
Prerequisite: Marketing 332. Suggested prerequisite: Mkt. 333. A detailed study of the processes and institutions of distributive marketing from manufacturer or processor to retailer through mechant middlemen, functional middlemen, agents and agency structures, selling agents, manufacturers' agents, brokers, jobbers, commission firms, wholesalers, other intermediary marketing institutions, consignments.

435. Business Cycles and Forecasts. Cr. 3. II.
Prerequisite: 60 semester hours including 3 hours of methods of statistics and 6 hours of economic principles. Economic theories of cycles. Their cause and proposed remedies. An examination of forecasting services available and technique employed by them. Problems in specific commodities and securities.

436. Retail Store Management. Cr. 3. I.
Prerequisite: Mkt. 332. Store location, layout, fixtures; store organization; interpreting customer demand; purchasing, receiving, checking, marketing merchandise; store control; merchandising arithmetic; sales promotion, advertising, and publicity; employee relations and the credit department.

437. Advanced Business Statistics. Cr. 3. II.
Prerequisite: 60 semester hours including 3 hours of statistics. Further training in statistical methods and their uses in business institutions. A more extended study of some phases including sampling, averages, dispersion, index numbers, linear and nonlinear correlation, multiple and partial correlation, estimates, variance, and their use in business forecasting.

438. Display. Cr. 3. II.
Prerequisite: Mkt. 432. Technical training of personnel for planning and executing display programs and unit displays, including analysis and evaluation of displays, showwindow and interior displays, methods of display appeal through arrangement, color lighting, themes, units, timing, appropriateness, objectives, materials.

439. Sales Administration. Cr. 3. II.
Prerequisite: Mkt. 433. A thorough study of problems and methods of organization and administration of sales department including sales research; sales operation embracing departmental organization, selection, training, equipping, and remunerating sales personnel; sales control, embodying sales territories, routing, expense accounts, quotas, costs and budgets; sales promotion, sales policies.

531. Research in Marketing. Cr. 3. I.
Prerequisite: Graduate standing and 12 hours of undergraduate work in marketing. The student will select a subject for personal study and will present an acceptable term paper.

Courses which may be taken for graduate credit are Mkt. 332, 333, 346, 431, 432, 433, 434, 435, 436, 437, 438, 439, 531; provided additional work on an added problem is done in each course numbered in the 300 or 400 series.

SECRETARIAL ADMINISTRATION

113. Intermediate Typewriting. Cr. 1. (0-5). I, II.
For those who have had one year of typing in high school or its equivalent. Combined class and laboratory work. Composition of business letters, typing of business letters, tabulating of materials, typing of manuscripts. Typewriter service, $4. Five hours including machine work. Required of all students majoring in secretarial administration and commercial teaching.

114. Advanced Typewriting. Cr. 1. (0-5). II.
For those who have had Sect. 113 or its equivalent. Training is given in the preparation of stencils, business forms, advanced personal work, developing speed. Required of all students majoring in secretarial administration and commercial teaching. Typewriter service, $4. Five hours including machine work.

131-2. Elementary Shorthand. Cr. 3. I, II.
Beginning course covering reading, penmanship, and simple transcription of shorthand. Credit not given for 131 unless 132 completed. No student should attempt the study of shorthand who has difficulty in English. No student will be given credit for Sect. 131 who has had one year of shorthand.

235, 236. Intermediate Shorthand. Cr. 3. (3-1). I, II.
Prerequisite: Sect. 131-2 or equivalent, Sect. 113. Emphasis placed on increased accuracy and speed in reading and writing shorthand. Introduction to typewriter transcription. Requires one extra schedule hour each week for machine transcription practice.

321. Office Machines. Cr. 2. (0-6). I, II.
Prerequisite: 60 semester hours. Special emphasis on ten-key, full key, and electric adding machines; comptometers, crank driven and electric calculators. Recommended for all students majoring in the Division of Business Administration. Machine service, $4.

331, 332. Secretarial Practice. Cr. 3, 3 (3-1). I, II.
Prerequisite: Sect. 114 and Sect. 236. Advanced dictation, training in office duties. To train students to systematize and supervise secretarial activities. Primarily for majors in secretarial administration and commercial teachers. Course 332 is designed to prepare students to qualify for positions under civil service examinations. One hour each week for machine transcription practice.

333. Business Correspondence. Cr. 3. I, II.
Prerequisite: English 131-2, 231-2, 60 semester hours, knowledge of typewriting. Lectures, reading and practice. Study of characteristics of general business correspondence. Types of letters common to a wide variety of business concerns are discussed. Technique of credit letters, collection letters, adjustment letters, sales letters, and the writing problems of students discussed in personal conferences.

337. Report Writing. Cr. 3. (3-0). I, II.
Prerequisite: English 131-2; 231-2 or 237-8; knowledge of typewriting and 60 semester hours. Training in the field of report writing, including business and technical reports, as well as brief letter reports.

338. Filing Systems, Procedure, and Practice. Cr. 3. (2-3). I.
Prerequisite: 60 semester hours. Training the student to organize, administer, and supervise by the alphabetic, numeric, and geographic methods of filing.

421. Voice Writing and Duplicating. Cr. 2. (1-3). I, II.
Prerequisite: 90 semester hours including Sect. 114 and Sect. 236. Instruction and practice in the operation of the voice machines, including duplicating equipment such as the mimeoscope, mimeograph, direct and gelatin process Ditto machines. Intended for students majoring in secretarial administration. Machine service, $4.

432. Methods of Teaching Commercial Subjects in High School Cr. 3. II.
Prerequisite: Senior classification in the department and 6 hours of secondary education. Aims and objectives, selection and organization of subject matter, methods of presentation, and curriculum development most suitable for teaching commercial subjects in high school. May be used as credit in education toward a teacher's certificate.

433. Secretarial Problems and Practices. Cr. 3. II.
Prerequisite: Sect. 331-2. Responsibilities and duties of various types of secretaries. Training in applying for jobs, advancement, and personality development. A minimum of 75 hours will be spent with an approved office or business concern.

Mathematics

PROFESSORS HAZLEWOOD, HEINEMAN, MICHIE, SPARKS, THOMPSON, UNDERWOOD. ASSISTANT PROFESSORS GRANT, MAY, PARKER, WOODWARD. INSTRUCTORS BAILEY, HOLLAND, KAMMERDIENER, LINDSAY, McGLOTHLIN, ROBERTS, ROWLAND, SMITH, THOMAS, THOMPSON.

121-2. Algebra. Cr. 2.
Prerequisite: Two units of high school algebra. Review of high school algebra; quadratic equations; variation; progressions; binomial theorem; graphs; inequalities; complex numbers; theory of equations; exponential equations; determinants. Prerequisite for Math. 122. Math. 131 or concurrent registration in Math. 131.

*130. Algebra. Cr. 3.
Prerequisite: One unit of high school algebra. Review of high school algebra; quadratic equations; variation; progressions; graphs; binomial theorem; logarithms.

131. Trigonometry. Cr. 3.
Prerequisite: One unit of high school algebra, one unit of plane geometry, and Math. 121 or 130, or concurrent registration in Math. 121. Trigonometric functions; identities; radians; trigonometric equations; logarithms; solutions of triangles.

* Credit will not be allowed for both Math. 137 and Math. 130.

132. Analytic Geometry. Cr. 3.
Prerequisite: Math. 121 or 130, and 131. The straight line and conic sections; transformation of coordinates; polar coordinates; parametric equations; introduction to solid analytic geometry.

*137. Commercial Algebra. Cr. 3.
Primarily for business administration and home economics students.
Prerequisite: One unit of high school algebra. Review of high school algebra; simple equations; exponents; quadratics; progressions; graphs; logarithms; simple interest.

138. Mathematics of Finance. Cr. 3.
Prerequisite: Math. 137 or its equivalent. Compound interest; discount; annuities; amortization; depreciation; sinking funds; evaluation of bonds; introduction to statistical methods.

230. Agricultural Mathematics. Cr. 3.
Elementary algebra; percentage; linear equations in one unknown; systems of linear equations; elementary trigonometry; mensuration and application; graphical representation of statistics. For students of agriculture.

231-2. Differential and Integral Calculus.
Prerequisite: Math. 132 or concurrent registration. Differentiation; maxima and minima; rates; curvature; formal integration; definite integrals; areas; lengths; volumes.

233. Calculus Applications. Cr. 3.
Prerequisite: Math. 232 or 251. Volumes; centroids; moments of inertia; pressure; work; partial differentiation; series; multiple integrals; indeterminate forms; hyperbolic functions.

234. Algebra. Cr. 3.
Prerequisite: Math. 130 or 121. Inequalities; complex numbers; elementary theory of equations; permutations and combinations; probability; determinants; partial fractions; mathematical induction.

238. Statistics. Cr. 3.
Prerequisite: Math. 130 or 137. Collection and tabulation of data; bar charts; line graphs; sampling; averages; dispersion; correlation; index numbers; normal curve; probability; applications to economic problems.

251. Calculus. Cr. 5.
Prerequisite: Math. 122 and 132. Differentiation; maxima and minima; rates; curvature; formal integration; areas.

321. Differential Equations. Cr. 2.
Prerequisite: Math. 232 or Math. 251. Methods for the solutions of elementary types of differential equations, with applications. For engineers.

332. Differential Equations. Cr. 3.
Prerequisite: Math 232 or Math. 251. Solutions of differential equations, with geometric and physical applications.

337. Higher Geometry. Cr. 3.
Prerequisite: Math. 132. Directed segments and angles; similitude; inversion; geometry of the triangle, quadrilateral and circle. Recommended for teachers of geometry in high school.

433. Theory of Equations. Cr. 3.
Prerequisite: Math. 232 or Math. 251. Complex numbers; rational integral equations; symmetric functions; determinants; systems of linear equations.

434-5. Advanced Calculus.
Prerequisite: Math. 232. Continuity; multiple integration; indeterminate forms; series; partial differentiation; line, surface and space integrals; Fourier series; partial differential equations.

436. Introduction to the Theory of Finite Groups. Cr. 3.
Prerequisite: Math. 232 and consent of the instructor. Substitution groups; Lagrange theorem; Galois theory; groups of an equation; gamma groups; series of compositions.

438. Solid Analytic Geometry. Cr. 3.
Prerequisite: Math 132 or 236, and the consent of the instructor. Direction angles and cosines; the equations of space curves, planes, lines, and surfaces.

439. Vector Analysis. Cr. 3.
Prerequisite: Math. 232 or 251. Scalar and vector products; divergence; gradient; curl; applications.

5312-13. Functions of a Complex Variable. Cr. 3.
Prerequisite: Math 434-5. The algebra of complex numbers and their geometric representations; conformal mapping; power series and properties of analytic functions; differentiation and integration; special definite integrals and infinite products.

533. Advanced Topics in Analysis. Cr. 3.
Prerequisite: Consent of instructor. Partial differential equations; boundary value problems; related topics.

534. Synthetic Projective Geometry. Cr. 3.
Prerequisite: Consent of instructor. Fundamental theorems of projective geometry treated synthetically.

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* Credit will not be allowed for both Math. 137 and Math. 130.

535. Analytic Projective Geometry. Cr. 3.
Prerequisite: Consent of the instructor. Analytic treatment of the projective properties of the straight line and the conic sections.
538. Theory of Numbers. Cr. 3.
Prerequisite: Consent of instructor. Congruences; quadratic residues and reciprocity law; quadratic forms.
601. Thesis.

ASTRONOMY

111. Survey of Astronomy. Cr. 1.
Prerequisite: College standing. The main features of the known universe and the principles involved in their discovery. A non-mathematical survey recommended for all students except those planning to take Astron. 231-2.
231-2. General Astronomy. Cr. 3.
Prerequisite: Math. 130 or 121, and 131, with a grade of C or better, or with the consent of the instructor. The solar, stellar and galactic systems, studied with attentions to technical details.

In addition to courses numbered in the 500 series those numbered in the 400 series may be used for graduate credit provided the latter have been approved by the Committee on Graduate Work, and provided further that other conditions imposed by this committee are met.

Note the general regulations for the B. A. Degree, and the curriculum for the Degree of Bachelor of Science in mathematics.

Mechanical Engineering

PROFESSORS GODEKE, HARDGRAVE, POWERS. ASSISTANT PROFESSORS MARSHALL, MASON, MONASCH, NEWELL, WILLIAMS. INSTRUCTORS COFFEE, FORD, HELMERS, LAUDERDALE.

Mechanical engineering deals with the generation, transmission and utilization of power; the design, construction, operation, and testing of machinery; and the management of shops and factories. The course of study is designed to prepare the student for entrance into these fields. Shop and laboratory courses are used to familiarize the student with methods used in the industries. An approved slide rule is required for all but shop courses.

Electives, offered in the senior year, may be chosen only with the approval of the department. A curriculum in Mechanical Engineering, Aeronautical Option is offered for those who desire to enter this field.

COMBINATION COURSE PETROLEUM ENGINEERING—MECHANICAL ENGINEERING AND PETROLEUM ENGINEERING

The Departments of Petroleum Engineering and Mechanical Engineering are cooperating in offering a five-year curriculum. At the successful completion of four years of this curriculum the Degree Bachelor of Science in Petroleum Engineering, Production or Natural Gas Option, will be awarded. At the successful completion of the additional courses prescribed for the fifth year the Degree Bachelor of Science in Mechanical Engineering will be awarded.

The work of the first four years will include the courses shown in the curriculum for the petroleum engineering option chosen, with the following changes: Petroleum students will omit: Eco. 326, Chem. 346, Geol. 4312-13, and add E. D. 221, M.E. 241, M.E. 322, and M.E. 337. The fifth year will include Chem. 346, M.E. 311, 312, 313, 314, 315, 316, 341, 431, 434, 436, 437, C.E. 439 and 3 hours additional from Group A elective.

Courses which may be used for graduate credit are M. E. 322, 330-1, 423-4, 438-9, 4310, 4311, Engr. Seminar 411 and Engr. Seminar 412. These must be petitioned for and approved by the head of the department.

211. Sheet Metal Work. Cr. 1. (0-3). II.
Prerequisite: Registration in E. Dr. 121. the fundamental operations of sheet metal work, developing patterns and laying out work; hand and machine operations; rolling, forming, crimping, wiring, seaming, grooving, cutting, turning, bending, riveting, soldering of brass, copper, tin, galvanized iron, and steel.

221. Engineering Problems. Cr. 2. (1-2). I.
Prerequisite: Registration in Math 251. Study and practice of slide rule operations. Application of dimensional analysis, mechanics, pressure measurement, and perfect gas laws to elementary engineering problems. Curve drawing and presentation of engineering computations.

241. Mechanism and Dynamics. Cr. 4. (2-6). II.
Prerequisite: E. Dr. 121, registration in C. E. 331, M. E. 221. Study of the functions, geometrical properties, and relative motions of common mechanisms. Graphical analysis of displacements, velocities, accelerations, static forces, and dynamic forces in common machines.

311. Pattern Shop. Cr. 1. (0-3). I.
Prerequisite: E. Dr. 121. Methods and principles of pattern making, various woods, tools, and machines used. Shrinkage, glue joints, core boxes. Various constructions such as one-piece patterns, laminated, segmental, and stave construction, end and cross lap, dado, and rabbet joints. Individual instruction in the use of machine and hand tools.

312. Foundry Practice. Cr. 1. (0-3). I.
Prerequisite: Registration in M. E. 311. Foundry materials and products; bench, floor and pit molding; mixing, melting, and pouring of ferrous and non-ferrous metals; small foundry layout; making and testing of dry sand cores; green sand testing; microscopic examination and physical testing of non-ferrous metals; various methods of cleaning castings.

313. Machine Shop. Cr. 1. (0-3). I.
Prerequisite: E. Dr. 121. The various types of lathes, planers, millers, cutting tools, drills, reamers, abrasives, grinding machines, turret lathes, gear cutting machines, automatic screw machines, gauges, and inspection as applied to shop work. Bench work, such as chipping, filing, tapping, reaming, and fitting.

314. Machine Shop. Cr. 1. (0-3). II.
Prerequisite: M. E. 313. A continuation of M. E. 313. Standardization; routing of materials; die casting; press metals and presses; cutting fluids. Each student given advanced operation on machines, such as taper turning, internal and external threading, grinding, shaping, milling machine, calculations, and operations.

315. Heat Treating of Steel. Cr. 1. (0-3). II.
Laboratory work in the heat treating of plain carbon and alloy steels. Carburizing, cyaniding, nitriding, hardening, tempering, normalizing, annealing; various methods of forging, welding and rolling steel and wrought iron; destruction tests and microscopic examination of heat-treated steels; heat-treating furnaces and materials used; thermit welding and its application.

316. Welding Practice Cr. 1. (0-3). II.
Welding practice; electric arc, resistance, oxy-acetylene, and thermit welding, application of welding in construction of machines and structural steel; repairing of machine parts; care and operation of oxy-acetylene and arc welding equipment; butt, lap, and tee welding; welding methods; pipe cutting and welding; welding of various metals.

317-8. Heat Engineering Laboratory. Cr. 1. (0-3). I, II.
Prerequisite: Registration in M. E. 334-5. Mechanical measurements, heat transmissions, and heat transfer equipment. Tests of power plant equipment, internal combustion engines, pumps, blowers, and air equipment. For chemical, electrical, and textile engineering students.

322. Elementary Machine Design. Cr. 2. II.
Prerequisite: M. E. 241 or C. E. 332, registration in C. E. 333. Friction and lubrication. Elementary stress analysis and functions of bearings, brakes, clutches, shafting, fastenings, gearing, springs, columns. Energy loads.

330-1. Thermodynamics. Cr. 3. I, II.
Prerequisite Phys 236, Math. 251, M. E. 221. Thermodynamics principles governing the action of steam engines and turbines, internal combustion engines, air compressors, and refrigeration machines. Properties of air, steam, ammonia, gaseous mixtures and other heat media. Heat transfer. For mechanical engineering students.

332. Mechanical Measurements and Thermodynamics Laboratory. Cr. 3, (0-6). II.
Prerequisite: M. E. 330 and 341. Correlation of the parts of various kinds of heat engines and of methods and instruments used in mechanical engineering measurements. Methods of calibrating various instruments. Applications of properties of steam, flow of fluids, heat transmission. Simple tests of power plant equipment. Outside work required. For mechanical engineering students.

333. Kinematics of Machinery. Cr. 3. (2-3). II.
Prerequisite: E. Dr. 121, registration in C. E. 332. Kinematics and dynamics for non-mechanical engineering students. Motions of fundamental parts of machinery, such as link work, cams, gears, and flexible connections. Static and inertia forces, analysis and balancing. Graphic treatment used when possible. For textile and electrical engineering students. Given only when sufficient demand exists.

334. Elementary Thermodynamics. Cr. 3. I.
Prerequisite: Phys. 236, Math. 251. The theory of heat as applied to heat power machines. Properties of air, steam and other heat media, gas laws, reversibility, cycles and processes, refrigeration, flow in nozzles, mixtures of vapors and gases. For architectural, chemical, civil, electrical, industrial, and textile engineering students.

335. Heat Engines. Cr. 3. II.
Prerequisite: M. E. 334. Application of the principles of thermodynamics to power generating equipment. Steam engines, boilers, air compressors, refrigeration machines, internal combustion engines, auxiliary equipment. For chemical, civil, electrical, industrial, and textile engineering students.

337. Metallurgy. Cr. 3. I.
Prerequisite: Chem. 220. The manufacture of iron, steel and non-ferrous metals. Extraction of metals from their ores. Blast furnaces, open hearth. Bessemer, and crucible methods. Refining. Ferrous and non-ferrous alloys and their properties. Metallography and effect of heat treating.

338-9. Thermodynamics. Cr. 3. I, II.
Prerequisite: Phys. 236, Math. 251, M. E. 221. Thermodynamic principles governing transformation of heat energy into power energy or work. Study of perfect and imperfect vapor and gas cycles. Transmission of heat under various conditions. Similar to M. E. 330-1, except that more emphasis is placed upon imperfect gases and less upon vapors. For petroleum engineering students.

341. Steam Power Plant Engineering. Cr. 4. I.
Prerequisite: Registration in M. E. 330. Equipment of modern steam power plant including boilers, economizers, superheaters, air preheaters, pumps, feed water heaters, draft producing equipment, coal handling machinery, boiler room accessories, engines, turbines, condensers, pipe layouts, combustion of fuels, heat balance calculations.

423-4. Internal Combustion Engines. Cr. 2. I, II.
Prerequisite: M. E. 331 or 335. Ideal and actual cycles, combustion, detonation, fuels, mixture requirements, and performance of spark ignition and compression-ignition engines. Gas turbine cycles and performances. No credit for 423 without 424.

431. Power Plant Laboratory. Cr. 3. (0-6). I.
Prerequisite: M. E. 332. Continuation of tests on steam power plant equipment; turbines, fans, pumps. Tests on internal combustion engines using various fuels. Tests on refrigeration equipment. The analysis of data and their proper presentation in the form of an engineering report. Outside work required. For mechanical engineering students.

432. Power Plant Design. Cr. 2. II.
Prerequisite: M. E. 341 and 331, or 335. The design of a modern power plant to meet a given situation. Load curves. Selection for location. Choice of equipment for most economical service. Layout of plant for the best operating conditions. Power costs.

434. Industrial Engineering. Cr. 3. II.
Prerequisite: Eco. 232. The modern industrial system and the application of scientific knowledge to the management of industry, standardization, time studies, personnel relations. Plant layout, planning, scheduling, and inspection. Safety engineering.

436. Machine Design. Cr. 3. (0-9). I.
Prerequisite: M. E. 322, 337, E. Dr. 221. Complete code design of welded and riveted vessels. Complete design of one or more additional machines. Lectures on theory pertinent to the design problems.

437. Machine Design. Cr. 3. II.
Prerequisite: M. E. 436, Math 321. Introductory course in mechanical vibrations. Free and forced vibrations without damping, damped vibrations, systems with several degrees of freedom, balancing of machines, vibration isolation and absorption, equivalent systems.

438-9. Heating, Ventilating and Air Conditioning. Cr. 3. I, II.
Prerequisite: M. E. 331 or 334. Thermodynamics of air-stem mixtures, heating and cooling calculations, design of elementary heating systems, vapor refrigeration, air conditioning calculations, flow of gases, fan theory and performance, ventilation requirements and distributing systems, theory and application of air conveying and dust removal, as applied to various types of buildings and industries. No credit for 438 without 439.

4310. Aerodynamics. Cr. 3. I.
Prerequisite: M. E. 331 or 334, Math. 321. Airfoil theory, airplane performance, longitudinal stability, wing air-load analysis.

4311. Aerodynamics. Cr. 3. II.
Prerequisite: M. E. 4310; registration in M. E. 424. Propeller theory, performance, and load anlysis. Rotary wing theory, jet propulsion.

Military Science And Tactics (R.O.T.C.)

PROFESSORS ADAMS, LT. COLONEL CE; RIORDAN, LT. COLONEL AF. ASSOCIATE PROFESSORS SCHLAFLI, LT. COLONEL CE; MAIXNER, LT. COLONEL INF.; NEUBAUER, CAPTAIN SC. ASSISTANT PROFESSORS CURIK, MAJOR AF; YANTIS, CAPTAIN INF.; BAUMGARDNER, CAPTAIN AF; MALLARD, FIRST LIEUTENANT AF. SERGEANT INSTRUCTORS MOUNSEY, BROOKS, KILPATRICK, ROPER, MOSLEY, JONES, WILSEY, SOLBECK, TANNER*, TAYLOR*, MORGAN*, BEHRENS*.

121-2. First Year Basic. Cr. 2. I, II.
Prerequisites: Physical and mental qualifications prescribed by the Departments of the Army and the Air Force. The National Defense Act; regulations, history and or-

* Fall semester only, 1948-49.

ganization of ROTC; ROTC in national defense. Military discipline, courtesy and customs, school of the soldier with and without arms. Care, cleaning and nomenclature of individual weapons. Marksmanship training and firing on small bore ranges. Personal hygiene, sanitation, and first aid. Maps and aerial photographs, military organization, military drills, and ceremonies.

211-2. Second Year Basic. Cr. 1. I, II.

Prerequisite: M. S. 121-2. Leadership, drill and exercise of command, reviews, inspections, and military courtesy. Physical development methods, military law and boards. Evolution of warfare, military administration, and advanced study of maps and aerial photographs.

331-2. First Year Advanced (Corps of Engineers). Cr. 3. I, II.

Prerequisite: M. S. 211 or one year of active military service with the armed forces. Courses common to all military branches include: leadership, psychology and personnel management; leadership, drill and exercise of command, geographical foundations of national power, military law and boards, and voice and command.

Tactics and technique of the Corps of Engineers are: bridge design and classification, camouflage, engineer combat principles, engineer reconnaissance, explosives and demolitions, military roads, military sketching, organization of engineer units, organization of the ground and field fortifications, the place of the engineer in the military team, and job management.

333-4. First Year Advanced (Signal Corps). Cr. 3. I, II.

Prerequisite: M. S. 211 or one year of active military service with the armed forces, Courses common to all military branches include: leadership, psychology and personnel management; leadership, drill and exercise of command, geographical foundations of national power, military law and boards, and voice and command.

Tactics and technique of the Signal Corps consists of the following courses; organization and missions of the Signal Corps, organization of the infantry and armored division and their signal communications components, message center and signal center procedure, signal orders, comunication security, field wire communication fundamentals, field radio communication fundamentals, Signal Corps photography, and the place of the Signal Corps in the military team.

335-6. First Year Advanced (Air Force). Cr. 3. I, II.

Prerequisite: M. S. 211 or one year of active military service with the armed forces. Courses common to all military branches include: leadership, psychology and personnel management; leadership, drill and exercise of command, geographical foundations of national power, military law and boards, and voice and command.

Tactics and technique of the Air Force consists of the following courses: organization of the Air Force, Air Force training, inspection systems, statistical control systems, supply, navigation, meteorology, air intelligence and combat orders, air operations and guided missiles.

337-8. First Year Advanced (Infantry). Cr. 3. I, II.

Prerequisite: M. S. 211 or one year of active military service with the armed forces. Courses common to all military branches include: leadership, psychology and personnel management; leadership, drill and exercise of command, geographical foundations of national power, military law and boards, and voice and command.

Tactics and technique of the Infantry consists of the following courses: gunnery, technique of fire and fire control, organization, troop movement, motors and transportation, communication, tactics, and the place of the Infantry in the military team.

431-2. Second Year Advanced (Corps of Engineers). Cr. 3. I, II.

Prerequisite: M. S. 331-2. Courses common to all military branches include: command and staff, military teaching methods, psychological warfare, military problems of the United States, military mobilization and demobilization, combat intelligence, and leadership, drill and exercise of command. Courses peculiar to the Corps of Engineers include: airborne and amphibious operations, engineer combat principles, engineer reconnaissance, engineer estimates and orders, water supply, engineer signal communications, river crossing operations, engineer supply, and construction and utilities.

433-4. Second Year Advanced (Signal Corps). Cr. 3. I, II.

Prerequisite: M. S. 333-4. Courses common to all military branches include: command and staff, military teaching methods, psychological warfare, military problems, of the United States, military mobilization and demobilization, combat intelligence, and leadership, drill and exercise of command. Courses peculiar to the Signal Corps include: field radio material, field wire material, signal supply and repair, applied signal communications, Infantry division, and higher echelon signal communication equipment.

435-6. Second Year Advanced (Air Force). (Armament—Military Management). Cr. 3.

Prerequisite: 335-6. The second year advanced Air Force program includes specialization in armament or administration and military management. Courses common to all military branches include: command and staff, military teaching methods, psychological warfare, military problems of the United States, military mobilization and demobilization, combat intelligence, and leadership, drill and exercise of command. Courses peculiar to the Air Force armament courses include: aircraft weapons, ballistics and ammunition, aerial gunsights and cameras, central station fire control systems, aerial bombs and fuses, bombing equipment, bombsights and automatic pilots, aircraft smoke tanks and chemical spray, aircraft rockets, and the armament officer in tactical operations. Courses peculiar to the administration and personnel management course include: Under administration, publications, correspondence, reports and rosters, pay and allowances, unit personnel administration, post administration, non-appropriated funds, orders and memorandums, appointments, and reductions and absences; under military management, principles, functions and art of management, cost accounting, and training and surveys.

437-8. Second Year Advanced (Infantry). Cr. 3. I, II.
Prerequisite: M. S. 337-8. Courses common to all military branches include: command and staff, military teaching methods, psychological warfare, military problems of the United States, military mobilization and demobilization, combat intelligence, and leadership, drill and exercise of command. Courses peculiar to Infantry consist of the following; communications, troop movement, gunnery, technique of fire and fire control, supply and manitenance, and new developments.

Music

PROFESSORS BLITZ, WILEY. ASSISTANT PROFESSOR HADDON.
PART-TIME INSTRUCTORS RICHARDS, SHORT,
SMITH, TROTTER*, WALKER.

Instrumental and voice teachers associated with the college are listed following the description of courses.

The department offers a music major toward the Bachelor of Arts Degree and major in public school music and in band music for the degree, Bachelor of Science in Education.

Primary and elementary teachers of public school music should enroll in Music 231 and 337 (or other choice with permission). If the student has had junior and senior high school music or is sufficiently advanced upon an instrument or in voice, he may enroll for Music 337 after an examination.

The selection of music minors and music electives should be made after consulting the department head. Any branch of music may be elected upon recommendation of the head of the department in which the student is majoring. Music 335, 336 is the only advanced subject which can be taken without music prerequisites.

The department does not offer majors in voice and instruments, but in lieu grants instrumental and voice diplomas to those students who have accomplished the junior and senior applied courses with distinction and who present junior and senior recitals open to the public. Although this college diploma may embody the necessary credentials for the acquisition of the state instrumental or voice certificate, the former should not be confused with the latter.

Courses are listed under the following headings: music, band, chorus, orchestra, and applied music with voice or the instrument specified.

All branches listed under applied, chorus, orchestra, and band are normally divisible. Music 121 and Music 123 may be taken by non-music majors as individual courses. Exceptions to the normal music offerings will be made on petition by the student to the Head of the Department with the approval of the Dean of Arts and Sciences.

The holder of the Degree of Bachelor of Science in Education with a major in band may obtain as much as 18 hours in the following branches as a minor for a Degree of Master of Education: Band 415, 416, 421, 422, 425, 426, 4215, 4216, 431, 432, 521, 522, 523, 524; Music 335, 336, 337, 438; Applied Music 324, 326, 425, 426, 4215, 4216 if properly petitioned for in advance and if an additional special problem is done.

MUSIC

117-8. Class Voice. Cr. 1. I, II.
Posture; breath control; voice placement; physical development; vocalization. Taught in small groups. Chorus attendance required.

121-2. Solfeggio. Cr. 2. I, II.
Sight singing. Ear training and dictation. Training in ensemble. Coordination of solfeggio and instrument.

123-4. Harmony. Cr. 2. I, II.
Consonant harmony. Harmonization of melodies and figuration of basses. Survey of chords of the sevenths.

211, 212. Music Appreciation. Cr. 1. I, II.
Prerequisite: Sophomore standing. Not open to music majors or minors. A survey of musical literature with the objective of developing musical information and its integration with other arts. Lectures are sustained by musical numbers, given either by members of the music staff, or with the use of victrola or radio. Technical details are eliminated in order to give time for biographical data pertinent to the composition rendered.

* Fall semester only, 1948-49.

217-8. Voice. Cr. 1. I, II,
Continuation of physical development, vocalization, repertoire. Chorus attendance required.

221-2. Solfeggio. Cr. 2. I, II.
The science of quint relation, ladder of the fifths, conception of M.A. Barberau, Paris, 1847. Solmization with changes of clefs. Ear training and dictation, conducting. Choral training. Coordination of solfeggio and instrument.

223-4. Harmony. Cr. 2. I, II.
Prerequisite: Music 123-4. The dominant seventh and inversions. Secondary sevenths and inversions. Other chords of the sevenths. The harmonization of melodies and the figuration of basses. The realization of exercises either at the piano, in solfeggio, or reproduced from memory.

231. Music Education. Cr. 3. II.
Prerequisite: Sophomore standing. Methods course. The ways and means of teaching music to school children. Fundamentals of music appreciation; rudiments of music; concentration upon primary grades; study of state-adopted textbooks in primary music. Music in the rural school.

327-8. Conducting. (Methods Course). Cr. 2. I, II.
Prerequisite: 221-2. Elements of counterpoint. Score reading. Choir directing. Diction and interpretation. Instrumental transpositions and substitutions. Theoretical knowledge of the instruments of the orchestra from the conductor's point of view. Methods of teaching chorus and orchestra groups. Deciphering instrumental charts.

335, 336. History and Appreciation. Cr. 3. I, II.
Prerequisite: Junior standing. The study of musical literature covering the various periods from the pre-classic to the modern. Acquainting the student with salient facts of music history and teaching him how to listen to music, what to listen for, and what reaction to expect. Study of opera by radio and phonography.

337. Music Education. Cr. 3. I.
Admission after examination. Methods for elementary grades. The materials and methods of teaching music to school children; the pedagogy of music, embracing the principles required for scientific music foundation; the qualifications necessary to student and teacher; group activities; music appreciation; study of state adopted textbooks; primary music education. Seminar course.

431, 432. Minor Instruments. Cr. 3. I, II.
Prerequisite: the equivalent of two semester hours of playing experience on minor instruments. Instruments other than the student's major instrument. Scales, arpeggios, studies, and repertoire.

438. Junior and Senior Methods. (Methodology). Cr. 3. II.
Prerequisite: Music 327-8, 337. The technique of teaching vocal, instrumental music, group activities; chorus and ensemble work; music appreciation; and theory as it relates to junior and senior high school pupils.

CHORUS

113, 114. Freshman Chorus. Cr. 1. I, II. S.
213, 214. Sophomore Chorus. Cr. 1. I, II. S.
313, 314. Junior Chorus. Cr. 1. I, II. S.
413, 414. Senior Chorus. Cr. 1. I, II. S.
4113, 4114. Additional Senior Work. Cr. 1. I, II, S.
Open to students interested in choral diffusion, organization, discipline and community singing. These various levels, meeting at the same time, are differentiated by the placement of the singers in the chorus sections and the attendant responsibilities of the positions assigned. One hour period per week. Preparation supervised when necessary.

During the summer sessions the syllabus includes rudiments of music, public school music singing, and methods.

ORCHESTRA

115-6. Freshman Orchestra. Cr. 1. I, II.
215-6. Sophomore Orchestra. Cr. 1. I, II.
315-6. Junior Orchestra. Cr. 1. I, II.
415-6. Senior Orchestra. Cr. 1. I, II.
4115-6. Additional Senior Work. Cr. 1. I, II.

APPLIED MUSIC

Terms for private instruction are found on page 37.

The 2-hour courses (125, etc.), represent private instruction for 60 minutes per week with 10 hours per week preparation. Participation in applied music demonstration group or equivalent is required.

The 1-hour courses (115, etc.), represent private instruction for 60 minutes per week with five hours per week preparation. Participation in the applied music group or equivalent is required. Recommended to

students who have not the time to cover the repertoire of the 2-hour courses.

The applied music demonstration group is a class demonstration wherein the music literature of various instruments, countries and periods is performed. This class is supervised by the head of the department, and through its medium, and without extra tuition, grades and accreditations are submitted for recording. Exemption from this class is granted only when the equivalent of the course is directed by a college music faculty member.

Admission to the applied music courses is based upon the applicant's public school record, music background, education, and skill. For the Bachelor of Arts Degree admission will not be considered unless the student has approximated the intermediate grades according to the high school applied music outline.

The syllabus of the applied music follows a nationally standardized repertoire.

Keyboard—recommended to students as a secondary or minor instrument, or to students who have not obtained the required proficiency in piano. May be taken as a 1- or 2-hour semester credit course.

Voice or Instrument (1-hour courses)

115, 116. Freshman. Cr. 1. I, II, S.
215, 216. Sophomore. Cr. 1. I, II, S.
315, 316. Junior. Cr. 1. I, II, S.
415, 416. Senior. Cr. 1. I, II, S.

Voice or Instrument (2-hour courses)

125, 126. Freshman. Cr. 2. I, II.
225, 226. Sophomore. Cr. 2. I, II.
325, 326. Junior. Cr. 2. I, II.
3215, 3216. Junior (Additional work) Cr. 2. I, II.
425, 426. Senior. Cr. 2. I, II.
4215, 4216. Senior (Additional work) Cr. 2. I, II.

Pipe Organ

125, 126. Freshman. Cr. 2. I, II.
225, 226. Sophomore. Cr. 2. I, II.

Prerequisite: Two years of solfeggio. Two years of harmony. Two years of piano. Manual technique, pedal technique. Manual studies. Studies for manuals and pedals. Chorales. Repertoire.

Band

Students desiring to major or minor in band music should follow the schedule of courses outlined for the Degree of Bachelor of Science in Education, or Bachelor of Arts with a band major.

Since a great majority of the students who play in the band will major in some other field, it is suggested that these students register for the 1-hour band courses. This work may be counted as elective credit on the Bachelor of Arts Degree, or the freshman and sophomore years may be substituted for the required physical education. A maximum of 8 hours of music may be counted as elective credit on the Bachelor of Arts Degree.

Full Band

111-2. Freshman. Cr. 1. I, II.
211-2. Sophomore. Cr. 1. I, II.
311-2. Junior. Cr. 1 I, II.
411-2. Senior. Cr. 1. I, II.

Objectives—popular concerts, classical concerts, parades and campus activities. These various levels, meeting at the same time, are differentiated by the placement of the players in the band sections and the attendant responsibilities of the positions assigned. Five one-hour meetings per week which include lecture, rehearsal, and preparation periods.

Military Band

Part of ROTC training. For particulars, inquire of the officer in command.

Band Music Major

125-6. Freshman. Cr. 2. I, II.
225-6. Sophomore. Cr. 2. I, II.
325-6. Junior. Cr. 2. I, II.
425-6. Senior. Cr. 2. I, II.

Required courses for a band major on the degree, Bachelor of Science in Education. Admission based upon the candidate's school record and music background. Besides following the requirements of the full band, the applicant must devote the equivalent of five hours per week to sectional rehearsing, supervision, conducting, making a total of 10 hours per week. Band majors are exepcted to make appearances as soloists, to direct the full band in public, to teach band instruments, and to demonstrate a wide and practical knowledge of band music literature and history.

Music 431, 432. Senior Music. (Minor Instruments). Cr. 3. I, II.
Listed on the band curriculum for Bachelor of Science in Education. The term "minor instruments" signifies a secondary instrument, another instrument besides the one upon which the player has attained the greater skill. Band majors are required to understand and be able to teach the technique of all the principal band instruments and to have an elementary acquaintance with bowed instruments. Courses in minor instruments are also offered in summer and listed under Band 115 et seq.

BAND

115, 116. Freshman. Cr. 1. I, II, S.
215, 216. Sophomore. Cr. 1. I, II, S.
315, 316. Junior. Cr. 1. I, II, S.
415, 416. Senior. Cr. 1. I, II, S.
Minor instruments offered as 1-hour courses, three of which are equivalent to Music 431 or 432. Description given under Music 431, 432.

321. Junior Band Conducting and Methods. Cr. 2. I.
Prerequisite: Music 221-2. Posture technique of the baton; fundamental principles in obtaining tone balance, color, shading, etc. Program building, and practical application of the conducting of smaller concert numbers. Methods of teaching band instruments and groups.

421-2. Senior Band Conducting and Methods. Cr. 2. I, II.
Advanced study in the art of conducting. The reading of band partiture and piano scores. The directing of band accompaniments and the study of advanced concert forms. Methods of teaching band instruments and groups. Comparative study of standard methods of teaching.

4215-16. Senior. Cr. 2. I, II, S.
Formerly 431B-2B. Additional senior work.

431. Administration of the School Band. Cr. 3. S.
Prerequisite: Senior standing. It may be offered as graduate work.

432. A Survey of Teaching Materials for Band. Cr. 3. S.
Prerequisite: Senior standing. It may be offered as graduate work.

521. Band Conducting for Graduate Students. Cr. 2. S
Study and performance of composers' works of all periods. A public performance of a designated composition of the larger forms will be required. Original arrangements are expected from the student.

522. Band Conducting for Graduate Students. Cr. 2. S.
The same description as 521, but offering a larger repertoire.

523. Symphonies. Cr. 2. S.
The conducting of symphonic works of Beethoven, Dvorak, Tchaikowsky, and other masters.

524. Symphonies and Symphonic Poems. Cr. 2. S.
The same description as 523, but offering a larger repertoire and additonal work.

Music Fees For Private Instruction

(See Expenses)

Nutrition

(See Foods and Nutrition)

Petroleum Engineering

PROFESSOR DUCKER. INSTRUCTOR JOHNSON.

The petroleum engineering curricula offered by this department are designed to equip the graduate with a knowledge of the fundamentals

of mathematics, physics, chemistry, mechanical sciences, geology, economics, business, and many specialized courses specifically related to petroleum. With this background of undergraduate work and a sound knowledge and understanding of its application, he is equipped to enter the field of petroleum engineering, to attack the problems that will be met with in the petroleum industry, and to advance and develop in the profession of petroleum engineering.

Although the emphasis of this department is at all times placed on a sound foundation of the fundamentals of engineering, the technology of petroleum has made such advances in recent years that it is no longer possible to cover adequately all of its phases in a four-year engineering course. For this reason the work towards a Bachelor of Science Degree in Petroleum Engineering has been divided into the following options, each containing special courses that direct the emphasis towards that particular phase of petroleum technology:

(1) **Production Option**

In this option a strong basis of fundamental science, mathematics and engineering, including thermodynamics and fluid machanics, is required during the first three years as a basis for specialized courses in production engineering in the senior year.

(2) **Natural Gas Option**

The first three years of this option are identical with those of the production option. In the senior year specialized courses pertaining to production, transportation, and marketing natural gas and gasoline are required.

(3) **Mechanical Engineering**

For the requirements for a Bachelor of Science Degree in Mechanical Engineering in a five-year combination with **Petroleum Engineering,** see "Mechanical Engineering Department."

(4) **Geology Option** (Open only to those students who elected it prior to March 1948.)

In addition to a basic knowledge or engineering fundamentals, a thorough training is provided in those branches of geology that pertain to petroleum technology.

(5) **Geophysics Option** (Open only to those students who elected it prior to March '48.)

The emphasis in this option is placed on geology, physics, and electrical engineering, to supplement the basic engineering work also included.

331. Petroleum Development Methods. Cr. 3. (3-0). I, II.
Prerequisite: Math. 233, junior standing in petroleum engineering. Exploration methods; standard and rotary drilling methods; cementing and well completion methods; well surveying; drilling hazards, directional drilling; field trips.

333. Petroleum Production Methods. Cr. 3. (2-3). I, II.
Prerequisite: Pet. E. 331 and junior standing in petroleum engineering. Flowing wells; gas-lift methods and equipment; gas wells; pumping methods and problems; water emulsion problems; gathering and storage systems; field trips; laboratory.

410-11. Seminar. Cr. 1. (1-0).
Prerequisite: Senior standing in petroleum engineering. Discussion of current petroleum problems; reports; lectures by men from industry.

412. Production Laboratory. Cr. 1. (0-3). II.
Prerequisite: Pet. E. 433. Theory and application of tests of petroleum, petroleum products, materials of the petroleum industry; advanced gas-lift problems; and other production techniques.

413. Natural Gas Laboratory. Cr. 1. (0-3). II.
Prerequisite: Registration in Pet. E. 435. Natural gas analysis and testing; measurement and calibration of flow metering devices, regulation and control devices; gas phase relationships, and natural gasoline techniques.

433. Advanced Production Engineering. Cr. 3. (3-0). I.
Prerequisite: Pet. 333. Continuation of Pet. E. 333 covering advanced oil production methods and problems: well logging methods; secondary recovery problems; pipe line transportation systems; power sources and transmissions; equipment specification.

434. Natural Gas Engineering. Cr. 3. (3-0). I.
Prerequisite: M. E. 339, M. E. 318. Study of the methods of production, treating, compression, distribution, measurement, analysis and utilization of natural gas, and the thermodynamic principles related thereto.

435. Natural Gas and Gasoline. Cr. 3. (3-0). II.
Prerequisite: Petr. Engr. 434. Study of distillate wells and distillate reservoir behavior. Extraction methods and techniques of natural gasoline production. Liquified petroleum gases.

436. Reservoir Engineering. Cr. 3. (2-3). I.
Prerequisite: C. E. 339, Pet. E. 433. Study of the fundamental forces in reservoirs and the evidence of these forces as expressed in mathematics relationships; behavior of reservoir fluids; flow of fluids in reservoirs; productivity indices, prediction of the reservoir behavior; laboratory analysis of reservoir fluids; solubility, shrinkage, viscosity; sample and pressure methods; displacement experiments, capillary pressures and advanced core analysis.

Philosophy And Sociology

ASSISTANT PROFESSOR LITTLE, PART-TIME PROFESSOR GORDON. INSTRUCTOR SMITH.

Major requirements: Students may major in either philosophy or sociology. Majors in either field will complete a total of 30 semester hours. With special permission, certain courses in the one field may apply on the major in the other. By special arrangement, also, certain of the following courses are available to majors in this department: Anthro. 331-332, Govt. 433 and 434, Psy. 433 and 434, Eco. 337 and 436, R. Soc. 431 and 432.

PHILOSOPHY

230. Introduction to Philosophy. Cr. 3. I, II.
Prerequisite: Sophomore classification. Problems involved in the interpretation of the nature of knowledge, reality, and value.

238. Ethics. Cr. 3. II.
Prerequisite: Sophomore classification. Problems of individual and social conduct.

332. History of Philosophy. Cr. 3. I.
Prerequisite: Junior classification. Philosophical systems developed by the great philosophers of the world.

337. Logic. Cr. 3. II.
Prerequisite: Junior classification. Introduction to deductive and inductive methods.

431. Aesthetics. Cr. 3. I.
Prerequisite: Senior classification or consent of instructor. Interpretations of the nature of beauty and analysis of the aesthetic experience.

436. Philosophy of Religion. Cr. 3. I.
Prerequisite: Senior classification or consent of instructor. Survey of historical and contemporary religious movements.

438. Seminar in Philosophical Problems. Cr. 3. I.
Prerequisite: Senior classification and major or minor in philosophy. Readings on selected topics, reports, and conferences.

SOCIOLOGY

211. Problems in Community Health. Cr. 1. I.
Prerequisite: Sophomore classification. Health problems as they affect the community, the family, or the individual. Additional work in this field is offered in Soc. 212.

212. Problems in Community Health. Cr. 1. II.
Prerequisite: Sophomore classification. Health problems as they affect the community, the family, or the individual. Additional work in this field is offered in Soc. 211.

230. Introduction to Sociology. Cr. 3. I, II.
Prerequisite: Sophomore classification. The underlying principles of social science.

233. Current Social Problems. Cr. 3. I, II.
Prerequisite: Sophomore classification: Survey and analysis of current social problems.

331. Social Pathology. Cr. 3. I, II.
Prerequisite: Junior classification. Study of the major maladjustments in society.

332. Marriage. Cr. 3. II.
Prerequisite: Junior classification. History, present status, current problems, and future of the marriage institution.

336. Social Life and Culture of Mexico. Cr. 3. II.
Prerequisite: Junior classification and a course in sociology or consent of instructor. Comparison of social institutions and problems of Mexico with those of the United States.

433. Criminology. Cr. 3. I.
Prerequisite: Senior classification or consent of instructor. Study of the causes and remedies of delinquency and crime.

438. Seminar in Social Problems. Cr. 3. II.
Prerequisite: Senior classification and major or minor in sociology. Independent research in sociological problems.

Courses which may be used for graduate credit: Phil. 431, 436, 438, Soc. 433, 438, Psy. 433, 434, Eco. 337 and 436, Govt. 433, 434, R. Soc. 431, 432, 532, if properly petitioned for and provided additional work or an added problem is done in each course numbered in the 300 or 400 series, which otherwise carry no graduate credit.

Physical And Health Education For Men

PROFESSOR JENNINGS. ASSOCIATE PROFESSOR ROBISON. ASSISTANT PROFESOR MORRIS. LECTURER PHILBRICK.

Students wishing to do major or minor work in the Department of Physical and Health Education will follow the general requirements for the Degree Bachelor of Science in Education.

The teaching major may be satisfied by completion of the following courses: Phys. Ed. 230, 231, 232, 331, 3310, 3311, 431, 432. Zoology 235-6 must be completed by physical education majors in satisfying science requirements for this degree.

Details concerning the special certificate required of physical education teachers and coaches are noted under the Department of Education and Psychology.

Activities for Men:

A. Intercollegiate athletics.
B. Dual and individual sports: handball, fencing, tennis, golf, badminton, boxing, wrestling, and swimming.
C. Gymnastic activities: individual gymnastics, tumbling.
D. Team games: volleyball, softball, basketball, speedball, soccer, baseball, touch football.
E. Intramural sports: The intramural program has been planned to give each student an opportunity to compete in some sport of his own choosing.

113. Physical Education. Cr. 1. (0-2).

114. Physical Education. Cr. 1. (0-2).

213. Physical Education. Cr. 1. (0-2).

214. Physical Education. Cr. 1. (0-2).

231. Theory and Practice of Individual Sports. Cr. 3. (3-3).
Meets three hours each week in lecture and three in laboratory. Course is designed to develop skills and thoroughly acquaint students with a number of physical activities practical for use in physical education programs in junior and senior high schools, college, and community recreation programs.

232. Theory and Practice of Team Sports. Cr. 3. (3-3).
Meets three hours each week in lecture and three in laboratory. Continuation of P. E. 231 but is designed thoroughly to acquaint students with team games commonly used in school programs.

*3310. Personal Health. Cr. 3.
Hygienic principles of health as related to individual health problems. A study of personal health, normal body functions, and the predisposing and actual causes of disease. Consideration of health conservation and the prevention of disease in the family as related to individual and community health.

3311. Methods of Teaching Physical Education in High School. Cr. 3.
Prerequisite: 6 semester hours of physical education and 6 hours in education. Aims and methods of teaching physical education in high schools.

431. Theory and Practice of Coaching. Cr. 3.
Football and baseball. Study of various systems and techniques commonly used; proper training methods; injuries common in athletics; care and treatment of injuries including practical work in bandaging and taping. A course designed for those who plan to coach major sports.

432. Theory and Practice of Coaching. Cr. 3.
Basketball, track, and field. Continuation of P. E. 431.

* Open to both men and women.

Physical And Health Education For Women

PROFESSOR LANGFORD. ASSISTANT PROFESSORS RAINEY, RICHARDS.

Physical education is required of all freshman and sophomore women students to meet the graduation requirement for all degrees. Courses 111-112 and any two of the 200 courses meet the requirement.

111. Fundamentals in Gymnastics and Rhythms. Cr. 1. (0-2).
Exercises for coordination and posture, free rhythmic steps, and movements.

112. Fundamentals in Dancing and Sports. Cr. 1. (0-2).
Folk, square and country dancing and basic skills in one of two major team sports.

210. Clogging. Cr. 1. (0-2).
Clog, character and tap dancing.

211. Riding. Cr. 1. (0-2).
Instruction and practice in horseback riding.

212. Tennis. Cr. 1. (0-2).
Technique and practice in tennis.

215. Basketball. Cr. 1. (0-2).
Technique and practice in basketball.

216. Soccer and Speedball. Cr. 1. (0-2).
Technique and practice in fundamental skills and team play of soccer and speedball.

217. Folk Dancing. Cr. 1. (0-2).
Fundamental skills and practice in folk dancing.

218. Volleyball. Cr. 1. (0-2).
Technique and practice in volleyball.

219. Stunts and Tumbling. Cr. 1. (0-2).
Fundamental skills and practice in stunts and tumbling.

2110. Archery. Cr. 1. (0-2).
Fundamental skills and practice in archery.

2111. Golf. Cr. 1. (0-2).
Technique and practice in golf.

2112. Swimming. Cr. 1. (0-2).
Technique and practice of the various strokes in swimming.

2113. Individual Gymnastics. Cr. 1. (0-2).
For students not physically able to participate in regular physical education classes.

2114. Field Hockey. Cr. 1. (0-2).
Fundamental skills and practice in field hockey.

2115. Badminton. Cr. 1. (0-2).
Technique and practice in badminton.

2116. Social Dancing. Cr. 1. (0-2).
Fundamentals and practice of social dance.

2117. Recreational Games. Cr. 1. (0-2).
Games of low organization such as table tennis, darts, badminton.

2119. Softball. Cr. 1. (0-2).
Technique and practice in softball.

2120. Modern Dance. Cr. 1. (0-2).
Fundamental movement and composition in modern dance.

Major Program

Physical education majors and minors complete the requirements for the Bachelor of Science in Education with the following special requirements:

30 semester hours of physical education are required for a major, including P. E. 131, 132, 230, 233, 338, 339, 4311, 4312, 3313, 4310.

Minor Program

A minimum of 18 hours is required for a minor in physical education including P. E. 230, 233, 331, 131-132, 3310.

131. Orientation for Physical Education Students. Cr. 3. (3-0).
Brief introduction to the field of physical education, its philosophy, its aims and objectives, its potential values. The significance of physical education in the school program.

132. Orientation for Physical Education Students. Cr. 3. (3-0).
An historical survey of physical education stressing the relation between the types of activity developed and the social and political ideals of different nations and periods. A study of the principles upon which physical education is based. Analysis of successful teaching in physical education.

*230. Principles of Health Education. Cr. 3. (3-0).
Health education programs in elementary and high schools. Hygiene and first aid material.

* Open to both men and women.

233. Methods in Physical Education for the Elementary School Teacher. Cr. 3. (3-0).
A method and content course dealing with the theory and practice of physical education for the classroom teacher in the elementary school.

*331. Recreational Methods. Cr. 3. (3-0).
Group and unorganized games; highly organized games and sports. The games taught are suitable for schools, playground, and social recreation.

*337. History of Physical Education. Cr. 3. (3-0).
History of physical education, with particular attention to recent literature.

338-9. Technique of Sports. Cr. 3. (3-0).
Instruction in technique and rules with demonstrations and actual playing of various sports. Baseball, tennis, volleyball, soccer, basketball, speedball, and fieldball.

*3310. Personal Health. Cr. 3. (3-0).
Hygienic principles of health as related to individual problems. A study of personal health, normal body functions, and the predisposing and actual causes of disease. Consideration of health conservation and the prevention of disease in the family as related to individual and community health.

*3312. Safety and First Aid. Cr. 3. (3-0).
A study of safety and first aid. Also prevention and care of injuries common to athletic and physical education activities.

3313. Teaching of Rhythmical Activities. Cr. 3. (3-0).
Principles and procedures of teaching the various types of dancing; training in recognition and use of dance rhythm; correlation of music and dance through its various stages; recognition, interpretation, and composition of rhythmic and step patterns.

*434. Principles of Physical Education. Cr. 3. (3-0).
Formerly 339. Principles of physical education from the standpoint of the physical education teacher or administrator.

*435. Modern Trends in Physical Education. Cr. 3. (3-0).
For teachers, supervisors, and administrators. Programs, requirements, accrediting, costumes, tests, athletic associations, equipment, and other current problems.

*436. Physical Examination in Physical Education. Cr. 3. (3-0).
Prerequisite: Zool. 235-6. Organization and technique of examinations and measurement. The significance of health examinations in the detection of various physical defects and the methods of recording findings. Practical experience in the various methods of examining, measuring, and grading posture.

*437. Tests and Measurements in Physical Education. Cr. 3. (3-0).
A study of the practical application of typical capacity and achievement tests now in use in the field of health and physical education for the purpose of classification and measurement of school progress. A critical study of various specific tests and types of tests.

*438. Problems in Curriculum Construction in Physical Education. Cr. 3.
Problems in the selection and organization of health and physical activities used at various school levels. Essential steps in the organization of content material and class procedure to insure systematic progress.

*439. Community Recreation. Cr. 3. (3-0).
Prerequisite: 60 hours credit and 12 hours of physical education in addition to that required of all freshmen and sophomores. The development and administration of recreation for community groups.

*4310. Physiology of Exercise. Cr. 3. (3-0).
Prerequisite: Zool. 235-6. The benefits and results of exercise.

4311-12. Methods in Secondary Physical Education. Cr. 3. (3-0).
Methods of teaching physical education in secondary schools; health examination and preparation of a complete program of physical education for secondary schools.

Women's Physical Education Majors and Minor Club. Membership in this club is open to all physical education majors and minors enrolled in college. This organization was established to promote professional interest in physical education.

Requirement for Teaching Health and Physical Education in Public Schools: P.E. 230, P.E. 233 meet the standards of the State Department of Education for certificates in health and physical education for the classroom teacher.

Physics

PROFESSOR SCHMIDT. ASSOCIATE PROFESSOR MERRYMON. ASSISTANT PROFESSORS CROSS**, DAY. LECTURERS ELLIOTT, STEFFY. INSTRUCTOR RICH.

Students majoring in physics for the Bachelor of Arts Degree should take Phys. 131-2 or 141-2, 235-6, 215-6 and select at least 18 hours of

* Open to both men and women.
** Deceased Dec. 8, 1948.

courses in physics of junior or senior rank. Majors for the Bachelor of Science Degree see that section of this catalog.

131-2. Elements of College Physics. Cr. 3. (3-2). I, II.
A general survey of the entire field of physics; mechanics, heat, sound, electricity, magnetism, and light. Primarily for students of the Divisions of Agriculture, Arts and Sciences, Home Economics, and Business Administration.

137-8. Physical Basis of Speech and Music. Cr. 3. I, II.
For students majoring in speech and music.

141-2. General Physics. Cr. 4. (3-3). I, II.
Prerequisite: Two units of high school algebra and one unit of plane geometry or Math. 130. A general course in physics designed to meet pre-medical requirements, but may be taken by others.

215-6. Physical Measurements. Cr. 1. (0-3). I, II.
Must be taken parallel with Phys. 235-6.

235-6. Engineering Physics. Cr. 3. I, II.
Prerequisite: One year of high school or college physics; parallel enrollment in calculus. See Phys. 215-6.

312-3. Modern Physics Laboratory. Cr. 1. (0-3).
Prerequisite: Parallel enrollment in Phys. 337-8. Approval of instructor. Credit will be given for either or both semesters.

331. Light. Cr. 3. (2-3). I.
Prerequisite: One year of physics and junior standing.

332. Heat. Cr. 3. II.
Prerequisite: One year of physics and calculus.

333-4. Electricity and Magnetism. Cr. 3. I, II.
Prerequisite: One year of physics and calculus.

337. Introduction to Modern Physics. Cr. 3. I.
Prerequisite: One year of physics and calculus.

338. Introduction to Modern Physics. Cr. 3. II.
Prerequisite: One year of physics and calculus.

411-2. Physics Seminar. Cr. 1. I, II.
Prerequisite: 12 hours of physics and calculus. Offered in alternate years.

413-4. Physics Seminar. Cr. 1 I, II.
Prerequisite: 12 hours of physics and calculus. Offered in alternate years.

415-6. Special Projects. Cr. 1. (0-3). I, II.
Prerequisite: 16 hours of physics. Individual student study of theoretical or experimental projects in physics under the guidance of a member of the staff. An outline of the proposed project must have been accepted by the head of the department before registering in this course.

423-4. Electrical Measurements. Cr. 2. (0-6). I, II.
Prerequisite: 12 hours of physics and calculus.

435. Mechanics. Cr. 3. II.
Prerequisite: 12 hours of physics and calculus.

531-2. Theoretical Physics. Cr. 3. I, II.
Prerequisite: Graduate standing.

539-10. Geometrical and Physical Optics. Cr. 3. I, II.
Prerequisite: Calculus and Physics 331.

601. Thesis.

In addition to all courses numbered in the 500 series, courses in this department which may be taken for graduate credit are: Physics 331, 332, 337, 338, 411, 412, 413, 414, 415, 416, 423-4, 435, if properly petitioned for and provided additional work or an added problem is done in each course numbered in the 300 and 400 series which otherwise carry no graduate credit.

Plant Industry

PROFESSORS YOUNG, LEIDIGH, YOCUM. ASSISTANT PROFESSORS AYERS*, BURNETT, ELLE*, LYNCH, SULLIVAN. INSTRUCTOR LaGASSE. LECTURERS MORROW, WILLIAMS.

The Department of Plant Industry provides curricula leading to the degree of Bachelor of Science in Agriculture with major work in the fields of agronomy, agronomy and farm machinery, and horticulture. Crops, soils, and range management options are offered in agronomy. General horticulture, pomology, and floriculture and landscape design options are offered in horticulture. The agronomy curriculum provides instruction in the basic principles of production of forage, pasture, grain

* On leave 1948-49.

and fiber crops, management practices for range lands, pasture and soils under both subhumid and irrigated conditions. The agronomy and farm machinery curriculum provides instruction in basic agronomic practices and selection, care, use, repair and management of farm machinery, buildings, and electrical devices, as well as the engineering of moisture conservation structures and irrigation systems. The horticulture curriculum provides instruction in the basic principles underlying plant propagation, orcharding, vegetable gardening, floriculture and landscape gardening. A plant industry farm is maintained with field plots, tree nursery and orchard in which field and vegetable crops and fruits are grown for practical training of students. Field trips are included in many courses to assist in broadening the student's training.

In addition to all courses numbered in the 500 series, courses in this department which may be taken for graduate credit are: P.I. 431, 432; Agron. 333, 421, 422, 423, 434, 435, 436, 437, 439; Hort. 431-2; 433; Ag. Engr. 411, 412, 432, 433, 434, if properly petitioned for and provided additional work or an added problem is done in each course numbered in the 300 or 400 series which otherwise carry no graduate credit.

PLANT INDUSTRY

321. Apiculture. Cr. 2. (1-3). II.
Prerequisite: Junior standing. Introduction to practical beekeeping. Value of bees in production of horticultural and agronomic crops.

331. Plant Insects and Diseases and Their Control. Cr. 3. (3-0). I, II.
Prerequisite: Junior standing in agriculture or biology. The most important fruit, vegetable, and crop insects and diseases— and their control. Sprays, methods of spraying, and spray calendars.

333. Functions of Horticultural and Agronomic Crop Plants. Cr. 3. (3-0). II.
Prerequisite: Junior standing. The behavior, growth processes, temperature relations, moisture relations, drought resistance, nutrition and food reserves, pollination, fertilization, and fruit setting, and permanent effects resulting from insect and fungus invasion of horticultural and agronomic crop plants.

341. Principles of Genetics. Cr. 4. (3-3). I, II.
Prerequisite: Junior standing in agriculture and Ag. Eco. 331. Heredity and variation in both plants and animals. History. The chromosome theory in higher animals, poultry, and insects. Biometry as applied to genetic data stressing economic plants and animals.

411. Plant Industry Seminar. Cr. 1. (1-0). II.
Prerequisite: Senior standing in Department of Plant Industry. Assigned readings, current advances and thought. Informal discussions, oral reports, and papers.

421. Plant Industry Problems. Cr. 2. (2-0). I, II.
Prerequisite: Open to students having satisfactory scholastic records. An investigation of a problem in the field of special interest to the individual student concerned.

431. Plant Breeding and Improvement. Cr. 3. (3-0). II.
Prerequisite: P. I. 341. Practical application of genetics in the breeding and improvement of plants.

432. Plant Industry Problems. Cr. 3. (3-0). I, II.
Prerequisite: Open to all students having satisfactory scholastic records. An investigation of a problem in the field of special interest to the individual student concerned.

441. Plant Production. Cr. 4. (3-3). I.
Prerequisites; Agronomy 131, 221, and junior standing in agriculture. Not open to agronomy majors. A modified course composed of applied production of fiber and grain, forage and vegetable crops applicable to Texas. Problems in seed and feed production. Special emphasis on needs of vocational agriculture teachers, county agents, etc.

535. Research Methods. Cr. 3. (3-0). I.
Prerequisite: Graduate standing in agriculture or equivalent. Project outlines, research administration, research organization, fellowships, research budgets, thesis organization and writing, research foundations.

AGRONOMY

131. The Fundamentals of Crop Production. Cr. 3. (2-3). I, II.
A survey course. Crops, their classification, identification, distribution, production, grading, and use. Tillage and elementary soils. Diseases and pests.

221. Soils. Cr. 2. (2-0). I, II.
Prerequisite: Chem. 131, sophomore standing in agriculture. Origin, formation, classification of soils, physical, chemical, and biological requirements, maintenance of soil fertility.

311. Soils Laboratory. Cr. 1. (0-3). I, II.
Prerequisite or parallel: Agron. 221. Field study of soil-forming materials, soil texture, classification, identification, field surveying, and mapping.

323. Principles of Crop Judging and Grain Grading. Cr. 2. (0-6). II.
Prerequisite: Junior standing in agriculture, and Agron. 131. Practice in identification, grading, judging, and testing quality and value of seeds and crop products.

331. Forage and Pasture Crops. Cr. 3. (2-3). I, II.
Prerequisite: Agron. 131, junior standing in agriculture. The production, harvesting, storage and uses of forage and pasture crops.

332. Grain Crops. Cr. 3. (2-3). I.
Prerequisite: Agron. 131, junior standing in agriculture. The production, harvesting, storage, grading, and use of grain crops. Adaptation, identification, and general improvement.

333. Range Plants. Cr. 3. (2-3). I.
Prerequisite or parallel: Agron. 331, junior standing in agriculture. The economic value of range grasses, non-grasseous forage plants and poisonous plants. Identification, habitat, palatability, and regions of growth.

421. Cotton and Other Fiber Crops. Cr. 2. (2-0). II.
Prerequisite: Junior standing in agronomy or approval of instructor. Culture improvement and classification of cotton. Diseases and insect pests of cotton.

422. Soil Management. Cr. 2. (2-0). I.
Prerequisite: Agron. 221, 331, senior standing in agriculture, and registration in Ag. Engr. 411. Soil moisture conservation, supplemental water supply, permanent farming under the conditions of light or wide seasonal variations of rainfall.

423. Soil Management. Cr. 2. (2-0). I.
Prerequisite; Agron. 221, 331, senior standing in agriculture and registration in Ag. Engr. 412. The nature and sources of plant nutrients, their liberation and conservation. Use of supplements and fertilizers. Irrigation and drainage, inspection trips.

424. Advanced Crop Judging and Grain Grading. Cr. 2. (0-6). I.
Prerequisite: Agron. 323, junior standing. Special work in identification, judging, testing, grading, and market standards for grain crops, hay crops, and general farm crops. Inspection trips and contests.

434. Soil Conservation and Land Use Planning. Cr. 3. (2-3). I, II.
Prerequisite: Agron. 221, 331. Junior standing. A study of types of erosion causes and controls. Inspection trips in soil conservation. Land use planning and conservation management.

435. Soil Morphology and Genesis. Cr. 3. (2-3). I, II.
Prerequisite: Agron. 221, senior classification in agriculture. The origin and classification of soils of the world and particularly of the United States.

436. Soil Chemistry. Cr. 3. (3-0). I, II.
Prerequisite: Agron. 221, 12 hours chemistry, senior standing in agriculture. Chemistry of the soil as affected by cultivation, crop rotation, fertilizers, and moisture relationships.

437. Range Management. Cr. 3. (2-3). I.
Prerequisite: Senior classification in agriculture, Agron. 331, 333, A. H. 331. Management problems and use of plants and soils under range conditions.

439. Soil Microbiology. Cr. 3. (3-0). I, II.
Prerequisite: Agron. 221, Bact. 231, 12 hours of chemistry, senior standing in agriculture. Micro-organisms in the soil with emphasis upon the functions of the soil bacteria and their influence upon the decomposition of organic matter and soil fertility in general.

512-3-4. Agronomy Seminar. Cr. 1, 2, or 3. (1-0). I, II.
Prerequisite: Graduate standing in agriculture or equivalent. Review and discussion of current literature in the field.

531-2-3. Agronomy Problems. Cr. 3, 6, or 9. (3-0). I, II.
Prerequisite: Graduate standing and consent of major professor and head of department. Credit to vary depending upon problem outlined. The work will consist of an outline of a specific problem in line with the major interest of the student and dealing with a phase of specialized study not included in regular course work.

601. Thesis.

HORTICULTURE

131. Principles of Horticulture and Plant Propagation. Cr. 3. (2-3). I, II.
Fundamental principles and practices of orcharding, gardening; propagation by seeds, cuttings, division, budding, and grafting.

231. Vegetable Gardening. Cr. 3. (2-3). I, II.
Prerequisite: Hort. 131. The basic principles of market gardening and truck farming. Planning, planting, and caring for the home garden.

322. Landscape Appreciation. Cr. 2. (2-0). I, II.
Prerequisite: Junior standing. History of gardening. Basic principles of landscape design for city and farm homes. Practice work on landscape problems. The principal trees and shrubs.

331. Trees and Shrubs. Cr. 3. (3-0). I.
Prerequisite: Junior standing. Identification characteristics, and use of shrubs, deciduous and evergreen trees of economic and ornamental importance.

332. Annuals and Perennials. Cr. 3. (3-0). II.
Prerequisite: Junior standing. Identification, characteristics, culture and uses of annuals, perennials, bulbous crops, and outdoor roses.

333. Fruit Culture. Cr. 3. (2-3). I.
Prerequisite: Hort. 131. Junior standing in agriculture. Principles of fruit production; particularly, the home orchard. Tree fruits, grapes, and small fruits. Climatic, soil, and water requirements. Varieties and cultural practices.

334-5. Principles of Floriculture. Cr. 3. (2-3). I, II.
Prerequisite: Hort. 131. Junior standing. Greenhouse construction, heating, and management. Culture of special greenhouse crops. Retail management, flower arrangement and nursery management.

336-7. Landscape Design. Cr. 3. (1-6). I, II.
Prerequisite: E. Dr. 131, Arch 121-2, junior standing. Principles of landscape design, the city home, country estates, gardens, small city parks, and playgrounds. Field trips are included for practical applications.

421. Citriculture. Cr. 2. (2-0). I.
Prerequisite: Junior standing. Commercial production of citrus friuts, adaptation, soil requirements, temperature, orchard heating, and irrigation.

431-2. Pomology. Cr. 3. (3-0). I, II.
Prerequisite: Hort. 333, or registration in Hort. 433. The principles underlying fruit production. Temperature, moisture, irrigation, nutrition, fruit setting of pomological fruits.

433. Systematic Pomology. Cr. 3. (2-3). I.
Prerequisite: Hort. 333, or registration in Hort. 431. Nomenclature, variety, description, classification, climatic and regional adaptation. Practice in describing and identifying varieties of fruits.

512-3-4. Horticulture Seminar. Cr. 1, 2, or 3. I, II, S.
Prerequisite: Graduate standing in agriculture or equivalent. Review and discussion of current literature in the field.

531-2-3. Horticultural Problems. Cr. 3, 6, or 9. I, II, or S.
Prerequisite: Graduate standing and consent of major professor and head of department. Credit to vary depending upon problem outlined. The work will consist of an outline of a specific problem in line with the major interest of the student and dealing with a phase of specialized study not included in regular course work.

601. Thesis.

AGRICULTURAL ENGINEERING

321-2. Farm Shop. Cr. 2. (1-3). I, II.
Prerequisite: Junior standing. Care, fitting, and use of tools. Woodwork as affects farm problems. Minor work for farm machinery and engines. Farm sheet metal, forging, oxy-acetylene, and arc welding, pipe fitting, concrete, electric wiring, painting, and rope work.

323. Farm Machinery. Cr. 2. (1-3). I.
Prerequisite: Junior standing. Construction, care, operation, and repair of the different types of farm machinery.

331-2. Farm Power. Cr. 3. (2-3). I, II.
Prerequisite: Junior standing. Principles of operation of the gasoline engine as power, operation, care and repair, modern farm tractors, and electric motors.

411. Soil Management Laboratory. Cr. 1. (0-3). I.
Prerequisite: Senior standing in agriculture. Terrace location, design, and construction for soil erosion control and moisture conservation. Inspection trips.

412. Soil Management Laboratory. Cr. 1. (0-3). II.
Prerequisite: Ag. Engr. 411. Senior standing in agriculture. Design and layout of ditches and systems for irrigation or drainage. Measurements of water. Inspection trips.

431. Farm Buildings. Cr. 3. (3-0). II.
Prerequisite: Senior standing in agriculture. Farm building objectives, location for efficient operation and sanitation. Materials of construction, dimensions, and floor plans.

432. Land Mapping and Measurement. Cr. 3. (1-6). I.
Prerequisite: Senior standing in agriculture. Study and construction of plane table and topographic maps and the interpretation of aerial maps with special application.

433. Advanced Farm Shop. Cr. 3. (1-6). I, II.
Prerequisite: Ag. Engr. 321, 322, senior standing in agriculture. Hot and cold metal work, arc and torch welding on farm machines; power tool use. Principles and practices in construction of electric appliances for the farm, concrete structures, septic tanks, chutes, and trailers.

434. Advanced Farm Machinery. Cr. 3. (1-6). I, II.
Prerequisite: Senior standing in agriculture. Ag. Engr. 323, 331. Types, uses and servicing, adjusting and repairing internal combustion engines with emphasis on farm tractors. Factors for calculating and reducing farm power and machinery costs. Adjusting and repairing field machines, much practice, cause and effect.

Portuguese

(See Foreign Language)

Poultry Husbandry

(See Animal Husbandry)

Psychology

(See Education and Psychology)

Rural Sociology

(See Agricultural Economics)

Secretarial Administration

(See Marketing and Secretarial Administration)

Sociology

(See Philosophy and Sociology)

Spanish

(See Foreign Language)

Speech

PROFESSOR PENDLETON. INSTRUCTORS CHAPPELL*, WARD, THOMPSON**. LECTURERS UPSHAW, LINDELL.

Majors in the Department of Speech are required to take Speech 131, 231-2, 233, 235-6, 432-3, 435, 439, and at least 6 additional hours to be selected from courses numbered 300 or above. They will fulfill graduation requirements for the Bachelor of Arts Degree as listed on page 117. To fulfill graduation requirements in science, majors in the Department of Speech will take Phys. 137-8 and Zool. 235-6. Eighteen semester hours of English are required for majors in the department.

Speech may be offered as a minor in graduate work. Courses in this department which may be taken for graduate credit are Speech 423, 432-3, 434, 435, and 439, if properly petitioned for and provided additional work or an added problem is done in each course numbered in the 300 or 400 series, which otherwise carry no graduate credit.

A Speech Clinic, open to students and others with deficiencies in speech, is conducted by members of the staff one afternoon each week. No college credit is given for clinic work.

131. Fundamentals of Speech. Cr. 3. I, II.
Training in the basic principles of speech, with emphasis upon the original speech.

132. Public Speaking. Cr. 3. II.
Prerequisite: Speech 131. Continuation of fundamentals with emphasis on speeches directed toward specific purposes.

231. Principles of Acting. Cr. 3. (2-3). I.
Brief survey of the history and nature of drama and developments in the art of acting. Study of stage terms and technique. Analysis of characterization with practice in line reading and pantomime. Stage make-up. Materials for illustrative exercises chosen from classical and current plays.

232. Play Production. Cr. 3. (2-3). II.
Prerequisite: Speech 231. Analysis of the problems of the director. Experience with various aspects of production, including scenery, properties, costuming, and lighting. Production of one-act plays as laboratory projects.

233. Voice and Diction. Cr. 3. I, II.
Analysis of the characteristics of good voice and speech usage. Structure and functioning of the speech mechanism. The use of phonetics and phonetic symbols for ear training and transcription of speech. Practical exercises in developing adequate vocal controls for effective speaking.

235. Argumentation and Debate. Cr. 3. I.
Prerequisite: Govt. 131-2 or 230-1, or parallel enrollment in government. Class discussion and debate on questions of present-day interest. Emphasis on analysis and the use of evidence. Open to freshmen with permission of the instructor.

236. Argumentation and Debate. Cr. 3. II.
Prerequisite: Speech 235. Continuation of discussions and debates. A study of the types of argument, fallacies, and the use of refutation and rebuttal. Briefing debate propositions.

* On leave spring semester 1949.
** Spring semester 1949.

335. Radio Speech. Cr. 3. (2-3). I.
Prerequisite: 6 semester hours of speech, or by permission of the instructor. A study of the background of radio broadcasting and speech in radio broadcasting. Announcing, the radio speech, interviews, and discussions.

336. Radio Program Production. Cr. 3. (2-3). II.
Prerequisite: Speech 335. Studio organization. Planning and production of programs.

338. Business and Professional Speech. Cr. 3. I, II.
Formerly Speech 331 and 337. Prerequisite: Sophomore classification. Basic principles of speech applied to the speech needs of the professional man and woman. Practice in the construction and delivery of the various types of speeches and in group conference and discussion. For majors in the Divisions of Agriculture, Business Administration, Engineering, and Home Economics.

423. Advanced Stage Directing. Cr. 2. (1-3). I.
Prerequisite: Speech 231-2; junior classification. Discussion of the problems of the director with practical work in the staging of plays for public presentation. Preparation of the prompt book.

432. Speech Correction. Cr. 3. I.
Prerequsite: Junior classification. A general survey of the speech correction field and classification of common speech disorders. Study of the nature and development of speech, including structure and controls of speech mechanism and the science of phonetics. Emphasis on classification of speech disorders, fundamental causes and basic problems of the field. Part-time observation in Speech Clinic.

433. Speech Correction. Cr. 3. II.
Prerequisite: Speech 432. A background study of the causes and therapies of common speech disorders. Observation of hearing tests. Supervised work with cases in the Speech Clinic.

434. Speech Seminar. Cr. 3. I, II.
Prerequisite: 18 semester hours in speech. Sources and methods of finding material. Evaluation, assimilation, and organization of material.

435. Interpretative Reading. Cr. 3. I.
Prerequisite: Junior classification and 18 semester hours of English. Students are advised to take Speech 233 before entering this class. Consideration of the problems of transferring meaning from the printed page to the listening audience. Study of the types of literature for oral interpretation. Practice in the interpretative reading of prose and poetry.

436. Radio Program-Planning, Direction, and Production. Cr. 3. (2-3). II.
Prerequisite: Speech 336. Program planning and production.

439. The Teaching of Speech. Cr. 3. II.
Formerly 421. Prerequisite: 20 semester hours of speech; 9 semester hours of education. Methods of teaching speech. Review of all phases of speech. A survey of the texts in speech. Preparation of syllabi.

Textiles

(See Clothing and Textiles)

Textile Engineering

PROFESSOR PARSONS. ASSISTANT PROFESSOR SHAFTER. LECTURER BUNTON.

Training in this department is intended to provide the proper background for those students planning to enter the textile and allied fields. Although the work is aimed primarily at training for textile design, production and finishing, it also provides a sound background for the fields of testing, research, dry cleaning, laundering, sales, and general textile administration.

Although the work offered in the Department of Textile Engineering is practically the same for all students, some specialization may be achieved because of the choice of service courses incorporated in the curriculum and offered in other departments. To this end the curriculum is divided into three options: Textile Engineering Option, Chemistry and Dyeing Option, and Weaving and Design Option.

The textile instruction consists of lectures, calculations, tests, investigations, and experimentation with the various machines; practical operation of the machines by students; the principles underlying fabric structure; and the elements of woven design. The structure and cost of fabrics are ascertained by work in cloth analysis.

The carding and spinning areas of the textile plant and laboratories have complete equipment required to convert the fiber into the

finished yarn. All machines are standard mill sizes and include vertical opener, picker, cards, both roller and revolving flat, comb, drawing frames, roving frames, and long-draft spinning frames. The weaving area of the plant is equipped with machinery for the production of almost any type cotton fabric.

Upon these machines the students do practice work in the manufacture of many standard fabrics. Wide latitude is given the student in producing fabrics to illustrate different color combinations and weave effects of his own design. In the dyeing laboratory instruction, which precedes practical dyeing on the machines, students study the action of the alkalies and acids on various textile fabrics, and the application of dyes to silk, wool, cotton, and rayon. Full details of the processes employed in bleaching cotton yarn and cloth are followed, including water purifications by chemical and mechanical means, with special reference to bleaching and finishing.

It is the policy of the Textile Engineering Department to encourage and sponsor cooperative research work in the field of textiles. At the present time both state supported and industrial research is being carried on. This cooperation provides the student interested in research, special opportunities in that field.

234. Cotton Classing and Marketing. Cr. 3. (2-3). I.
The grading, stapling, and marketing of cotton; special emphasis on the economics of the system. Practical laboratory work in classing of cotton.

235. Textile Fibers and Their Preparation for Yarn Cr. 3. (2-3). II.
The physical and chemical properties of the common textile fibers with special attention to their preparation for yarn manufacturing. Introduction to microscopy and photomicrography as applied to textile fibers.

326. Wool. Cr. 2. II.
A study of wool as a finished product of the ranch, and its commercial value as determined by its use as a textile material. Includes a study of the chemical and physical structure of the wool fiber, grading, sorting, scouring, and manufacturing into yarn and fabric.

331-2. Yarn Manufacture. Cr. 3. (2-3). I, II.
Prerequisite: T. E. 234. The principles of cotton yarn manufacturing, and the practical operation of opening, cleaning, picking, carding, drawing, and roving processes. The calculations involved with drafting, speeds, production, and power transmission through the various processes.

333-4. Bleaching and Dyeing. Cr. 3. (2-3). I, II.
Prerequisite: Registration in Chem. 341 or Chem. 343. The chemistry and practicing of bleaching and dyeing animal, vegetable, and synthetic fibers in the principal forms—raw material, yarn and fabric.

335-6. Fabric Design and Weaving. Cr. 3. (1-6). I, II.
Prerequisite: T. E. 235. Lectures and practical work in the structure and manufacture of the simpler types of fabrics. Plain and dobby looms with special regard to the mechanical principles involved.

421-2. Fabric Analysis Weaving and Jacquard Design. Cr. 2. (1-3). I, II.
Prerequisite:T. E. 335-6. Analyzation of fabric construction. Advanced work in design of fancy woven fabrics. A continuation of the mechanics of operation of the various looms.

423. Advanced Dyeing and Color Matching. Cr. 2. (0-6). II.
Prerequisite: T. E. 433 and registration in T. E. 434. Advanced dyeing and color matching to specifications on yarns and fabrics.

433-4. Dyeing and Finishing. Cr. 3. (2-3). I, II.
Prerequisite: T. E. 333-4. Practical application of the principles taught in T. E. 333-4; a study of rayon technology; and a study of the various finishing processes as applied to textile fabrics.

435. Advanced Yarn Manufacture. Cr. 3. (2-3). I.
Prerequisite: T. E. 331-2. Basic principles of cotton and synthetic yarn spinning; systems other than cotton spinning, and laboratory work in test spinning methods and practices.

436. Yarn Preparation and Textile Testing. Cr. 3. (2-3). II.
Prerequisite: T. E. 435. The principles of twisting, winding, spooling, warping and slashing. Physical, chemical and microscopical testing of yarns and fabrics.

437. Textile Costing. Cr. 3. I.
Prerequisite: T. E. 331-2, 335-6 and registration in 435. A thorough study of basic cost concepts, historical and predetermined costs applied to textiles as an aid to management.

*438. Mill Organization. Cr. 3. (2-3). II.
Prerequisite: T. E. 437. The student designs the plant and machinery layout of a mill to manufacture a given quantity of textile product. Lectures are given on the duties of operating executives and technical staffs.

* Formerly T. E. 424.

411-2. Textile Engineering Seminar. Cr. 1. I, II.
Credit for this course may be given as often as successfully repeated. The investigation and study of engineering problems of special interest and value to the students taking the course. Offered only to students of senior standing, with permission of the head of the department.

BIBLICAL LITERATURE

MR. CECIL RAYMOND MATTHEWS, THE METHODIST CHURCH.
MR. W. F. ROGAN, PRESBYTERIAN CHURCH.
MR. CARL SPAIN, CHURCHES OF CHRIST.
MR. VESTER WOLBER, BAPTIST GENERAL CONVENTION OF TEXAS

131. Survey of the Old Testament. Cr. 3.
A survey of the content of the Old Testament in relation to the history of the Hebrews and their religious outlook on life.

132. Survey of the New Testament. Cr. 3.
A survey of the content of the New Testament in relation to its historical background and basic Christian teachings.

221. Book of John. Cr. 2.
A study of the background, authorship, and occasion for writing the book of John with emphasis on interpretation and major teaching.

222. Book of Revelation. Cr. 2.
A conservative study of the background and interpretation of the book of Revelation.

231. History of Christian Church. Cr. 3.
A study of the history and growth of the Christian Church from its earliest beginning to the present time.

232. Problems of Christian Leadership. Cr. 3.
A study of the problems of Christian leadership with emphasis on the needs of those who plan religious vocations, and guidance in the interpretation of the Bible as it challenges Christlike living in all vocations.

223. The Book of Romans. Cr. 2.
Intensive study of the contents of the Epistle to the Romans, with emphasis on the spiritual and ethical teaching.

234. Selected Studies in the New Testament. Cr. 3.
The major spiritual and ethical themes of the New Testament are studied intensively. These will include such themes as: The Fatherhood of God, Sonship of Christ, the Holy Spirit, Marriage and the Home, the Ordinances of Christ, the Church, the Atonement, and Justification.

311. The Bible, Its Origin and Growth. Cr. 1. I.
Prerequisite: Junior classification. A study of the origin and growth of the Bible and its significant message for our generation.

313. The Book of James. Cr. 1. I.
Prerequisite: Junior classification or Bible 132. A study of the background, authorship, and occasion for writing the book of James with emphasis on its message of practical Christian living.

338. The Spread of Christianity. Cr. 3.
The book of Acts is studied in its harmonic connection with the epistles. The missionary program and message is traced through the historical records of the New Testament.

431. The Prophets. Cr. 3. I.
Prerequisite: Junior classification. A careful study of the Hebrew prophets, their place in history, and their message.

432. The Life and Teachings of Jesus. Cr. 3.
Prerequisite: Junior classification. A study of the life, teaching, and significance of Jesus as revealed in the gospels.

434. Comparative Religion. Cr. 3. II.
Prerequisite: Junior classification or Bible 132. This course includes a study of the origin and fruits of the chief world religions (Confucianism, Buddhism, Taoism, Hinduism, Mohammedanism, Zoroastrianism).

ENROLLMENT

Enrollment For The Long Session, 1948-49

	Freshmen	Sophomores	Juniors	Seniors	Graduates	Totals
Agriculture	229	197	240	198	49	913
Arts & Science	964	450	517	423	173	2527
Business Administration	12	269	335	291	30	937
Engineering	474	415	494	554	9	1946
Home Economics	168	94	80	78	7	427
Totals	1847	1425	1666	1544	268	6750

Total Men Students.....5135 Total Women Students.....1615

Enrollment For The Summer Session, 1948

	Freshmen	Sophomores	Juniors	Seniors	Graduates	Totals
Agriculture	21	49	86	134	39	329
Arts & Science	154	181	313	358	237	1243
Business Administration	6	85	181	190	10	472
Engineering	96	155	262	349	3	865
Home Economics	57	32	33	51	15	188
Totals	334	502	875	1082	304	3097

Total Men Students.....2290 Total Women Students.....807

EXTENSION

Individual enrollments in extension classes	451
Individual enrollments in correspondence courses	2608
Total enrollment for the period	3059

Attendance 1925-1949

Year	Long Session	Summer Session	Extension	Totals
1925-26	1043	336		1379
1926-27	1535	677		2212
1927-28	1682	965	386	3033
1928-29	2088	1298	820	4206
1929-30	2353	1316	1098	4767
1930-31	2319	1556	1227	5102
1931-32	2155	1606	1011	4772
1932-33	2332	1288	833	4453
1933-34	2361	1970	1236	5567
1934-35	2684	1956	1403	6043
1935-36	2748	1678	1522	5948
1936-37	3010	1695	1255	5960
1937-38	3494	1839	1067	6400
1938-39	3896	1932	1137	6965
1939-40	4246	1800	1198	7244
1940-41	4076	1522	1063	6661
1941-42	3824	1653	1050	6527
1942-43	3079	1140	1273	5492
1943-44	1928	1060	1354	4342
1944-45	2222	1060	2084	5366
1945-46	3744	2670	1791	8205
1946-47	6095	3067	2625	11787
1947-48	6689	3097	3059	12845
1948-49	6750			

DEGREES CONFERRED 1927-1948

Division of Agriculture

	Conferred in 1948 Men	Women	Both	Totals 1927-48
Bachelor of Science in Agriculture	94	1	95	811
Master of Science	6		6	40
Total for Division of Agriculture	100	1	101	851

Division of Arts and Sciences

Bachelor of Arts	50	89	139	2593
Bachelor of Science	41	8	49	213
Bachelor of Science in Education	18	44	62	874
Master of Arts	8	5	13	457
Master of Education	14	8	22	102
Master of Science	3	0	3	38
Master of Science in Education				1
Total for Division of Arts and Sciences	134	154	288	4278

Division of Business Administration

Bachelor of Business Administration	124	40	164	1006
Bachelor of Science	12	0	12	19
Master of Business Administration	0	1	1	11
Total for Division of Business Administration	136	41	177	1036

Division of Engineering

Bachelor of Architecture	8	0	8	27
Bachelor of Arts	0	1	1	65
Bachelor of Commercial Art	0	0	0	4
Bachelor of Science in Architectural Engineering	1	0	1	33
Bachelor of Science in Chemical Engineering	20	1	21	143
Bachelor of Science in Civil Engineering	28	0	28	180
Bachelor of Science in Electrical Engineering	33	1	34	223
Bachelor of Science in Geological Engineering	0	0	0	23
Bachelor of Science in Industrial Education	0	0	0	1
Bachelor of Science in Industrial Engineering	15	1	16	42
Bachelor of Science in Mechanical Engineering	32	0	32	211
Bachelor of Science in Petroleum Engineering	28	0	28	125
Bachelor of Science in Textile Engineering	6	0	6	73
Bachelor of Science in Textiles	0	0	0	19
Master of Science	1	0	1	12
Total for Division of Engineering	172	4	176	1181

Division of Home Economics

Bachelor of Science in Home Economics	0	70	70	860
Master of Science	0	3	3	14
Total for Division of Home Economics	0	73	73	874

Honorary Degrees

Doctor of Laws	1	0	1	7
Doctor of Science	0	0	0	1
Total Honorary Degrees	1	0	1	8

SUMMARY OF DEGREES CONFERRED 1927-48

Total Bachelors' Degrees	7545	Total Men Receiving Degrees	4390
Total Masters' Degrees	675	Women Receiving Degrees	3838
Total Doctors' Degrees	8		
	8228		

APPENDIX

TEXAS TECHNOLOGICAL COLLEGE—ESTABLISHING AND PROVIDING FOR THE LOCATION THEREOF.

S. B. No. 103 Chapter 20 (page 32)

GENERAL LAWS OF THE STATE OF TEXAS Passed by the THIRTY-EIGHTH LEGISLATURE at the REGULAR SESSION.

An act to establish a State College in Texas, west of the ninety-eighth (98th) meridian and north of the twenty-ninth (29th) parallel, to be known as Texas Technological College; providing for the location of such college; its government; the control of its finances; defining it leading objects and prescribing generally the nature and scope of instruction to be given; conferring upon the Board of Directors of said college the rights of eminent domain; making the necessary appropriations for the purchase of land, the location, establishing, and maintenance of said college and declaring an emergency. Be it enacted by the Legislature of the State of Texas.

Section 1. There shall be established in the state a college for white students, to be known as the Texas Technological College, said college to be located north of the twenty-ninth (29th) parallel, and west of the ninety-eighth (98th) meredian and shall be a co-educational college giving thorough instruction in technology and textile engineering from which a student may reach the highest degree of education along the lines of manufacturing cotton, wool, leather, and other raw materials produced in Texas, including all branches of textile engineering, the chemistry of materials, the technique of weaving, dyeing, tanning, and the doing of any and all other things necessary for the manufacture of raw materials into finished products; and said college shall also have complete courses in arts and sciences, physical, social, political, pure and applied, such as are taught in colleges of the first class leading to the Degrees of Bachelor of Science, Bachelor of Arts, Bachelor of Literature, Bachelor of Technology, and any and all other degrees given by colleges of the first class; said college being designated to elevate the ideals, enrich the lives and increase the capacity of the people for democratic self-government and particularly to give instruction in technological, manufacturing, and agricultural pursuits, and domestic husbandry and home economics, so that the boys and girls of this state may attain the highest usefulness and greatest happiness and in so doing may prepare themselves for producing from the State its greatest possible wealth.

Sec. 2 The government, control, and direction of the policies of said Technological College shall be vested in a board of nine (9) directors to be appointed by the Governor, who shall hold office for a period of six (6) years, said board of nine (9) directors to be so divided that the terms of three (3) directors shall expire every two years and it shall be the duty of the Governor, in making the appointment of the first board of directors, to indicate in his appointment the name of the director whose term shall expire in two (2) years, the name of the director whose term shall expire in four (4) years, and the name of the director whose term shall expire in six (6) years; all of said directors to hold their office until their successors are qualified, unless a removal is made by the governor for inefficiency or inattention to their duties as members of such board.

The Board of Directors of the Texas Technological College shall provide a president therefor, who shall devote his entire time to the executive management of said school and who shall be directly accountable to the Board of Directors for the conduct thereof.

Sec. 3. In addition to the courses provided in technology and textile engineering, the said Texas Technological College shall offer the usual college courses given in standard senior colleges of the first class, and shall be empowered to confer appropriate degrees to be determined by the Board of Directors and shall offer four-year courses, two-year courses, or short-term courses in farm and ranch husbandry and economics and the chemistry of soils and the adaptation farm crops to the peculiar soil, climate and condition of that portion of the State in which the college is located, and such other courses and degrees as the Board of Directors may see fit to provide as a means of supplying the educational facilities necessary for this section of the State, and it shall be the duty of the Board of Directors to furnish such assistance to the faculty and students of said college as will enable them to do original research work and to apply the latest and most approved method of manufacturing and, in general, to afford the facilities of the college for the purpose of originating, developing, supporting, and maintaining all of these agencies (physical, mental and moral) for the development of physical, mental and moral welfare of the students who attend the college and for the further purpose of developing the material resources of the State to their highest point of value and usefulness by teaching the arts of commerce and manufacturing. All male students attending this college shall be required to receive such instruction in military science and tactics as the Board of Directors may prescribe which shall, at all times, comply in full with the requirements of the United States Government now given as prerequisite to any aid extended by the Government of the United States to State institutions of this character and all such white male students shall, during their atendance at such college, be subject to such military discipline and control as the Board of Directors shall prescribe.

Sec. 4. The chairman of the State Board of Control and the State Superintendent of Public Instruction, the President of the University of Texas, the President of the College of Industrial Arts of Texas, and the President of the Agricultural and Mechanical

College of Texas shall constitute a board charged with the responsibility for the location of the Texas Technological College, a majority of whom shall be authorized to act under the terms of this bill in the location of said school; said board being restricted in the choice of location to the area mentioned in section 1 of this act and as soon after the passage and approval of this act as practical, said locating board shall make careful investigation of proposed sites for the said institution. Consideration shall be given to climatic conditions, supply of water, accessibility and such other matters as may appropriately enter into the selection of the desirable location of an institution of this kind. It is further provided that the said locating board shall not be influenced to any degree in the determination of its selection of a location by offers and promises of bonuses and gifts, directly or indirectly, to the State of Texas, as a consideration for the location of said college at any particular place, but a primary consideration which shall outweigh all others in the minds of the members of the locating board, shall be to locate this college where it can, in the future, render the greatest service to the State and to the section of the United States for which it is especially intended; but this is not to be interpreted to mean that the Board of Directors shall not have authority to accept gifts of land, money for student loans, permanent improvement or any other objects of value when tendered for the purpose of more completely carrying out the purpose of this act; said gifts to be made after said school is located and established and if a suitable location for said college is offered by any city or community. The lands bought shall be so located that the administration building will be within convenient distance to the residence section of the town where located, or the place where the students reside.

Sec. 5. The said locating board shall have authority to select approximately two thousand (2,000) acres of land for the site of said college and agree with the owner or owners thereof upon the price to be paid therefor, which said agreement shall be reduced to writing and by the said locating board signed and delivered to the Board of Directors herein provided for, who shall thereupon have full authority to contract for the purchase of said land for said purpose, and upon approval of the title thereto by the Attorney General of the State of Texas, to pay for said land and any improvements thereon in any sum not to exceed one hundred and fifty thousand ($150,000) dollars.

Sec. 6. It is further provided that, when said locating board has selected a site for said college, it shall be the duty of said board to make a full and complete report of all details connected with the selection of the site for the said college to the Governor of the State of Texas. The filing of this report with the Secretary of State shall legally constitute the establishing of the college.

Sec. 7. The Board of Directors of the said Texas Technological College is hereby vested with the powers of eminent domain to acquire for the use of said college such land as may be necessary for the purpose of carrying out its purposes by condemnation proceedings such as are now provided for railroad companies under the laws of the State of Texas.

Sec. 8 There is hereby appropriated from the general revenue of the State, not otherwise appropriated, the following sums, or so much thereof as may be necessary.

1. Twenty-five hundred (2,500) dollars of the available revenue of the State, or so much thereof as may be necessary, to become available upon the passage and approval of this act, for the purposes of paying the expenses of the locating board in determining the location of said institution.

2. One hundred and fifty thousand ($150,000) dollars of the available revenues of this State, or so much thereof as may be necessary, to become available September 1, 1923, for the purchase of the necessary lands for the location and establishment of said school, and any portion of which amount is not used for the purchase of lands shall be available for the purposes provided in the following sections thereof.

3. Five hundred thousand ($500,000) dollars for the fiscal year ending August 31, 1924, for the purpose of providing necessary utilities, machinery, permanent improvements, equipment, and buildings for said college.

4. Three hundred and fifty thousand ($350,000) dollars for the fiscal year ending August 31, 1925, for the purpose of providing necessary utilities, machinery, permanent improvements, equipment, and buildings for said college; and

5. In the event any portion of the sums hereby appropriated should not be used for and during the year for which they are hereby appropriated, such sums shall become available for the succeeding year, for the purpose herein provided, and for no other.

Sec. 9. The fact that Texas is producing annually millions of dollars worth of raw materials, which are being shipped to distant factories to be made into finished products, together with the fact that Texas has no adequate institutions for teaching technology and the art of textile manufacturing and the fact that the needs of that portion of the State where this college shall be located are inadequately supplied with educational institutions, create an emergency and an imperative public necessity for this act to take effect at once and for the suspension of the constitutional rule requiring bills to be read on three several days, it is therefore enacted that said rule be suspended and this act take effect and be in force on and after its passage.

REGULATIONS OF STATE DEPARTMENT OF EDUCATION GOVERNING TEXAS STATE TEACHERS CERTIFICATES

Four-Year Elementary or Two-Year High School Certificate. On completion of five college courses (30 semester hours), including 6 semester hours in English, 6 semester hours in education, and the required courses in government, an elementary certificate valid for four years, or high school certificate valid for two years, may be issued.

Six-Year Elementary or Four-Year High School Certificate. On completion of 10 college courses (60 semester hours), including 12 hours in education, and the required courses in English and government, a four-year high school certificate, or six-year elementary certificate, may be issued. Any 12 hours in education will be accepted for the elementary certificates, valid for six years, but an applicant must have credit for 6 semester hours that bear wholly on high school education before the high school certificate may be issued. It is provided that the holder of the six-year elementary certificate shall, upon completion of five years of successful elementary teaching, be granted a permanent elementary certificate. It is provided further that the satisfactory completion of a year's college work (30 semester hours) may be substituted for a year's successful teaching, if attendance at the college takes place after the issuance of the certificate.

Six-Year High School Certificate. A six-year high school certificate may be issued on completion of three years of college work, including 18 semester hours of education. The courses in education must include at least 2 semester hours in observation and practice teaching and 6 semester hours in high school education.

Permanent High School Certificate. A permanent high school certificate may be issued on a bachelor's degree, including 24 semester hours in education. A part of the courses in education must include at least 2 semester hours in observation and practice teaching, 2 semester hours in high school methods and 6 semester hours in high school education.

A permanent high school certificate may be issued also on a bachelor's degree, which includes 12 hours in education (6 hours of high school), with the usual required courses in English and government, and three years' teaching experience subsequent to a degree.

Special Certificates. Special certificates authorizing the holders to teach the special subjects of agriculture, home economics, commercial subjects, public school drawing, speech, manual training, physical training, public school music, instrumental music, industrial training, or foreign languages may be granted by meeting the requirements set forth by the State Department of Education for the several certificates. Thus, also students who are registered in the Divisions of Agriculture, Home Economics, Enigneering, or Commerce may take sufficient courses in education and psychology to meet the requirements for a state teacher's certificate and the usual special certificates in the designated fields, and thus may take their degrees in the division in which they are registered and qualify themselves to teach agriculture, home economics, shop work, industrial training, commercial subjects, or combinations of these and other high school subjects.

The three-year special certificate may be issued on completion of two years' college work, which must include 6 semester hours in English, 6 semester hours in education, 6 semester hours in required courses in government, and 6 semester hours in the special subject in which the certificate is issued, and in addition thereto, one semester's work in methods of teaching the special subject.

The four-year special certificate may be issued on the completion of three years' college work, which must include 6 semester hours in English, 6 semester hours in education, 6 semester hours in required courses in government, and 18 semester hours in the special subject in which the certificate is granted, and in addition thereto, one semester's work in the methods of teaching the special subject.

The permanent special certificate may be issued on the completion of the requirements for a bachelor's degree, in which must be included the required courses of 6 semester hours in English, 6 semester hours in education, and 24 semester hours in the special subject, and in addition thereto, one semester's work in special methods of teaching the subject in which the certificate is issued.

Holders of special certificates in certain fields may secure a permanent special certificate in that field on the completion of three years of teaching this special subject during the validity of their certificate.

Administrator's Certificate of Approval. A statment of approval is issued those administrators who present the completion of at least 12 semester hours' credit in the field of advanced administration and supervision, and 6 semester hours of credit in the field of advanced methods. This document is not accepted in lieu of any legal certificate that may be required. It indicates that the holder has met the requirement concerning the training of superintendents and principals of accredited school systems in Texas. These courses are generally taken by people who have already been graduated. The number of education courses required for the Degree of Bachelor of Science in Education usually prevents a student from taking additional courses in education for the undergraduate degree.

State Department of Education Rulings for Teachers of Physical and Health Education. Full-time teachers of physical education must have, in addition to the usual requirements for teachers' certificates, 24 semester hours of college credit in physical and health education, distributed as follows: 6 hours in methods and materials of health

education; 6 hours in methods and materials of physical education; 6 hours in coaching team sports (methods), and 6 hours electives—principles of physical education, administration of health and physical education.

For the present the State Department of Education is asking that certain prescribed courses in physical and health education be required of all classroom teachers responsible for playground work.

One Year Extension of Certificates of Any Grade. Any certificates of any grade may be extended for a period of one year by completion of 6 semester hours in summer school, during the year in which the certificate expires. Work done in long sessions and by correspondence or extension work may not be used in lieu of summer school attendance for extension of certificate.

Government Requirement. A teacher's certificate issued by the State Department of Education based on college work requires courses in government covering the federal and Texas constitutions. Govt. 230 will satisfy the minimum requirements for this purpose. However, for degree purposes, 6 hours of government are required.

Courses for Elementary Teachers. Students who are preparing to teach in the elementary grades of the public schools should elect Biol. 133-4 as the basic requirement in elementary science. They are also expected to take courses in physical education and in music and art in connection with their preparation for acceptable teaching in tihs field.

Scholarship, as shown by the grades of the students, will be given considerable weight in recommending students for certificates or teaching positions.

Placement Service. A placement service is operated for the benefit of teachers and prospective teachers, who desire to secure taching positions. Due to the shortage of teachers at the present time, all candidates for teaching positions and all persons qualified to teach should register with the service.

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