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TEXAS TECHNOLOGICAL COLLEGE

VOL. XXX APRIL, 1954 NO. 4

TWENTY-NINTH
ANNUAL CATALOG

With Announcements for 1954-55

Issued in January, February, March, April, May, June, August, October and December of each year by the College. Entered as second-class matter, December 24, 1924 at the Post Office, at Lubbock, Texas, under the Act of August 24, 1912.

CALENDAR

1954

JANUARY

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COLLEGE CALENDAR 1954-55

Twenty-Ninth Annual Session

SUMMER SESSION 1954

1954

First Term

June 6. Sunday, 12 Noon. Dormitories open for room occupancy.

June 7. Monday. Summer Session begins. Registration for first term. Breakfast served as first meal in dormitories.

June 8. Tuesday. Classes begin at 7:40 A.M.

July 15-16. Thursday-Friday. Final examinations for first term.

July 16. Friday. Dormitory dining rooms close for first term with serving of evening meal.

July 17. Saturday. First term ends.
Students without room reservations for second term must vacate dormitory rooms by 10 A.M.

Second Term

July 18. Sunday, 12 Noon. Dormitories open for room occupancy.

July 19. Monday. Registration for second term. Breakfast served as first meal for second term in dormitories.

July 20. Tuesday. Classes begin at 7:40 A.M.

Aug. 25-26. Wednesday-Thursday. Examinations for second term.

Aug. 27. Friday. Commencement Exercises at 7:15 P.M. Dormitory dining rooms close with serving of evening meal.

Aug. 28. Saturday. Second term ends. Dormitory rooms must be vacated by 10 A.M.

Thirtieth Annual Session

LONG SESSION 1954-55

FALL SEMESTER

1954

Sept. 10. Friday, 3 P.M. General faculty meeting, Aggie Memorial Auditorium.

Sept. 11. Saturday, 9 A.M. Divisional faculty meetings.

Sept. 12. Sunday, 12 Noon. Dormitory rooms open for occupancy. First meal breakfast Monday, Sept. 13.

Sept. 13. Monday. Fall semester begins.
1:30 P.M. All entering freshmen report to College Gymnasium.

Sept. 13-15. Monday-Wednesday. Freshman counseling program.

Sept. 15. Wednesday. Preregistration consultations for all students.

Sept. 16. Thursday. All-Church Night—Lubbock churches.

Sept. 16-17. Thursday-Friday. Registration for fall semester.

Sept. 18. Saturday, 8 A.M. Classes begin.

Sept. 21. Tuesday. Late registration fee will be charged after this date.

Sept. 27. Monday. Last day to complete registration and pay fees for fall semester. Last day to add courses.

Sept. 29. Wednesday, 10-12 A.M. Student convocation. Election of class officers for the year.

Oct. 18. Monday, 5 P.M. Progress reports on all freshmen due at the Registrar's Office.

Oct. 28. Thursday. Last day on which a student may drop, without grade penalty, a course in which he is failing.

Nov. 11. Thursday. Last day to file Personnel Information Forms and photographs at the Placement Office by students planning to complete their work in January.

Nov. 13. Saturday. Homecoming Day. Classes dismissed at 10 A.M.
Saturday, 5 P.M. Midsemester reports due at the Registrar's Office.

Nov. 15-18. Monday-Thursday. Religious Emphasis Week.

Nov. 23. Tuesday. A course cannot be dropped after this date without a grade of WF, unless drop is initiated by the Dean.

Nov. 24. Wednesday, 10 P.M. Classes dismissed for Thanksgiving holidays.

Nov. 29. Monday, 8 A.M. Classes resumed.

Dec. 22. Wednesday, 12 Noon. Classes dismissed for Christmas holidays.

1955

Jan. 3. Monday, 8 A.M. Classes resumed.

Jan. 12-18. Wednesday-Tuesday. Week of restricted social activities.

Jan. 19-25. Wednesday-Tuesday. Final examinations, fall semester.

Jan. 26. Wednesday. Students without room reservations for the spring semester must vacate dormitory rooms not later than 10 A.M. of this date. Fall semester ends.

SPRING SEMESTER

Jan. 26. Wednesday, 12 Noon. Dormitory rooms open to new occupants.

Jan. 27. Thursday, 8 A.M. Spring semester begins. Entering freshmen assemble in Aggie Memorial Auditorium.

Jan. 27-28. Thursday-Friday. Registration for spring semester.

Jan. 29. Saturday, 8 A.M. Classes begin.

Feb. 3. Thursday. All-Church Night—Lubbock churches.

Feb. 4. Friday. Late registration fee charged after this date.

Feb. 11. Friday. Last day to complete registration and pay fees for spring semester. Last day to add courses.

Mar. 1. Tuesday, 5 P.M. Progress reports on all entering freshmen due in Registrar's Office.

Mar. 5. Saturday. Last day on which a student may drop, without grade penalty, a course in which he is failing.

Mar. 7-10. Monday-Thursday. Willson Lectures.

Mar. 12. Saturday. Last day to file Personnel Information Forms and photographs at the Placement Office by students planning to complete their work in May. Last day to file with the Dean the statement of intention to graduate on May 30, 1955. Last day for degree candidates to file with Dean statement to complete correspondence courses to apply on degree.

Mar. 23. Wednesday, 5 P.M. Midsemester reports due at the Registrar's Office.

Apr. 2. Saturday. Last day to order academic regalia and senior invitations at College Bookstore. Last day to pay $5 graduation fee. Last day for refund of $5 graduation fee to candidates who cannot graduate on May 30, 1955. The student must cancel his plans by notifying his Dean in writing.

Apr. 7. Thursday, 10 P.M. Classes dismissed for Easter Vacation.

Apr. 12. Tuesday, 8 A.M. Classes resumed.
A course cannot be dropped after this date without a grade of WF, unless drop is initiated by the Dean.

Apr. 21. Thursday. Last day to complete correspondence courses by degree candidates. Instructors are to file grades for correspondence work not later than May 5. Students must complete final examination in time for it to reach the instructor by April 26. Last day to submit to the Graduate Dean the first draft of theses and dissertions. Last day to submit to the Dean a request to graduate *in absentia.*

Last day for degree candidates to remove grades of "Inc." and "Pr." Instructors are to send the change-of-grade card to the Dean's Office as soon as the work has been completed.

May 13-19. Friday-Thursday. Week of restricted social activities.

May 20. Friday. Last day to submit to the Graduate Dean the final draft of theses and dissertations and to pay the binding fee.

May 20-26. Friday-Thursday. Final examinations, spring semester.

May 26. Thursday. Dormitory dining rooms close with serving of evening meal.

May 27. Friday, 8:30 A.M. Grades and absence reports through Thursday, May 26, for all degree candidates due in Registrar's Office.
10 A.M. Dormitories close. Degree candidates may occupy rooms until 10 A.M., Tuesday, May 31.

May 28. Saturday, 10 A.M. Meetings of divisional faculties to approve final and official graduation lists. These lists are due at the Registrar's Office by 11 A.M.

May 29. Sunday, 8:30 A.M. Graduation rehearsal at Stadium.
3:30-5 P.M. President's Reception for Graduates.
8 P.M. Baccalaureate Sermon in Stadium.

May 30. Monday, 8 P.M. Commencement. Spring semester ends.

June 1. Wednesday, 11 A.M. All grades and absence reports due in Registrar's Office.

SUMMER SESSION 1955

June. 5. Sunday, 12 Noon. Dormitories open for room occupancy.

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

BOARD OF DIRECTORS

1953-1954

OFFICERS

CHARLES C. THOMPSON, *Chairman*

ROBERT B. PRICE, *Vice Chairman*

J. ROY WELLS, *Secretary*

MEMBERS

Term Expires 1955

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

Term Expires 1957

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

Term Expires 1959

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

STANDING COMMITTEES

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

SPECIAL COMMITTEES

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

OFFICERS OF ADMINISTRATION

EDWARD NEWLON JONES, B.S., Ph.D., LL.D., President
Office, First Floor, East Wing, Administration Building

CLIFFORD BARTLETT JONES, LL.D., President Emeritus

GUSTAV ERNST GIESECKE, A.B., M.A., Ph.D., Vice President
Office, First Floor, East Wing, Administration Building

MARSHALL LEE PENNINGTON, B.B.A., Vice President and Comptroller
Office, First Floor, East Wing, Administration Building

JAMES ROY WELLS, B.A., B.B.A., M.B.A., Assistant to the President and Secretary of the Board of Directors
Office, First Floor, East Wing, Administration Building

JAMES GEORGE ALLEN, B.A., M.A., Dean of Student Life
Office, 167 Administration Building

WARREN PERRY CLEMENT, B.A., M.A., Registrar and Director of Admissions
Office, 158 Administration Building

SETH THOMAS CUMMINGS, Purchasing Agent and Assistant Business Manager
Office, First Floor, East Wing, Administration Building

WILLIAM BRYAN GATES, B.S., M.A., Ph.D., Dean of the Graduate School
Office, 251 Administration Building

ROBERT CABANISS GOODWIN, B.A., M.A., Ph.D., Dean of Arts and Sciences
Office, 206 Administration Building

GEORGE GAIL HEATHER, B.S., M.A., Ph.D., Dean of Business Administration
Office, 253 Administration Building

DYSART EDGAR HOLCOMB, B.S., M.S., Ph.D., Dean of Engineering
Office, 202 Engineering Building

RAY CURTIS JANEWAY, B.A., B.S. in L.S., M.S., Librarian
Office, 215 Library

LEWIS NORTEN JONES, B.S., M.A., Dean of Men
Office, 163 Administration Building

JACOB HOMER MILLIKIN, B.A., M.A., Director of Extension
Office, 108 Extension Building

MARJORIE MILLER NEELY, B.A., M.S., Dean of Women
Office, 169 Administration Building

SHIRLEY FRANCES SCHULZ, B.S., Director of Food Service
Office, Dormitory Administration Building

EDWARD WILLIAM SMITH, B.A., LL.B., Director of Development
Office, First Floor, East Wing, Administration Building

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

EVERITT DONALD WALKER, B.S., M.B.A., C.P.A., Auditor
Office, 111 Administration Building

WILLA VAUGHN TINSLEY, B.S., M.S., Ph.D., Dean of Home Economics
Office, 151 Home Economics Building

HAMPTON LEE GREEN, B.S., Colonel, Corps of Engineers, U.S. Army, Professor of Military Science and Tactics
Office, 1 Military Science Building

OLLEN TURNER, Colonel, U.S. Air Force, Professor of Air Science and Tactics
Office, 1 Military Science Building

FLORENCE EVELYN CLEWELL, B.A., Assistant Registrar
Office, 158 Administration Building

FRANCES FREESE, B.A., M.A., Assistant Dean of Women
Office, 171 Administration Building

NEIL CASEY FINE, B.S., M.S., Ph.D., Assistant Dean of Agriculture
Office, 201A Agriculture Building

WILLIAM RAY GEISERT, A.B., M.S. Ed., Head Supervisor of Men's Dormitories and Assistant Dean of Men
Bledsoe Hall

WARREN GAMALIEL HARDING, B.A., M.Ed., Assistant Registrar
Office, 156 Administration Building

JAMES EDWARD PLATZ, B.A., B.S. in L.S., Assistant Librarian
Office, Library

JOE WALKER SEAY, B.B.A., Assistant Purchasing Agent
Office, First Floor, East Wing, Administration Building

VIRGINIA LEE SNELLING, B.A., Assistant Auditor and Payroll Supervisor
Office, 109 Administration Building

JOHN GATES TAYLOR, Assistant Auditor
Office, 111 Administration Building

ERNEST WALLACE, B.S., M.A., Ph.D., Assistant Dean of Arts and Sciences
Office, 206 Administration Building

JAMES BERLYN WHITEHEAD, A.B., Assistant Dean of Student Life
Office, 163 Administration Building

FACULTY

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

EDWARD NEWLON JONES, President, 1948, 1952.
B.S., LL.D., Ottawa; Ph.D., Iowa

BYRON ROBERT ABERNETHY, Professor of Government, 1941, 1947.[1]
B.A., N. Dakota State Teachers; M.A., N. Dakota; Ph.D., Iowa

CHARLES EDWARD ADAIR, Master Sergeant, U.S. Air Force, Instructor in Air Science and Tactics, 1951.

JAMES FOOTE ADAMS, Instructor in Government, 1947.[2]
M.A., Chicago.

OTTO VINCENT ADAMS, Professor of Civil Engineering, 1927, 1932; Dean of Engineering, 1932-1949.
B.S. in C. and I.E., Colo. A. & M.; M.S.E., Michigan; D.Sc., Colo. A. & M.; Reg. Prof. Engr., (Texas).

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 Foreign Languages, 1947.
B.S., M.S., Texas Tech.

JAMES GEORGE ALLEN, Professor of English and Dean of Student Life, 1927-1950.
B.A., S.M.U.; M.A., Harvard.

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

NATHAN JEFFERSON ALLEN, JR., Instructor in Animal Husbandry, 1951.[3]
B.S., Texas Tech.

HUGH ALLEN ANDERSON, Associate Professor of Economics, 1939, 1947.
B.A., M.A., Hardin-Simmons.

STANLEY EUGENE ANDERSON, Assistant Professor of Animal Husbandry, 1948.
B.S., Iowa State; M.S., Texas Tech.

DEE GUS ANDROS, Instructor in Health and Physical Education and Recreation and Assistant Football Coach, 1954.[4]
B.S., M.Ed., Oklahoma.

WILLIAM BURNSIDE ARPER, JR., Assistant Professor of Geology, 1953.
B.S., M.S., Oklahoma; Ph.D., Kansas.

DONALD ASHDOWN, Professor of Agriculture and Director of Greenbug Control Research, 1952.
B.S., Utah State Agriculture College; Ph.D., Cornell.

JACK OTHO ASHWORTH, Instructor in Agricultural Economics, 1949.
B.S., M.S., Texas A. & M.

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

CECIL IRVY AYERS, Associate Professor of Agronomy, 1942, 1949.
B.S., M.S., Texas Tech.

ALBERT BARNETT, Professor of Education, Professor of Psychology, and Director of the Testing and Counseling Center, 1933, 1947.
B.S., M.A., Ph.D., George Peabody.

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[1]Absent on leave Spring Semester, 1953-54.
[2]Absent on leave, 1953-54. Resigned December 13, 1953.
[3]Resigned January 31, 1954.
[4]Beginning February 16, 1954.

NOLAN ELLMORE BARRICK, Professor and Head Department of Architecture and Allied Arts, and Supervising Architect, 1953.
B.A., B.S. in Arch., M.A., Rice; Reg. Arch., (Texas).

ROY BYRN BASS, Part-time Instructor in Finance, 1946, 1951.
A.B., LL.B., Baylor.

JOHN HENRY BAUMGARDNER, Captain, U.S. Air Force, Associate Professor of Air Science and Tactics. (Absent on leave from academic duties of Assistant Professorship in Animal Husbandry). 1945, 1952.
B.S., M.S., Texas Tech.

VERNON LEO BEHNER, Part-time Instructor in Accounting, 1950.
B.B.A., University of Texas.

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

JAMES WAYLAND BENNETT, Assistant Professor of Agricultural Economics, 1948.
B.S., Texas Tech.; M.S., Louisiana State University.

DAVID JACOB BESDIN, Associate Professor of Physics, 1953.
B.S., Miami; M.A., Ph.D., Rice.

MILDRED LUCILE BETTENCOURT, Instructor in Education, 1950.
B.A., Texas; M.Ed., Texas Tech.

LOTUS BERRY BLACKWELL, Instructor in Marketing, 1948.[1]
B.A., M.A., Hardin-Simmons.

WILLIAM ALLEN BLACKWELL, Assistant Professor of Electrical Engineering, 1948, 1952.
B.S., Texas Tech.; M.S., Illinois.

RALPH HURD BOND, Associate Professor of Geology, 1948.
B.A., M.S., Ohio State.

FRED WILLIAM BOREN, Assistant Professor of Animal Husbandry, 1950, 1951.
B.S., Texas A. & M.; M.S., Kansas State.

CHARLES TRUITT BOURNS, Associate Professor of Agricultural Engineering, 1953.
B.S., Southwestern; M.S., Texas A. & M.; I.E., Utah State.

LAWRENCE EDWARD BOWLING, Instructor in English, 1952.
B.A., Berea; M.A., Vanderbilt; Ph.D., Iowa.

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

JOHN PAUL BRAND, Associate Professor of Geology, 1948.
B.A., M.A., Miami, Ohio; Ph.D., Texas.

THOMAS WHARTON BRIDGES, JR., Part-time Instructor in English, 1952.
B.A., Centenary; M.A., Vanderbilt; M.S., Columbia.

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

RICHARD E. BROWN, Major, U.S. Army, Associate Professor of Military Science and Tactics, 1952.
B.S., New Hampshire.

WILLIAM WALLACE BROWN, Part-time Instructor in Marketing.[2]
B.B.A., Texas Tech.

BRUCE CORNELIUS BROWNING, Assistant Professor of Education, 1954.[2]
B.S. in Ed., M.Ed., Texas Tech.

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.; Reg. Prof. Engr., (Texas).

LAWRENCE ORR BUNTON, Associate Professor of Textile Engineering, 1947.
Diploma Textile Engineering, Clemson.

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[1]Absent on leave for Military duty beginning September 1, 1951.
[2]Spring Semester, 1954.

HARRY RAY BURKHART, Assistant Professor of Animal Husbandry, 1948.[1]
B.S. Colo. A. & M.; M.S., Texas A. & M.

MELVIN MAX BURNETT, Major, U.S. Air Force, Associate Professor of Air Science and Tactics, 1950, 1951.[2]

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.[3]
B.S., M.A., T.S.C.W.

LLOYD LEE BUZAN, Part-time Instructor in Marketing, 1953.

WILLIAM LOUIS BYRD, Part-time Instructor in Marketing, 1953.
B.A., Baylor

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

HARRISON JAMES CAMERON, JR., Assistant Professor of Business Education and Secretarial Administration, 1951.
B.S., Bloomsburg State Teachers; M.Ed., Ed.D., Pennsylvania State.

EARL D. CAMP, Associate Professor of Biology, 1945, 1953.
B.S., Texas Tech.; M.S., New Mexico; Ph.D., Iowa.

HATTIE CHARLOTTE CAMP, Instructor in Child Development, 1946.
B.S., M.S., Texas Tech.

TRUMAN WILDES CAMP, Professor and Head Department of English, 1935, 1949.
B.A., Ph.D., Yale.

DAYTON F. CAPLE, Major, U.S. Army, Associate Professor of Military Science and Tactics, 1952.
B.A., Chicago.

MARY SUE CARLOCK, Instructor in English, 1952.
B.A., S.M.U.; M.A., Texas.

JOHN STEPHEN CARROLL, Professor and Head Department of Education, 1950.
B.A., San Diego State; M.A., Southern California; Ph.D., Yale.

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

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

GERALDINE CLEWELL, Professor of Home Economics Education, 1935, 1953.
B.S., Texas Tech.; M.S., Iowa State; Ph.D., Ohio State.

WILLIAM HOMER CLONINGER, Associate Professor of Animal Husbandry, 1953.
B.S., M.S., Ph.D., Missouri.

VERNON THOMAS CLOVER, Professor of Economics, 1947, 1953.
B.S., M.S., Kansas State (Ft. Hays); Ph.D., Colorado.

OTIS HERBERT COLVIN, JR., Instructor in Music, 1950.
B.A., B.Mus., Baylor; M.Mus., Colorado.

KATHRYN G. CONOVER, Part-time Instructor in Foods, Nutrition and Institutional Management, 1950, 1952.[4]
B.S., Drexel Institute of Technology.

LEWIS BRISCOE COOPER, Professor of Education, 1938, 1952.
B.S., North Texas; M.A., Texas; Ph.D., Cincinnati.

TOM WAYNE COPELAND, Part-time Instructor in English, 1951, 1953.
B.A., Valparaiso; M.A., Indiana University.

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[1]Absent on leave for Military duty beginning May 26, 1951.
[2]Transferred February 8, 1954.
[3]Resigned January 31, 1954.
[4]Fall Semester, 1953.

WILLIAM MOORE CRAIG, Professor of Chemistry, 1926.
B.A., M.A., Southwestern; M.A., Texas; Ph.D., Harvard; Reg. Prof. Engr., (Texas).

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

ALBERT BENJAMIN CUNNINGHAM, Professor of English, Emeritus, 1929, 1949.
B.A., Muskingum; B.D., Drew; M.A., Ph.D., New York; Litt.D., Lebanon.

MARY BURWELL DABNEY, Professor and Associate Head Department of Health and Physical Education and Recreation, 1952.
B.S., William & Mary; M.A., Ed.D., Columbia.

DEAN INGRAM DAULEY, Part-time Instructor in Government, 1948.[1]
B.A., Texas Tech.; M.A., Vanderbilt.

RAYMOND LEON DAVIDSON, Assistant Professor of Education in Department of Education and in Division of Extension, 1949.
A.B., Clarendon College; M.A., Texas Tech.; Ed.D., Texas.

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; Reg. Prof. Engr., (Texas).

JOE DENNIS, Professor and Head Department of Chemistry and Chemical Engineering, 1938, 1950.
B.A., Austin College; M.A., Ph.D., Texas.

PHILIP ELDON DENNIS, Associate Professor of Geology, 1948.
B.A., M.A., Brigham Young.

JOHN CLARKSON DOWLING, Professor and Head Department of Foreign Languages, 1953.
B.A., Colorado; M.A., Ph.D., Wisconsin.

LOLA MARIE DREW, Associate Professor of Home Management, 1946, 1949.
B.S., T.S.C.W.; M.A., Columbia.

WILLIAM LYON DUCKER, Professor and Head Department of Petroleum Engineering, 1948.
B.S., Oklahoma; Reg. Prof. Engr., (Texas, Oklahoma).

RICHARD DURAN, Assistant Professor of Architecture, 1951.
B.A., Florida; M.S., Illinois Institute of Technology.

JOSEPH STEPHEN DWYER, Professor and Head Department of Industrial Engineering and Engineering Drawing, 1951.
B.S. in I.E., Oklahoma A. & M.; M.S. in I.E., Georgia Institute of Technology; Reg. Prof. Engr., (Texas).

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

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

TED ELDON EDWARDS, Assistant Professor of Education, 1950, 1952.
B.A., Howard Payne; M.A., Hardin-Simmons; Ed.D., Texas Tech.

GEORGE OLIVER ELLE, Professor of Horticulture and Park Management, 1938, 1951.
B.S., Oregon State; M.S., Texas; Ph.D., Cornell.

RAYMOND PRUITT ELLIOTT, Associate Professor of Music, 1950, 1951.
B.M., M.S., Kansas.

JAMES ALVIS ELLIS, Part-time Instructor in Government, 1946, 1952.
B.A., Texas Tech.

ROBERT ARTHUR ELSON, Instructor in Music, 1953.
B.M., M.M., Michigan.

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[1]Resigned December 31, 1953.

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

GEORGE K. ESTOK, Associate Professor of Chemistry, 1951, 1953.
B.S., St. Vincent; M.S., Pennsylvania State; Ph.D., Notre Dame.

LAURA KATHERINE EVANS, Associate Professor of Education, 1951.[1]
B.S., Eastern Kentucky State; M.A., George Peabody.

WILLIAM BEATTIE FEATHERS, Assistant Football Coach, 1954.[2]
B.S. in Phys. Ed., Tennessee.

NEIL CASEY FINE, Professor of Animal Husbandry and Assistant Dean of Agriculture, 1935, 1950.
B.S., Texas Tech.; M.S., Iowa State; Ph.D., Minnesota.

ROBERT NORFLEET FLOURNOY, Captain, U.S. Air Force, Assistant Professor of Air Science and Tactics, 1951.
B.S., North Carolina.

FRANCES FREESE, Assistant Professor of Psychology and Assistant Dean of Women, 1953.
B.A., M.A., S.M.U.; M.A., Radcliffe.

GORDON FULLER, Professor of Mathematics, 1950.
B.A., West Texas; M.A., Ph.D., Michigan.

STERLING HALE FULLER, Associate Professor of Government, 1950, 1953.
B.S., M.A., Oklahoma; Ph.D., Texas.

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

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

EUNICE JOINER GATES, Professor of Foreign Languages, 1925, 1945.
B.A., M.A., Southwestern; M.A., Michigan; Ph.D., Pennsylvania.

WILLIAM BRYAN GATES, Professor of English and Dean of the Graduate School, 1925, 1950.
B.S., Millsaps; M.A., Vanderbilt; M.A., Michigan; Ph.D., Pennsylvania.

ERNEST WILLIS GIBSON, Assistant Professor of Accounting, 1944.
B.A., Transylvania; M.A., Kentucky; C.P.A.

GUSTAV ERNST GIESECKE, Professor of Foreign Languages and Vice President, 1953.
B.A., M.A., Ph.D., Stanford.

WINNIFRED GARLAND GIFFORD, Assistant Professor of Child Development, 1949.
B.S., Illinois; M.S., Iowa State.

EVERETT ALDEN GILLIS, Associate Professor of English, 1949.
B.A., M.A., T.C.U.; Ph.D., Texas.

HARRY FREDERICK GODEKE, Professor of Mechanical Engineering, 1930.
B.S., M.E., M.S., Illinois; Reg. Prof. Engr., (Texas).

HOWARD ELDON GOLDEN, Associate Professor of Marketing, 1946.
B.S., West Texas; Ph.D., Missouri.

ROBERT CABANISS GOODWIN, Professor of Chemistry and Chemical Engineering and Dean of Arts and Sciences, 1930, 1945.
B.A., Howard Payne; M.A., Texas; Ph.D., Harvard; Reg. Prof. Engr., (Texas).

WILLIAM MARCUS GOSDIN, Part-time Instructor in Horticulture and Park Management, and Superintendent of Care and Maintenance of Grounds, 1949, 1953.[3]
B.S., Texas Tech.

PRESTON FRAZIER GOTT, Assistant Professor of Physics, 1949.
B.S., M.A., Texas.

HAMPTON LEE GREEN, Colonel, Corps of Engineers, U.S. Army, Professor of Military Science and Tactics, 1952.
B.S., Alabama Polytechnic Institute.

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[1]Absent on leave, 1953-54.
[2]Beginning February 15, 1954.
[3]Spring Semester, 1954.

LOLA BETH GREEN, Instructor in English, 1946.
B.A., M.A., Texas Tech.

HORACE ERNEST GRIFFITH, Part-time Instructor in Government, 1952.
B.A., Texas Tech.; LL.B., Georgetown.

DOLORES YVONNE GRYDER, Instructor in Chemistry, 1953.
B.S., Southeastern State, Oklahoma.

ALAN MURRAY FINLAY GUNN, Professor of English, 1939, 1949.
B.A., Huron; M.A., Denver; Ph.D., Princeton.

JOE LEON HADDON, Assistant Professor of Music, 1947.[1]
B.S., M.Ed., Texas Tech.

J. EVETTS HALEY, Director of Institute of Americanism, 1952.
B.A., West Texas; M.A., Texas.

WOODROW FERRON HALVORSON, Assistant Professor of Speech, 1952.
B.A., North Dakota State; M.A., Denver.

THOMAS EARLE HAMILTON, Associate Professor of Spanish, 1940, 1946.
B.A., M.A., S.M.U.; Ph.D., Texas.

FRED GEORGE HARBAUGH, Professor of Animal Husbandry and Veterinarian, 1927, 1941.
B.S., D.V.M., Iowa State.

JOHN COYNE HARDGRAVE, Professor of Mechanical Engineering, 1926, 1947; Reg. Prof. Engr., (Texas).[2]

JOHN ELZIE HARDING, Assistant Professor of Management, 1937, 1941.
B.A., B.F.A., Howard Payne; M.A., Texas Tech.

LEVI MARLIN HARGRAVE, Associate Professor of Agricultural Education, 1946.
B.S., M.S., Texas Tech.

LAURENCE GEORGE HARMON, Professor of Dairy Industry, 1936, 1946.
B.S., Kansas State; M.S., Texas Tech.

HORACE CLAY HARTSELL, Associate Professor of Education, 1951, 1953.
B.S., Sam Houston; M.Ed., Ed.D., Texas.

EMMETT ALLEN HAZLEWOOD, Professor and Head Department of Mathematics, 1939, 1948.
B.S., West Texas; M.A., Ph.D., Cornell.

GEORGE GAIL HEATHER, Professor of Economics and Dean of Business Administration, 1950.
B.S., Southwest Missouri; M.A., Ph.D., Iowa.

ELLIS RICHARD HEINEMAN, Professor of Mathematics, 1928, 1947.
B.A., M.A., Wisconsin.

JOHN RUSSELL HEITMAN, Professor and Head Department of Journalism, 1950.
B.J., Missouri; M.S.J., Northwestern.

DONALD JACOB HELMERS, Assistant Professor of Mechanical Engineering, 1948, 1953.
B.S., Texas Tech.; M.S., Michigan; Reg. Prof. Engr., (Texas).

GENE LeCLAIR HEMMLE, Professor and Head Department of Music, 1949.
B.Mus., S.M.U.; M.A., Ed.D., Columbia.

CARL HENNINGER, Associate Professor of German, 1926, 1929.
B.A., Indiana; M.A., Illinois.

BONITA CHANDLER HERRICK, Part-time Instructor in Mathematics, 1943, 1953.[3]
B.A., M.A., Texas Tech.

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[1]Absent on leave, 1953-54.
[2]Deceased. (December 25, 1953.)
[3]Fall Semester, 1953.

LYLE EDWARD HESSLER, Professor and Research Associate, Cotton Research, 1949, 1951.
B. of Chem., M.S., Ph.D., Minnesota.

ARCHIBALD EDWIN HILL, Master Sergeant, U.S. Army, Instructor in Military Science and Tactics, 1951.

JACK ALLAN HILL, Assistant Professor of Management, 1953.
B.B.A., M.B.A., Denver.

DYSART EDGAR HOLCOMB, Professor of Chemical Engineering and Dean of Engineering, 1950.
B.S., Texas Tech.; M.S., Ph.D., Michigan; Reg. Prof. Engr., (Texas, Indiana).

WILLIAM CURRY HOLDEN, Professor and Head Department of History, Anthropology, and Sociology and Director of the Museum, 1929, 1945.[1]
B.A., M.A., Ph.D., Texas.

MARY BELLE HOLLAND, Instructor in Mathematics, 1946.
B.A., West Texas; M.A., Texas Tech.

LETA JANE HOLMAN, Instructor in Biology, 1946.
B.S., Texas Tech.; M.S., Michigan.

JEFFERSON MELVIN HOOPER, Associate Professor of Finance, 1948, 1952.
B.S., McMurry; M.S., Sul Ross.

CECIL HORNE, Professor and Head Department of Journalism, Emeritus, 1926, 1951.
B.A., Baylor; B.A., Yale.

EDNA NAWANNA HOUGHTON, Assistant Professor of Architecture, 1932, 1943.
B.S. in A.E., Texas Tech.; B.A. in F.A., Univ. of So. Cal.

CHARLES ERNEST HOUSTON, Associate Professor of Electrical Engineering, 1932, 1946.
B.S. in E.E., M.A, Texas Tech.

AMOS H. HOWARD, JR., Part-time Instructor in Finance, 1950.
B.A., Texas Tech.; LL.B., Texas.

DOROTHY HOYLE, Assistant Professor of Health and Physical Education and Recreation, 1951, 1953.
B.S., M.A., T.S.C.W.

CHESTER BURL HUBBARD, Assistant Professor of Management, 1947, 1952.
B.S., Texas Tech.

WILLIAM JOHN HUGHES, Part-time Instructor in History, 1950, 1953.
B.A., Colorado University; M.S., Western Ill. S.T.C.

ROBERT CHARLES HURMENCE, Instructor in Business Education and Secretarial Administration, 1952.
B.B.A., M.B.A., Texas Tech.

RUSSELL BRIGGS IRVIN, Part-time Instructor in Finance and Part-time Legal Counsel, 1951, 1952.
A.B., Simmons; M.A., LL.B., Texas.

DOYLE DAVID JACKSON, Professor of Education, 1934, 1941.
B.A., M.A., Texas; Ph.D., Arizona.

J. W. JACKSON, Professor of Government, 1929, 1946.
B.A., M.A., Texas Tech.

CHESTER CARTWRIGHT JAYNES, Part-time Instructor in Agronomy, 1951, 1952.
B.S., Texas Tech.

WILLIAM LOYD JENKINS, Assistant Professor of Industrial Engineering and Engineering Drawing, 1946, 1950.
B.S., Texas Tech.; M.S. in S.E., Georgia Tech.

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[1]On leave from Head, Department of History and Director of Texas Technological College Museum, 1953-54. Resigned as Head of the Department of History effective August 31, 1954.

WILLIAM MORLEY JENNINGS, Professor of Health and Physical Education and Recreation, 1941.
B.S., Mississippi A. & M.

PHILIP JOHNSON, Assistant Professor of Petroleum Engineering, 1947.
B.S., Texas Tech.

J. T. JONES, JR., Master Sergeant, U.S. Air Force, Instructor in Air Science and Tactics, 1951.

LEWIS NORTEN JONES, Dean of Men, 1948, 1953.
B.S., M.A., Texas Tech.

ELDRED AUGUSTUS JORDAN, Instructor in Agricultural Engineering, 1952.
B.S., Texas Tech.

SYLVAN JULIAN KAPLAN, Professor and Head Department of Psychology, 1954.[1]
B.A., M.A., Texas; Ph.D., Stanford.

GLENNA BAILEY KEESEE, Instructor in Geology, 1947.
B.S., Texas Tech.

JOHN NELSON KELLEY, JR., Instructor in English, 1952.
B.A., San Diego State; M.A., California.

ROBERT FRANCIS KELLOGG, Instructor in Health and Physical Education and Recreation and Assistant Football Coach, 1953.[2]
B.Ed. in Phys. Ed., Tulane.

DONALD E. KENNEDY, Master Sergeant, Corps of Engineers, U.S. Army, Instructor in Military Science and Tactics, 1952.

SABE McCLAIN KENNEDY, JR., Associate Professor of Government, 1946, 1953.
B.A., M.A., Texas Tech.; Ph.D., Colorado.

THOMAS EDWARD KILPATRICK, Instructor in Physics, 1953.
B.S. in E.E., Texas Tech.

LILA ALLRED KINCHEN, Assistant Professor of Clothing and Textiles, 1939, 1945.
B.S., M.S., Texas Tech.

OSCAR ARVLE KINCHEN, Professor of History, 1929, 1939.
B.A., M.A., Oklahoma; Ph.D., Iowa.

RAMON WALTER KIREILIS, Professor and Head Department of Health and Physical Education and Recreation, 1950.
B.S., M.S., Illinois; Pe.D., Indiana.

FLORIAN ARTHUR KLEINSCHMIDT, Professor of Architecture and Allied Arts, 1928, 1953.
B.S. in Arch., Minnesota; M. in Arch., Harvard; Reg. Arch., (Texas).

MARION HUGH KNIGHT, Sergeant First Class, U.S. Army, Instructor in Military Science and Tactics, 1951.

JAMES EDWARD KUNTZ, Associate Professor and Acting Head Department of Psychology, 1951, 1953.
B.S., M.S., Fort Hays K.S.C.; Ph.D., Purdue.

MINA WOLF LAMB, Associate Professor of Foods and Nutrition, 1940, 1944.
B.A., M.S., Texas Tech.; Ph.D., Columbia.

NORMAN LAMONT, Assistant Professor of Petroleum Engineering, 1951.
B.S., M.S., Louisiana State.

MILTON FREDERIC LANDWER, Professor of Zoology, 1927, 1949.
B.S., Northwestern; M.A., Nebraska; Ph.D., Michigan.

PAUL MERVILLE LARSON, Professor and Head Department of Speech, 1950.
B.S., M.S., Kansas State; Ph.D., Northwestern.

THOMAS LUTHER LEACH, Professor of Agricultural Education, 1937, 1948.
B.S., M.S., Texas Tech.

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[1]Effective June 1, 1954.
[2]Resigned February 10, 1954.

SAMUEL HUNT LEE, JR., Associate Professor of Chemistry, 1951, 1953.
B.S., Texas; Ph.D., Ohio State.

ARTHUR HENRY LEIDIGH, Professor of Agronomy and Dean of Agriculture, Emeritus, 1925, 1945.
B.S., Kansas State; M.S., Texas A. & M.

ARCHIE LEROY LEONARD, Associate Professor of Agricultural Economics, 1947.
B.S., M.S., Oklahoma A. & M.

QUANAH BELLE LEWIS, Instructor in English, 1946.
B.F.A., Oklahoma; M.A., Texas Tech.

HELEN ALMA LINDELL, Assistant Professor of Speech, 1948, 1949.
B.A., Washburn; M.A., Wisconsin.

JONATHAN WATTAM LINDSAY, Instructor in Mathematics, 1948.[1]
B.A., M.A., Texas.

IVAN LEE LITTLE, Associate Professor of Education and Philosophy, 1946, 1953.
B.A., Texas Tech.; M.A., Ph.D., Nebraska.

SAMUEL NOYES LITTLE, Assistant Professor of Agronomy, 1953.
B.S., M.S., New Hampshire; Ph.D., West Virginia.

THOMAS BROOKS LIVINGSTON, Associate Professor of Education, 1949, 1951.
B.S., M.S., North Texas; Ed.D., Stanford.

ROBERT IVAN LOCKARD, Professor of Architecture, 1935, 1953.
B.S., M.S., Kansas State; Reg. Arch., (Texas).

TROY ALLEN LOCKARD, Assistant Professor of Applied Arts, 1937, 1948.
B.S., M.A., T.S.C.W.

FRANK GAINLIM LOUIS, Textile Assistant, 1952.
B.S. in T.E., Texas Tech.

RAYMOND DeELMONT MACK, Instructor in Government, 1946.
B.A., T.C.U.; M.A., Texas.

HORACE JURS MACKENZIE, Assistant Professor of Industrial Engineering and Engineering Drawing, 1949, 1953.
B.S. in I.E., Texas Tech.; M.S., Oklahoma A. & M.

ANN AMELIA ROBERT MADDEN, Part-time Instructor in Mathematics, 1952.[2]
B.S., East Texas State.

ROY RAYMOND MALE, JR., Assistant Professor of English, 1950.[3]
B.S., Hamilton; M.A., Columbia; Ph.D., Texas.

JOHN ARTHUR MANNING, Part-time Assistant Professor of Speech, 1953.
A.B., M.S., Minnesota; Ph.D., Southern California.

GILBERTO MELO MARTINEZ, Sergeant First Class, U.S. Army Instructor in Military Science and Tactics, 1953.[4]

ROBERT LOUIS MASON, Associate Professor of Mechanical Engineering, 1942, 1953.[5]
B.S. in M.E., Texas Tech.; M.S. in M.E., Kansas State; Reg. Prof. Engr., (Texas).

ZANE ALLEN MASON, Part-time Instructor in History, 1950, 1953.
A.B., Carson-Newman; B.D., Grace Theological Seminary; M.A., Stephen F. Austin.

LIDA BELLE MAY, Assistant Professor of Mathematics, 1938, 1946.
B.A., Alabama; M.A., Texas.

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[1]Absent on leave, 1953-54.
[2]Fall Semester, 1953.
[3]Absent on leave, 1953-54.
[4]Transferred January 1, 1954.
[5]On leave from Academic duties, 1953-54.

ELMER LEON McBRIDE, Professor and Head Department of Agricultural Economics, 1935, 1937.
B.S., M.S., Oklahoma A. & M.

JOHN EARL McCALEB, Instructor in Agronomy, 1953.
B.S., M.S., Texas A. & M.

DARRELL KEITH McCARTY, Instructor in Music, 1953.
B.S., B.M., M.M., Illinois.

HENRY ROSEMOND McCARTY, JR., Director of the West Texas Audio-Visual Services, 1952.
B.S. in Ed., East Central State, Oklahoma; M.Ed., Texas Tech.

MARY HELEN McCARTY, Part-time Instructor in Music, 1953.
B.M., Indiana; M.M., Illinois.

CLIFTON ADAMSON McCLELLAND, Lieutenant Colonel, U.S. Air Force, Associate Professor of Air Science and Tactics, 1951.
B.S.A.E., Florida.

JOSEPH THOMAS McCULLEN, JR., Associate Professor of English, 1949, 1953.
B.A., M.A., Ph.D., North Carolina.

DONALD McDONALD, Assistant Professor of Education, 1948.[1]
B.S., M.S., North Texas.

LILLIAN ETTA McGLOTHLIN, Instructor in Mathematics, 1947.
B.A., M.A., Texas.

SETH SHEPARD McKAY, Professor of History, 1928.
B.A., M.A., Texas; Ph.D., Pennsylvania.

LAURA LOUISE McKEE, Part-time Instructor in Marketing, 1954.[2]
B.S., University of Arkansas.

FITZHUGH LEE McREE, Professor of Civil Engineering, 1927, 1942.
B.S. in C.E., M.S. in C.E., Texas; Reg. Prof. Engr., (Texas).

GEORGE PEYTON MECHAM, Associate Professor of Education, 1951.
B.S., North Texas; M.A., Columbia; Ph.D., George Peabody.

WILLIAM WALTER MERRYMON, Associate Professor of Physics, 1948.
B.A., Missouri; M.A., Illinois; Ph.D., Chicago.

JAMES NEWTON MICHIE, Professor of Mathematics, Emeritus, 1925, 1951.
B.S., Virginia; M.A., Michigan.

JONNIE McCRERY MICHIE, Professor and Head Department of Foods and Nutrition, 1925.
B.S., M.A., Columbia.

MARIE AGNES MILES, Instructor in English, 1946.
B.A., West Texas; M.A., Texas.

RUFUS ARTHUR MILLS, Professor of English, Emeritus, 1926, 1951.
B.A., M.A., Texas.

MARLIN P. J. MINTER, Part-time Assistant Professor of Electrical Engineering, 1948, 1953.
B.S. in E.E., Texas Tech.

FREEDIS LLOYD MIZE, Professor and Head Department of Management, 1946, 1950.
B.S., Sul Ross; M.Ed., Ed.D., Oklahoma.

ALICE THOMAS MIZELL, Part-time Instructor in English, 1952.[3]
B.A., Augustana; M.A., Wisconsin.

ALFRED OTTO MONASCH, Assistant Professor of Mechanical Engineering, 1949.
Diplom-Ingenieur, Techuical Univ. of Berlin, Charlottenburg.

HELEN WILLIAMS MORRIS, Part-time Instructor in Business Education and Secretarial Administration, 1952.[4]
B.S., McMurry; M.A., Hardin-Simmons.

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[1]Resigned January 30, 1954.
[2]Spring Semester, 1954.
[3]Fall Semester, 1953.
[4]Resigned October 31, 1953.

RAY CLIFFORD MOWERY, Professor and Head Department of Animal Husbandry, 1926, 1950.[1]
B.S., Texas A. & M.; M.S., Iowa State.

JAMES HAROLD MURDOUGH, Professor and Head Department of Civil Engineering, 1925, 1927.
S.B., M.I.T.; M.S.E., Michigan; Reg. Prof. Engr., (Texas).

DONALD VAN DALE MURPHY, Associate Professor of English, 1926, 1935.
B A., Tulsa; M.A., Columbia.

KLINE ALLEN NALL, Assistant Professor of English, 1944, 1952.
B.A., M.A., Texas Tech.; Ph.D., Texas.

MARJORIE ELMA MILLER NEELY, Dean of Women, 1951.
B.A., Eastern Washington; M.S., Ohio.

DORIS NESBITT, Assistant Professor of Home Economics Education, 1943.
B.A., Oklahoma; M.S., Iowa State.

ROBERT LEE NEWELL, Associate Professor of Mechanical Engineering, 1941, 1949.
B.S. in M.E., Texas Tech.; M.S. in M.E., Georgia Tech.; Reg. Prof. Engr., (Texas).

FRED WAYLAND NORWOOD, Associate Professor of Accounting, 1950.
B.B.A., M.B.A., Mississippi; Ph.D., Texas; C.P.A.

EDWIN ALEXANDER NUTT, Staff Sergeant, U.S. Air Force, Instructor in Air Science and Tactics, 1953.

AARON GUSTAF OBERG, Professor of Chemical Engineering, 1936, 1949.
B.S., M.S., Ph.D., Colorado.

WILLIAM EUGENE ODEN, Instructor in Government, 1948.[2]
B.A., M.A., Oklahoma.

WILLIAM THOMAS O'GARA, Assistant Professor of Geology, 1953.
B.A., M.S., T.C.U.

DWAYNE LA VERGNE OGLESBY, Assistant Professor of Finance, 1953.
A.B., A.M., LL.B., University of Kansas.

RICHARD KANE O'LOUGHLIN, Part-time Professor of Psychology, 1954.[3]
M.D., Georgetown Medical School.

CECIL THOMAS OVERBY, Associate Professor of Civil Engineering, 1946, 1949.
B.S. in C.E., Texas Tech.

ROBERT MARSHALL PARKER, Assistant Professor of Mathematics, 1946, 1947.
B.A., M.A., Texas Tech.

RODERICK PARKINSON, Instructor in Architecture, 1948.
B.S., M.S. in Ed., Texas Tech.

CLARENCE ALTON PARMER, Master Sergeant, U.S. Army, Instructor in Military Science and Tactics, 1953.

L. E. PARSONS, Professor and Head Department of Textile Engineering, 1942, 1945.
B.S., Texas Tech.; Reg. Prof. Engr., (Texas).

LEROY THOMPSON PATTON, Professor of Geology, Emeritus, 1925, 1951.
B.A., Muskingum; B.S., Chicago; M.S., Ph.D., Iowa.

WILLIAM MARTIN PEARCE, JR., Acting Head and Associate Professor of History, 1938, 1953.[4]
B.A., S.M.U.; M.A., Texas Tech.; Ph.D., Texas.

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[1]Resigned as Head of the Department effective, August 31, 1954.
[2]Absent on leave, 1953-54.
[3]Spring Semester, 1954.
[4]Head of the Department effective September 1, 1954.

MILTON LESTER PEEPLES, Part-time Instructor in Dairy Industry and Creamery Superintendent, 1951, 1953.[1]
B.S. in Agri., Texas Tech.

ANNAH JOE PENDLETON, Professor of Speech, 1927, 1942.
B.A., T.C.U.; M.A., Iowa.

JOHN MOORE PENICK, JR., Professor of Industrial Engineering and Engineering Drawing, 1946, 1953.
B.A., M.Ed., Ph.D., Oklahoma; Reg. Prof. Engr., (Texas).

VICTOR BRYAN PENUEL, JR., Major, U.S. Army, Associate Professor of Military Science and Tactics, 1951.

CONNER COLUMBUS PERRYMAN, Professor of Engineering Drawing, 1929, 1947.
B.S., North Texas; Reg. Prof. Engr., (Texas).

JOHN EMMET PETERSON, Master Sergeant, U.S. Air Force, Instructor in Air Science and Tactics, 1950.

VERNON ARDINE PETERSON, Master Sergeant, U.S. Army, Instructor in Military Science and Tactics, 1953.

GEORGE REX PHILBRICK, Associate Professor of Health and Physical Education and Recreation and Director of Intramural Sports, 1947, 1949.
B.S., Texas Tech.; M.Ed. in P.Ed., Texas.

JAMES WYATT POSEY, Assistant Football Coach, 1951.
B.S., Georgia.

BILLY KEITH POWER, Research Principal, Cotton Research and Part-time Instructor in Textile Engineering, 1951, 1952.
B.S. in T.E., Texas Tech.; M.S. in Text. Technology, M.I.T.

LOUIS JOHN POWERS, Professor and Head Department of Mechanical Engineering, 1942, 1952.
B.S. in M.E., Texas Tech.; M.S. in E.M., Texas; Reg. Prof., Engr., (Texas).

THOMAS GORDON PRESTRIDGE, Technical Sergeant, U.S. Air Force, Instructor in Air Science and Tactics, 1953.

CHARLES BLAISE QUALIA, Professor of Foreign Languages, 1925, 1953.
B.A., M.A., Ph.D., Texas.

ETTIE CLAIRE QUICKSALL, Instructor in Business Education and Secretarial Administration, 1945.[2]
B.A., M.A., Baylor.

SUE AVA RAINEY, Associate Professor of Health and Physical Education and Recreation, 1945.
B.S., Peabody; M.A., Columbia.

ARNE WILLIAM RANDALL, Professor and Head Department of Applied Arts, 1953.
B.A., Central Washington; M.A., Columbia.

QUEPHA LOUISE RAWLS, Part-time Instructor in Applied Arts.[3]
B.S. in H.Eco., Texas Tech.

EMMA CORNELIA REEVES, Instructor in English, 1953.
B.A., Hardin-Simmons; M.A., Texas Tech.

JULES RENARD, Associate Professor of Chemical Engineering, 1951, 1953.
Academic degree of Licentiate in Chemical Science, Univ. of Paul Pastur, Belgium; Academic degree of Chemical Engineer, Univ. of Nancy, France.

KENNETH ROBERT RENNER, Assistant Professor of Dairy Industry, 1950, 1951.[4]
B.S., Texas Tech.; M.B.A., Ohio State.

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[1]Spring Semester, 1954.
[2]Beginning November 1, 1953.
[3]Spring Semester, 1954.
[4]Resigned January 30, 1954.

JOHN CLARENCE RESLER, Assistant Professor of Physics, 1953.
B.S., University of Nebraska; M.S., Oklahoma A. & M.

FRANCIS J. RICHTER, Captain, U.S. Air Force, Assistant Professor of Air Science and Tactics, 1952.
B.A.E., Florida.

DONALD RAY RIDER, Technical Sergeant, U.S. Air Force, Instructor in Air Science and Tactics, 1953.

CHARLES LATHAN RIGGS, Associate Professor of Mathematics, 1953.
B.A., T.C.U.; M.A., Michigan; Ph.D., Kentucky.

CARL COKE RISTER, Distinguished Professor of History, 1951.
B.A., Simmons; M.A., Ph.D., George Washington.

VIRGINIA BOWMAN ROBERTS, Instructor in Mathematics, 1945.
B.A., M.A., Texas Tech.

POLK FANCHER ROBISON, Associate Professor of Health and Physical Education and Recreation and Basketball Coach, 1942, 1944.
B.A., Texas Tech.

ROBERT LYLE ROUSE, Associate Professor of Economics, 1950, 1952.
B.A., Coe; M.A., Ph.D., Iowa.

ANNIE NORMAN ROWLAND, Instructor in Mathematics, 1942.
B.S., M.S., Texas Tech.

JAMES ARTHUR RUSHING, Instructor in English, 1952.
B.S., M.A., S.M.U.

REGINALD RUSHING, Professor and Head Department of Accounting and Finance, 1939, 1948.
B.A., Southwestern; M.B.A., Ph.D., Texas; C.P.A.

RUTH WILSON RUSSELL, Instructor in English, 1948.
B.S., M.A., Oklahoma.

OSCAR ALLEN ST. CLAIR, Professor of Industrial Engineering and Engineering Drawing, 1934, 1951.
B.S. in E.E., Armour; Reg. Prof. Engr., (Texas).

ELIZABETH SKIDMORE SASSER, Associate Professor of Architecture, 1949, 1953.
B.F.A., M.A., Ph.D., Ohio State.

CLARENCE CARL SCHMIDT, Professor and Head Department of Physics, 1927, 1943.
B.A., Cornell College; M.A., Ph.D., Illinois.

ROBERT STEPHEN SCHULTZ, Staff Sergeant, U.S. Air Force, Instructor in Air Science and Tactics, 1951.

RONALD EDWARD SCHULZ, Assistant Professor of Speech, 1952.
B.S., M.A., Northwestern University.

SHIRLEY FRANCES SCHULZ, Part-time Instructor in Foods and Nutrition and Director of Food Service, 1948, 1951.
B.S., Southwest Texas.

JESSE Q. SEALEY, Associate Professor of Biology, 1928, 1948.
B.A., M.A., Ph.D., Texas.

A. B. SEGARS, Part-time Instructor in Accounting, 1953.
B.B.A., M.B.A., Texas; C.P.A.

ROY THOMAS SHAW, JR., Associate Professor of Marketing, 1952.[1]
B.S., Utah State Agriculture College; M.B.A., Stanford.

HORACE MONROE SHERROD, JR., Assistant Football Coach, 1953.
B.S., Tennessee.

MYRTLE DUNN SHORT, Part-time Instructor in Music, 1941.
B.Mus., Chicago Musical College.

RAYMOND GILBERT SIDWELL, Professor and Head Department of Geology, 1928, 1948.
B.A., M.A., Ph.D., Iowa.

WILLIAM MACKEY SLAGLE, Professor of Chemistry, 1926, 1949.
B.A., Southwestern; M.A., Texas.

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[1]Absent on leave, 1953-54.

BURNETT T. SMITH, Instructor in Mathematics, 1948.
B.S., M.Ed., Texas Tech.

MABEL BROOKS SMITH, Instructor in Sociology, 1945, 1947.
B.A., M.A., Texas.

NELDA MARIE SNOW, Instructor in Business Education and Secretarial Administration, 1949.
B.B.A., Texas Tech.; M.B.A., Denver.

OSCAR CLARENCE SOUTHALL, Assistant Professor of Chemistry, 1944.
B.A., Hardin-Simmons; M.A., Texas Tech.

FRED WINCHELL SPARKS, Professor of Mathematics, 1926, 1928.
B.A., M.A., Southwestern; M.S., Ph.D., Chicago.

HAROLD AYLESWORTH SPUHLER, Associate Professor of Electrical Engineering, 1950, 1953.
B.S., Texas Tech.; S.M., M.I.T.

HELEN JANET STAFFORD, Instructor in Biology, 1952.
B.A., Hunter; M.A., Texas.

WENZEL LOUIS STANGEL, Professor of Animal Husbandry, Dean of Agriculture, and Director of Farms, 1925, 1945.
B.S., Texas A. & M.; M.S., Missouri.

TOM BASIL STENIS, Assistant Professor of Electrical Engineering, 1947.
B.S. in E.E., M.S. in E.E., Texas.

PER GUSTAF STENSLAND, Professor of Education and Head of Adult Education Program, 1952.
Sw. "Studentexamen" Norra Latin, Stockholm; Fil. Kand. (M.A.), University of Stockholm; Ph.D., Teachers College, Columbia.

MARY RUTH STRANDTMANN, Instructor in Mathematics, 1951.
B.A., Southwest Texas; M.A., Texas Tech.

RUSSELL WILLIAM STRANDTMANN, Professor of Biology, 1948.
B.S., Southwest Texas; M.S., Texas A. & M.; Ph.D., Ohio State.

ALFRED BELL STREHLI, Associate Professor of Foreign Languages, 1928, 1953.
B.A., B.S., M.A., Ohio State.

ALAN LANG STROUT, Professor of English, 1928, 1937.
B.A., Dartmouth; M.A., Chicago; M.A., Wisconsin; Ph.D., Yale.

MARGRET RUSSELL STUART, Assistant Professor of Chemistry, 1946, 1952.
B.A., M.A., Texas Tech.

MERIAL CHRISTOPHER STUART, Part-time Instructor in Education, 1953.
B.S., M.Ed., Texas Tech.

RICHARD ARTHUR STUDHALTER, Professor of Botany, 1925.
B.A., Texas; M.A., Washington (St. Louis); Ph.D., Chicago.

DONALD JOSEPH TATE, Professor and Head Department of Business Education and Secretarial Administration, 1952.
B.S., Teachers' College, Emporia, Kansas; M.S., Ed.D., New York University.

HASKELL GRANT TAYLOR, Professor of Accounting and Finance, 1937, 1948.
B.B.A., M.A., Texas Tech.; C.P.A.

HELEN MAY KNAUF TAYLOR, Part-time Instructor in Music, 1953.
B.S., Juilliard.

ROBERT BOYNTON TAYLOR, Instructor in Music, 1953.
B.S., Juilliard; M.A., Columbia.

GUSSIE LEE TEAGUE, Associate Professor of English, 1926, 1943.
B.A., Oklahoma; M.A., Colorado.

JAMES OTIS TEAGUE, JR., Part-time Instructor in Accounting, 1953.[1]
B.B.A., Texas Tech.

HUGH SPENCER THOMAS, Part-time Instructor in Accounting, 1951.
B.B.A., Texas Tech.; M.A., George Pepperdine; C.P.A.

EARL L. THOMPSON, Professor of Mathematics, Emeritus, 1928, 1951.
B.A., Kansas State Teachers; M.A., Kansas; Ph.D., Chicago.

[1]Fall Semester, 1953.

ISABEL CECILIA THOMPSON, Assistant Professor of Speech, 1949.[1]
B.S., Sul Ross; M.A., Iowa.

WILLA VAUGHN TINSLEY, Professor of Home Economics; Head, Department of Home Management; Dean, Division of Home Economics, 1953.
B.S., T.S.C.W.; M.S., Colorado A. & M.; Ph.D., Minnesota.

JACK DAWSON TOWERY, Research Textile Engineer, Cotton Research, Part-time Instructor in Textile Engineering, 1950, 1952.
B.S. in T.E, Texas Tech; Reg. Prof. Engr., (Texas).

RICHARD KRAUSE TRACY, Instructor in Architecture, 1949.
B.F.A., Alfred.

AGNES ANN TRUE, Associate Professor of Psychology, 1934.
B.A., M.A., Ph.D., Michigan.

SCOTTI MAE TUCKER, Assistant Professor of Spanish, 1945, 1953.
B.A., M.A., Ph.D., Texas.

KIRK B. TURNER, Assistant Professor of Animal Husbandry, 1948.
B.S., Utah State; M.S., Oklahoma A. & M.

OLLEN TURNER, Colonel, U.S. Air Force, Professor of Air Science and Tactics, 1950.

MAYME LUCINDA TWYFORD, Associate Professor of Foods and Nutrition, 1928.
B.S., West Virginia; M.A., Columbia.

RALPH SYLVESTER UNDERWOOD, Professor of Mathematics, 1927, 1931.
B.A., M.A., Minnesota; Ph.D., Chicago.

ELO JOE URBANOVSKY, Professor and Head Department of Horticulture and Park Management and College Landscape Architect, 1949, 1951.
B.S., Texas A. & M.

MARY JEANNE van APPLEDORN, Instructor in Music, 1950.
B.Mus., M.Mus., Rochester.

DODD VERNON, Assistant Professor of Journalism, 1953.
B.J., Missouri; M.A., New Mexico.

FRANKLIN ALTON WADE, Professor and Head Department of Geology, 1954.[2]
B.S , Kenyon College; M.A., Ph.D., Johns Hopkins.

HARRY STUART WALKER, Instructor in Economics, 1953.
B.A., M.B.A., Denver.

HOMER ELDRED WALKER, Major, U.S. Air Force, Associate Professor of Air Science and Tactics, 1953.

WADE HAMPTON WALKER, Assistant Football Coach 1951.[3]
B.S., Oklahoma.

ERNEST WALLACE, Professor of History and Assistant Dean of Arts and Sciences, 1936, 1945.
B.S., East Texas; M.A., Texas Tech.; Ph.D., Texas.

COLEMAN YOUNGER WARD, Part-time Instructor in Agronomy, 1952.
B.S., Texas Tech.

GEORGE FREDERICK WARN, Associate Professor of Geology, 1948, 1953.[4]
A.B., Hanover; M.S., Northwestern.

BUIST LAMB WARREN, Assistant Football Coach, 1952.
B.S., Tennessee.

DeWITT THOMPSON WEAVER, Director of Athletics and Head Football Coach, 1951.
B.S. in Education, Tennessee.

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[1]Absent on leave, 1953-54.
[2]Effective July 19, 1954.
[3]Resigned February 15, 1954.
[4]Absent on leave, 1953-54.

REX WEBSTER, Part-time Instructor in Marketing, 1953.
B.A., M.A., Texas Tech.

MARGARET WATSON WEEKS, Dean of Home Economics, Emeritus, 1925, 1953.
B.S., M.S., Columbia.

GRACE PLEASANT WELLBORN, Instructor in English, 1947.
B.A., M.A., Hardin-Simmons; B.S., Howard Payne.

LANDON NEAL WESTBROOK, Instructor in Health and Physical Education and Recreation and Assistant in Athletics, 1952.
B.A., M.Ed., Oklahoma.

OLIVE BOONE WHEELER, Part-time Instructor in Education, 1953.
A.B., Howard Payne; M.A., T.C.U.

GEORGE ARTHUR WHETSTONE, Associate Professor of Civil Engineering, 1946, 1948.
B.S., M.S., Ph.D., Washington.

HAROLD NORTON WHITE, Assistant Professor of English, 1949.
B.A., M.A., Nebraska.

JAMES BERLYN WHITEHEAD, Assistant Dean of Student Life, 1951, 1953.
A.B., Indiana.

WILLIAM E. WHITTINGTON, JR., Assistant Professor of Accounting, 1947.[1]
B.B.A., M.B.A., Texas.

THOMAS FERDINAND WIESEN, Professor and Head Department of Economics, 1940, 1942.
B.S., Texas A. & M.; M.B.A., Pennsylvania.

DEWEY O. WILEY, Professor of Music and Director of Bands, 1934, 1941.
B.Mus., Hardin-Simmons; D.Mus., Southwestern Conservatory of Fine Arts.

RANDOLPH CARROLL WILHOIT, Assistant Professor of Chemistry and Chemical Engineering, 1953.
B.A., Trinity; M.A., Kansas; Ph.D., Northwestern.

IRA LAWSON WILLIAMS, Professor and Head Department of Agricultural Engineering, 1952, 1953.
B.S., Texas A. & M.; M.S., Iowa.

JUDDIE JOHNSON WILLINGHAM, Professor and Head Department of Dairy Industry, 1948, 1949.
B.S., Texas A. & M.; M.S., Ph.D., Iowa State.

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

JARVIS WITT, Part-time Instructor in Economics, 1953.
B.A., Texas Tech.

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

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

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

VERA BERG YOUNG, Part-time Instructor in Mathematics, 1952.[2]
B.S., M. S., Iowa State.

EDWARD WILLIAM ZUKAUCKAS, JR., Instructor in Horticulture and Park Management and Greenhouse Manager, 1952.
B.S., M.S., Rutgers University.

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[1]Absent on leave, 1953-54.
[2]Fall Semester, 1953.

TEACHING FELLOWS

Fred A. Brooks, Jr., B.A. ..... Chemistry
Joseph Lawrence Collins, B.S. ..... Physics
Ann Kersey Cooke, A.B. ..... English
Alberta Morton Curry, B.S. ..... Clothing and Textiles
John S. Dehn, B.S. ..... Chemistry
Elmer Anthony DeShazo, B.B.A. ..... Government
Mary Frances Duran, B.S. ..... Biology
Joe Ellis Ericson, B.S., M.A. ..... Government
Edwin Willmer Gaston, Jr., B.S., M.A. ..... English
Francis Earl Green, B.S., M.S. ..... Geology
Jack Wayne Grigsby, B.S. ..... Mathematics[1]
Henry Harrison Hahn, B.S. ..... Psychology
Roger Leland Hall, B.A. ..... Mathematics
Guinn Selwyn Johnson, B.B.A. ..... Mathematics
Albert Edgar Lee, Jr., B.A. ..... Geology[2]
Kathleen Eugenia Martin, B.A. ..... Biology
R. A. Moreland, Jr., B.S. ..... Mathematics
George Taylor Prigmore, B.S., A.B., M.A. ..... English
Virginia Casterton Riggs, B.S. ..... Biology
Joseph Hindle Robinson III, B.S. ..... Physics[2]
Jack Calvin Scott, B.S. in Chem. E. ..... Chemistry
Charles Henry Stembridge, Jr., B.S. ..... Chemistry
Joy Patrick Stiarwalt, B.A. ..... Government
Kenneth Willow Street, B.S. ..... Government
Frederick George Subt, B.S. ..... Chemical Engineering
William Weston Summitt, B.S. ..... Chemistry
Sydney A. R. Turner, B.A., M.A. ..... English[1]
James Howard Wells, B.S. ..... Mathematics
Craig Woodrow Wilkerson, B.B.A. ..... Accounting[1]

Library

RAY CURTIS JANEWAY, Librarian, 1949.
B.A., Kansas; B.S. in L.S., M.S., Illinois.
JAMES EDWARD PLATZ, Assistant Librarian and Head of Circulation, 1949.
B.A., Lawrence; B.S. in L.S., Illinois.
ROSA LEE LANGFORD, Assistant Circulation Librarian, 1953.
B.A., B.S. in L.S., T.S.C.W.
SIBYL PIRTLE MORRISON, Reference Librarian, 1947.[3]
B.S., Texas Tech.; B.S. in L.S., California.
BETTY PEARCE ARPER, Reference Librarian, 1954.[4]
B.S., Tulane; B.S. in L.S., Illinois.
KATHERINE BRIDGES, Assistant Reference Librarian, 1949.[5]
B.A., Texas; B.S. in L.S., Louisiana.
FRANK MILLETT TEMPLE, Head Cataloguer, 1951, 1953.
B.S., Boston; B.S. in L.S., North Texas.
LILLIAN NORWOOD, Assistant Cataloguer, 1951, 1953.
A.B., M.A., S.M.U.; B.S. in L.S., T.S.C.W.

[1]Fall Semester, 1953.
[2]Spring Semester, 1954
[3]Resigned January 12, 1954.
[4]Beginning January 20, 1954.
[5]Resigned January 30, 1954.

EMMA OLIVIA POPE, Part-time Assistant Cataloguer, 1951.
B.S., West Texas State.
CHARLOTTE MAE BRAND, Order Librarian, 1951, 1953.
B.A., Miami University; M.L.S., Texas.
JOSEPH NORMAN HEARD, Order Librarian, 1951.[1]
B.J., M.J., M.L.S., Texas.
FERRELLINE TUCKER, Documents Librarian, 1942, 1949.
B.A., Texas Tech.; B.S. in L.S., California.
GLORIA RUTH LYERLA, Periodicals Librarian, 1952, 1953.
B.S., M.S., North Texas.

Biblical Literature

(Available to students but not paid from college funds)

PAUL FREDERICK HEBBERGER, B.S., M.A., B.D., Biblical Literature, under auspices of Episcopal Church.
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. Presbyterian Church, U.S.A.
WAYNE SELSOR, A.B., B.D., Biblical Literature, under auspices of Disciples of Christ.
CONRAD TRUETT SMITH, A.B., M.A., Th.M., Biblical Literature, under auspices of Baptist General Convention of Texas.
SAMUEL MONTGOMERY WHITSON, B.A., M.A., Biblical Literature under auspices of Churches of Christ.

Cotton Research Staff

LYLE EDWARD HESSLER, Professor and Research Associate.
JACK DAWSON TOWERY, Research Textile Engineer.
BILLY KEITH POWER, Research Principal.
FRANK GAINLIM LOUIS, Textile Assistant.

Student Health Service

EMBREE RECTOR ROSE, B.A., M.A., M.D., Professor and Director of Student Health Service, 1947.
FREDERICK PAUL KALLINA, B.S., M.D., F.A.A.G.P., College Physician, 1948.
IRIS JANE NORMAN, R.N., Supervisor.
ERLENE BLAKNEY, R.N.
HILDEGARDE V. JENKINS, R.N.
LOIS REEVES, R.N.
MILDRED CANNON, R.N.
HATTIE M. CHILDRESS, R.N.
MARJORIE MATHEWSON, R.N.
NELL HEFNER, Medical Technologist.

Museum Staff

W. C. HOLDEN, Director, 1949.[2]
FRANCES MAYHUGH HOLDEN, Acting Director, 1953.
DOROTHY RYLANDER, Secretary, 1953.
PATRICIA ALLGOOD, Preparator, 1950.

[1]Resigned October 31, 1953.
[2]Absent on leave, 1953-54.

Other Staff Members

NOLAN ELLMORE BARRICK, Supervising Architect, 1953.
B.A., B.S. in Arch., M.A., Rice; Reg. Arch., (Texas).
FLOSSIE BURKHOLDER BROWN, Cashier, 1933, 1937.
B.A., Texas Tech.
WILLIAM CONNER COLE, Bookstore Manager, 1927.
B.B.A., Texas.
BENGE ROBERT DANIEL, Manager of the Texas Tech Press, 1951.
B.S., M.S., North Texas.
ELLIS R. FORMAN, Assistant Manager of College Bookstore, 1934, 1939.
B.A., Texas Tech.
WILLIAM MARCUS GOSDIN, Superintendent of Grounds, 1949.
B.S., Texas Tech.
WILLIAM WALKER HOLMES, JR., Sports News Director, 1951.
B.A., Texas A & I.; M.A., Colorado.
RUSSELL BRIGGS IRVIN, Part-time Legal Counsel, 1951, 1953.
A.B., Simmons; M.A., LL.B., Texas.
JEAN AYERS JENKINS, Placement Service Director, 1935, 1947.
B.A., Texas Tech.
CHARLES F. LIBBY, Supervising Custodian of Buildings, 1949.
ROBERT LOUIS MASON, Director and Engineer, Building Maintenance and Utilities, 1942, 1953.
B.S. in M.E., Texas Tech.; M.S. in M.E., Kansas State; Reg. Prof. Engr., (Texas).
MILTON LESTER PEEPLES, Creamery Superintendant, 1951, 1952.
B.S., Texas Tech.
WILLIAM HOPKINS RODGERS, Superintendent of Farms, 1943.
PETE SELLERS, IBM Supervisor, 1949.
WILLIAM DAVID SCOTT, Director of the Student Union, 1953.
A.B., Marshall College; M.A., Michigan.
AUBREY LORANCE SHOUSE, Director of Public Information, 1951.
B.A., Texas Tech.
JOHN PHILLIP SMITH, Manager of the PanTech Farms, 1947.
B.S., Texas Tech.
LUTHER LEONARD STEGER, Internal Auditor, 1952.
B.B.A., Texas Tech.
JIMMIE WILSON, Business Manager of Athletics, 1949.
AMIL DEAN ANDERSON, Assistant Director of the Student Union, 1953.
B.A., West Virginia.
VERNON EARL THOMPSON, Property Manager, 1949, 1953.
B.B.A., Texas Tech.

Dormitory Staff

Food Service

SHIRLEY FRANCES SCHULZ, Director of Food Service, 1948, 1951.
B.S., Southwest Texas.
BESS A. BANKS, Assistant to Director of Food Service, 1950.
MARGARET R. BIRKMAN, Dietitian, 1948.
B.S., Texas Tech.
KATHRYN G. CONOVER, Dietitian, 1950.
B.S., Drexel Institute of Technology.
MARY ELIZABETH ELLIOTT, Dietitian, 1950.
B.S., M.S., Texas Tech.
RUBY M. SWIFT, Relief Dietitian, 1953.
B.S., Texas Tech.
MARY LU KELLER, Assistant Dietitian, 1944, 1953.
B.S., Texas Tech.
DAULMA NOLES STRIBLING, Assistant Dietitian, 1953.
B.S., Texas Tech.
JOYCE VARNER, Dietitian, 1952.
B.S., North Texas State College.

Room Reservations

HUBERT LEE BURGESS, Supervisor of Dormitory Reservations, 1934, 1948.

WILLIAM H. CRUTCHER, Cashier, 1947.
B.B.A., Texas Tech.

Supervisory Staff

WILLIAM RAY GEISERT, Head Supervisor of Men's Dormitories and Assistant Dean of Men, 1953.
A.B., M.S. Ed., Indiana.

KITTIE CATON SELBY, Resident Hostess, Knapp Hall, 1953.

EDNA EIKEL, Resident Hostess, Horn Hall, 1944.

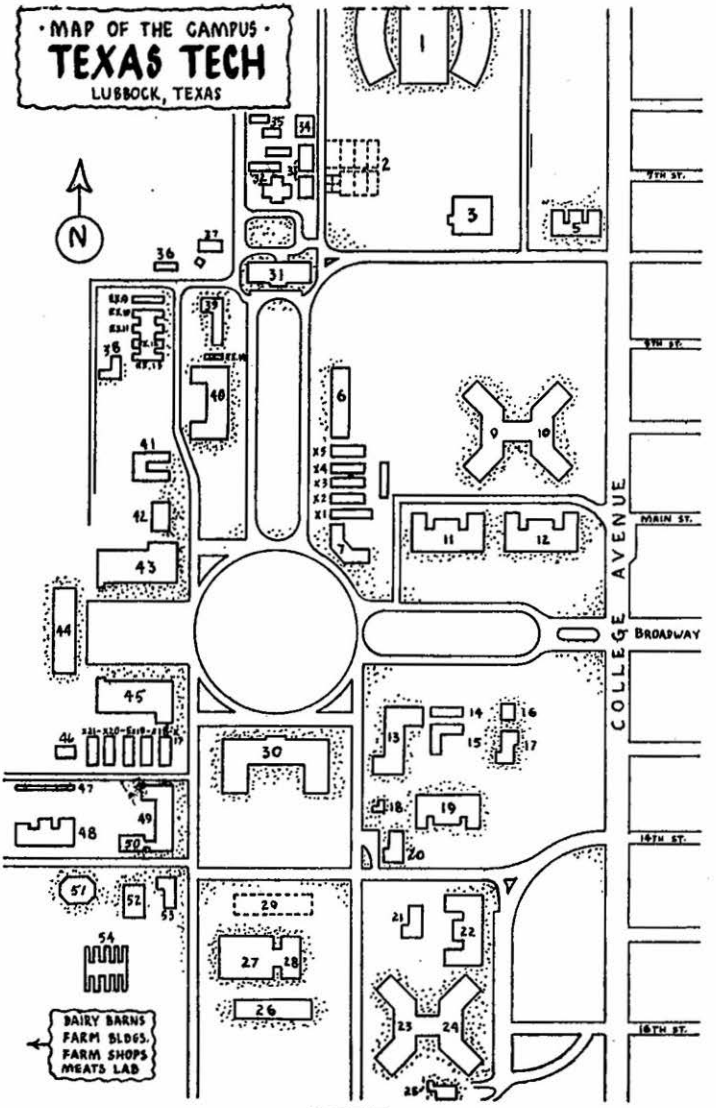
JACK VERNON COLLINS, Supervisor of Doak Hall, 1952.
B.S., North Texas; M.S., Texas Tech.

GEORGE WALTER ROGERS, Supervisor of Gordon Hall, 1951.
A.B., Oberlin College.

LOUIS G. STAMATAKOS, Supervisor of Sneed Hall, 1952.
B.S., M.S., Indiana.

BOBBIE LOUISE CALLAWAY, Counselor and Program Director, Horn Hall, 1953.
B.S., M.S., Oklahoma A. & M.

LUCILLE PONTIUS, Counselor and Program Director, Knapp Hall, 1953.
B.S., Missouri; M.A., Kansas.



LEGEND

LEGEND

Ad. Bldg. 30	East Engr. Bldg. 6	Power Plant 32
Ag. Bldg 49	Extension Bldg. 53	Psychology Bldg. 14
Air and Military Sc. Bldg 39, X9, X10	Farm Shops 47	President's Home 25
Arch. Lab. X1, X2	Garage 34	Journalism Bldg. 42
Bledsoe Hall 10	Gordon Hall 9	Rec. Hall 27
Bookstore 20	Greenhouse 46	Science Bldg. 44
Cafeteria 28	Greenhouses 54	Science Labs. X18, X19
Casa Linda 16	Gym. 8	Sneed Hall 12
Chem. Bldg. 45	Home Ec. Bldg. 13	Speech Bldg. 52
Chem. Labs. .X17, X20, X21	Home Management House 17	Stock Judging Pavilion ...51
Classroom Annex X3	Horn Hall 24	Storage Bldgs. 35
Clay Research 36	Jones Stadium 1	Student Union Bldg. 29
Dairy Manufactures Bldg. 50	Knapp Hall 23	Tennis Courts 3
Doak Hall 19	Library 43	Test. and Counsel. Center 15
Drane Hall 22	Mech. Engr. Shops 33	Textile Engr. Bldg. 31
Music Bldg. 26	Museum 7	Textile Engr. Lab. 37
Dorm Office 21	Naval Reserve Center 5	Veterinary Science Bldg. .45
	Nursery 18	West Engr. Bldg. 40
	Pet. Engr. Bldg. 38	West Hall 11

ORGANIZATION OF THE COLLEGE

Divisions and Departments

Agriculture

- Agricultural Economics
- Agricultural Education
- Agricultural Engineering
- Agronomy (Crops, Range Management, Soils)
- Animal Husbandry (Animal Industry, Dairy Husbandry, Poultry Husbandry, Range Management)
- Dairy Industry
- Horticulture and Park Management (General Horticulture, Park Management and Floriculture, Pomology)

Arts and Sciences

- Biology (Bacteriology, Botany, Zoology)
- Chemistry
- Education and Philosophy
- English
- Foreign Languages (French, German, Latin, Spanish)
- Geology (Geography)
- Government
- Health and Physical Education and Recreation
- History, Anthropology and Sociology
- Journalism
- Mathematics (Astronomy)
- Music
- Physics
- Preprofessional courses in Medicine, Dentistry, Law
- Psychology
- Speech
- Also courses in Biblical Literature

Business Administration

- Accounting and Finance
- Business Education and Secretarial Administration
- Economics
- Management
- Marketing

Engineering

- Architecture and Allied Arts
- 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, Nutrition and Institutional Management
- Home Economics Education
- Home Management

Graduate

Degrees Offered:

- Master of Arts
- Master of Business Administration
- Master of Education
- Master of Science
- Master of Science in Agriculture
- Master of Science in Chemical Engineering
- Master of Science in Electrical Engineering
- Master of Science in Home Economics
- Doctor of Education
- Doctor of Philosophy

Air and Military Science and Tactics (ROTC)

- Basic and Advanced
  - Air Force
  - Engineering
  - Infantry
  - Signal Corps

Extension

- Correspondence Courses
- Extension Classes

Interdepartmental Programs

- Adult Education Program
- Audio-Visual Services
- Evening Program
- Institute of Americanism

THE COLLEGE

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 of Texas and 400 miles northwest of the state capital at Austin. The elevation is 3200 feet above sea level.

The city and suburbs have a permanent population of approximately 110,000. Excellent churches, schools, hotels, and shopping centers are available. Two railway systems, an interstate bus line, an excellent highway system, 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 Parallel. The act authorized the establishment of a coeducational college "of the first class."

The first buildings were erected and opened to students Sept. 30, 1925. The physical plant is now valued at over $18,000,000.

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 (1944-1948), Dossie M. Wiggins (1948-52), and Edward N. Jones (1952-).

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.

The Library

The Library of Texas Technological College, consisting of 112,537 cataloged volumes, 26,294 periodicals and 302,696 documents, is housed in a separate building near the center of the campus. Among the facilities for student services are the reserve reading room, a general reading room, and areas devoted to the use of periodicals and documents. Individual study space is available for graduate students engaged in research. The Library also provides readers for microfilm and microcard publications.

The Library staff is made up of 12 professionally trained librarians and 15 sub-professionals, providing service all hours the Library is open.

SPECIAL COLLECTIONS

A small, but growing, collection of carefully selected material is available on open shelves for recreational reading.

The Southwest Collection, which is housed in a separate room on the second floor, was established for the acquisition and preservation of

materials of particular interest in this region. It includes documents and manuscripts, cataloged volumes, many not obtainable in any other Texas libraries, and a large collection of early Texas newspapers on microfilm, a gift of 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, a gift of Maurice Reilly; and a collection of records of the Spur Ranch, given by President Emeritus Clifford B. Jones. With the aid of several residents of Spur, a file of *The Texas Spur* from 1909 to 1940 has been secured for the collection.

The Library offers its services to the students and faculty of the College, to the citizens of the State of Texas, and to other friends of the College.

Hours of service: 8 A.M. to 10 P.M., Monday through Friday; 8 A.M. to 5 P.M. Saturday. Closed Sundays and holidays. Summer term: 7:30 A.M. to 9:30 P.M., Monday through Friday; 7:30 A.M. to 4:30 P.M. Saturday. Closed Sundays and holidays.

Testing and Counseling Center

The Testing and Counseling Center located on the campus is designed primarily to aid the student who needs help in deciding on the choice of a major, an occupational objective, or procedures in meeting problems of a personal nature. These services are also available to individuals not connected with the College who desire vocational counseling and to employers seeking advice in the selection or advancement of personnel. A special service deals with the problems of children and parent-child relationships.

All cases are handled on an individual basis in the strictest confidence. Typical procedure includes one or more interviews in order to acquaint the client with the services he may use and to obtain data for analyzing his background in general. Standard tests may then be administered at the client's convenience for a total period of four to six hours, although longer or shorter periods may be employed in some cases. Following this, an appointment is made for the client to be counseled in terms of general background and test results. This final conference or conferences may require one to four hours.

The tests used are selected to fit the needs of the individual client, but usually cover the areas of general intelligence, achievement in school subjects, interests, personality and special aptitudes. The purpose of each test is explained to the client.

Persons desiring the services of the Testing and Counseling Center should call 5-8541, Ext. 331, for an appointment. Appointments may be made for any day, Monday through Friday, 8 A.M. to 5 P.M. and Saturday forenoons. In exceptional cases appointments are made for Saturday afternoons.

All service is on a fee basis, payable to the College. Students of Texas Technological College are charged $7.50, whereas non-students are charged on the basis of the service required.

An IBM test-scoring service for the various departments of the College and for school systems in the area is also maintained. Further information regarding this feature may be had upon request.

Laboratory facilities are also furnished students in courses in counseling and guidance. Those enrolled in tests and measurements

are assigned laboratory work in the Testing and Counseling Center, but those studying the techniques of counseling are given supervised practice on certain non-fee cases among students enrolled in certain courses in psychology and education. Facilities for a limited number of Internships in Counseling and Guidance for doctoral candidates (Psychology 560-1) are available.

The counseling staff meets professional standards on the doctoral level. All are members of the American Psychological Association, the Texas Psychological Association, and, in some cases, hold professional membership in the National Vocational Guidance Association.

Student Health Service

The College Infirmary, a 20-bed unit, provides accommodations for those regularly enrolled students ill enough to require constant supervision, and not in such physical condition as to require surgery or the services of specialists. 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. Neither the Out-Patient Clinic nor the Infirmary is financially able to give students unlimited medical service. The cost of special expensive medications, examinations, treatments, special X-ray examinations, and special laboratory tests must be paid by the student. Except for the above special services, 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, supplies, and any special services 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 Health 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, diabetes, 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 recom-

mend 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 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 may be made for the continued care of students who were sick before the vacation period began.

West Texas Cooperative Audio-Visual Services

Since 1938 the Extension Division has rendered film distribution service to schools of the West Texas area. During the summer of 1952 the administration of Texas Technological College and the school administrators of the area agreed upon pooling their resources to provide increased educational film distribution services. Increased film distribution, housing and preview facilities, and audio-visual consultant service has been provided to enrich education in West Texas through cooperative effort.

The WTCAVS provides on-campus service for the divisions and departments of Texas Technological College. Room 11 of the Library Building has been set aside for on-campus viewing of films. These services may be scheduled by calling phone number 3-5014 or contacting the audio-visual personnel in the Library Building, Room 5.

Film distribution from the College campus is currently reaching 50,000 students in the public schools. Schools of West Texas desiring to participate in the Cooperative Audio-Visual program may obtain further information by writing the Director of WTCAVS, P. O. Box 4380, Texas Technological College, Lubbock, Texas.

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.

For those students who find it necessary to earn a portion of their expenses while attending college, the Placement Service is able to

assist in finding part-time positions with Lubbock business firms and on the campus.

Employers, representing schools or business and industry, should file requests with the Placement Office for needed personnel. All details and coverage offered may be received from the Director, The Placement Service, Room 150, Administration Building.

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 Adult Education Program

The Adult Education Program has been established with the help of a three-year grant from the Fund for Adult Education of the Ford Foundation. The purpose of the program, for which an all-College inter-departmental advisory committee has been formed, is to encourage the development and strengthening of adult education programs in the communities of West Texas. The program will be developed through extensive conferences with leaders in the local communities; its content will depend on the needs of citizens off campus and the resources of staff members on the campus.

Four areas of concern have been outlined: (1) development of lay and professional leaders, through program clinics, leadership institutes, and professional courses; (2) establishment of a program resource center, with books, pamphlets, study guides and audio-visual material which help in program making in organized groups; (3) encouragement of cooperative program planning, in local and regional councils; (4) strengthening of mass media communication through effective use of radio, television, motion pictures in adult education programs.

The Institute of Americanism

The Institute of Americanism was set up in the summer of 1952 in keeping with a trust established by the Charles Ernest Maedgen Foundation of Lubbock. It is an educational venture at Texas Technological College, set up by special approval of the Board of Directors and the administration, with offices supplied by the College, to "teach and emphasize the American way of life," and to stress "those fundamental concepts of our founding fathers under which this country has prospered to an amazing extent, unknown elsewhere in the world."

It is working with student groups, professors and departments, in special programs in furtherance of American ideals and the American heritage. Non-political in the narrowly-accepted sense, it is sponsoring a wide range of programs with other organizations throughout the Southwest, including lectures, panels, and articles on current economic and political problems from the standpoint of factual content, policy, and principle. In connection with the Department of History at Texas Technological College, it is sponsoring such courses as will ade-

quately emphasize to the graduates of the College the basic ideals, traditions and values of the American heritage.

This Institute is by and for all of those who believe in the dignity of the individual—in the genius of America. It is dedicated to the defense and conservation of the basic ingredient of American heritage, the indestructible moral nature of free men.

The Seismological Observatory

The Seismological Observatory of Texas Technological College was installed in June, 1948. Being the only observatory of its type within a considerable area of several contiguous states, it is in a particularly strategic position, especially for the detection of earth disturbances in Central and South America. Five seismometers, together with their associated equipment, constitute the Observatory, which is housed in an especially designed building.

Seismology, in addition to the detection and location of earthquakes, is useful in other ways. It is the one and only method of investigating the interior of the earth. Seismology is also useful in geophysical prospecting, in the design of buildings, in tracking hurricanes and typhoons, in measuring the thickness of polar ice caps, and in the generation, transmission, refraction, reflection, diffraction, polarization, and adsorption of elastic waves. In these and in perhaps other fields, the Observatory may prove to be a center of experimental work.

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 Museum building represents an investment of approximately $500,000 and 15 years of planning and work.

A good beginning has been made in collecting objects of scientific, historic, and artistic value. 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.

A Spitz Planetarium has been installed in a temporary "Theatre of the Skies" behind The Museum. Public performances are given on Sunday afternoons and Monday evenings. Special demonstrations on weekdays are given by appointment with The Museum secretary.

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,

Student Handbooks

Two student handbooks, *T-ing Off at Texas Tech* and *The Code of Student Affairs,* published annually, give exact information on matters related to student life. Customs and traditions, particulars on student housing, dormitory regulations, student services, student recognition, student self-government, eligibility requirements, regulations on parking, regulations on hazing, the student constitution, and general aspects of student life are discussed in these publications. They are authoritative publications of the College and complement the *General Catalog* in giving detailed information on college life at Texas Technological College.

ADMISSION

Responsibilities Assumed by Student Upon Admission

The student by virtue of his admission to Texas Technological College assumes a responsibility to do satisfactory work in his courses, to observe not only College regulations but also the proprieties of society. Serious violations of citizenship rarely occur. When they do, the student is subject to disciplinary action.

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 (transcript) sent from the high school or the college previously attended. If the high school does not have a form for submitting the 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 may 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 line and wait for necessary admission papers.

Freshman Pre-Registration Guidance and Testing. All entering freshmen are required to assemble at the College a few days in advance of registration for a period of testing and guidance. (See **College Calendar.**) This program is followed with a view to assisting the student in the selection of a study program and to aid the faculty and administration in the guidance of the individual student. The tests which are given during this period are not to be used as a basis for admission except in the case of mature students who are seeking admission on the basis of maturity and experience. Registration for the entering freshman student will not be completed until he takes the tests.

Health Requirements

(1) The College Health Data Blank will be furnished the student after the transcript and application blank are filed with the Registrar. This blank must be completed by the student, signed by his parents and completed and signed by the family physician. This must include a statement of successful smallpox vaccination within five years prior to registration as prescribed by the College physician. The health data blank must be filed with the Registrar before a beginning student is eligible to register.

(2) All regular students registering during the registration period for the fall semester must have a T.B. Chest X-Ray made as a part of the registration process. This service will be provided by the State Department of Health and the College during the first week of registration without cost to the student.

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. The following units are the uniform minimum requirements for admission to any division:

1. *English*	3
2. *Mathematics*	2
3. *Social Science*	2
4. *Laboratory Science*	1
5. *Electives*	7
Total	15

Recommendations for Particular Curricula

The student with the above minimum pattern of high school units will be admitted to any division of the College. For the study of engineering or certain other scientific fields the student with the above minimum will be admitted with conditions as outlined below. All course work and curricula are based upon the assumption that the student has a background and proficiency acquired in high school which will permit him to pursue the courses required in his curriculum. Any student who is shown to be deficient in English or mathematics either in his high school program or the Pre-Registration Testing Program will be assigned to a schedule designed to remove these deficiencies during the first two semesters or full-time equivalent.

The study of *Engineering* requires a thorough background of high school preparation in mathematics and physics. The prospective engineering student is strongly urged therefore to present 2 units in algebra and 1 in plane geometry. Likewise he should present 2 units in science, 1 of which should be physics. The student lacking 1 unit in plane geometry or second year algebra will be required to remove the deficiency during his first full semester in college. A deficiency of 1 unit in plane geometry will be removed by the successful completion of Mathematics 032 during the first semester. Credit earned will be transferred to the high school record. The engineering student deficient in 1 unit in second year algebra will enroll for Mathematics 051. The successful completion of the course will remove the deficiency in high school algebra and give the student 2 semester hours credit in college algebra (Mathematics 121). The student deficient in 1 unit in high school physics will enroll in Physics 141 and 142 during the first long session or its equivalent. College credit will be given, but 8

semester hours will be added to the student's curriculum for his degree in engineering. Physics is not required for admission for majors in commercial art or the design option in architecture.

The student planning to major in *mathematics, chemistry, physics,* or *geology* should present a high school program which includes 2 units in algebra and 1 in plane geometry. If these subjects are required for a curriculum, deficiencies may be removed as indicated above for majors in engineering.

Applicants for admission to the divisions of *Agriculaure, Business Administration,* or *Home Economics* will be admitted on a certificate of high school graduation with a pattern of units as outlined above under Uniform Requirements for Admission.

Any student who presents a certificate of high school graduation which does not fit the Uniform Requirements for Admission may be admitted on condition by special action of the Faculty Committee on Admissions. Such student may be required to do additional work in college to make up for the shortage in high school preparation.

Admission from Other Colleges and Universities

Undergraduate students who have attended another college, who have the usual honorable dismissal, may be admitted on presentation of an official transcript which will meet the following admission requirements *in each of the last two semesters of attendance* or on the total attendance if less than two semesters. Grade points are computed as follows: for each hour of A—3; B—2; C—1; D, E, and F—none.

A. New Students:

A student taking 12 or more semester hours, if a first-year student, must have passed in at least 9 semester hours with 3 or more grade points; if a second-year student, at least 9 semester hours with 6 or more grade points. A third-year student or above, taking 12 or more semester hours, must have passed in a minimum of 12 semester hours with 9 grade points or must have passed in 9 semester hours with 12 or more grade points. Any student taking less than 12 semester hours must have passed in approximately three-fourths of the courses taken and made 3 or more grade points if a first-year student, or as many grade points as hours undertaken if a second, third, or fourth-year student.

B. Former Students:

A former student who has attended another college after leaving this College must meet the appropriate quality requirements as indicated above. The restrictions will not be applied to work done in a summer session only at another college.

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. 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. The usefulness of transferred credit is determined by whether or not the work is equivalent to work in the curriculum or as permissible electives. At the option of the

academic dean, transferred courses with a grade of D or equivalent may not be accepted as meeting degree requirements.

Credit in physical education activity courses, or substitutes therefor, is accepted in transfer to the extent that it meets degree requirements, but grade points accumulated in such courses above a C average may not be applied to reduce a deficiency of grade points in other subjects.

Admission of Graduate Student. An applicant for admission to the Division of Graduate Studies shall 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 School may direct the applicant in the choice of undergraduate levelling courses.

Admission of Mature Students on Conditions. The mature student (21 years of age or over) who has not attended another college may be admitted as a freshman on condition without having met the formal admission requirements. A request for such admission must be accompanied by a complete transcript of the 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 Testing and Counseling Center to take the tests required of all freshmen at the beginning of the semester. At a designated time he will have a conference with the faculty committee on admissions; and in the light of his test scores and an analysis of his past training and experience, the Faculty Committee on Admissions may recommend his 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.

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 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.

Any student who has been honorably dismissed from any branch of the Armed Forces with a minimum of 90 days of 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. A former commissioned officer may receive credit for 12 semester hours in advanced military science. These may be used as elective credits insofar as such electives are appropriate to a given curriculum.

EXPENSES

The question of expense while attending college is of importance to every student. In a large student body, 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 provisions.

**Payment of Fees.* All fees are payable in full at the time of registration, and a student is not registered until all his fees are paid in full. 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 Resident Students. For each resident student enrolled for 12 or more semester credit hours the registration fee is $25 per semester. 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	6 semester hours—$13.50
10 semester hours— 21.50	5 semester hours— 11.50
9 semester hours— 19.50	4 semester hours— 9.50
8 semester hours— 17.50	3 semester hours— 7.50
7 semester hours— 15.50	

Registration Fee for Nonresident Students. Under the authority of House Bill 507 enacted into law by the 50th Legislature, each nonresident student† is required to pay a nonresident registration fee of $150 per semester of the long session. For the nonresident student enrolled in the long session for less than 12 semester hours, the registration fee is $12.50 per semester hour.

* Texas Technological College reserves the right to change fees in keeping with acts of the Texas State Legislature or the Board of Directors.

†The Board of Directors has adopted the following nonresident regulations:

1. A nonresident student is hereby defined to be a student of less than twenty-one (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 twelve (12) months immediately preceding the date of registration; or a student of twenty-one (21) years of age or over who resides out of the State or who has not been a resident of the State twelve (12) months subsequent to his twenty-first birthday or for the twelve (12) months immediately preceding the date of registration.

2. The term "residence" means "legal residence" or "domicile"; and the term "resided in" means "domiciled in."

3. The legal residence of one who is under twenty-one (21) years of age is that of the father. Upon death of the father, the legal residence of the minor is that of the mother. Upon divorce of the parents, the residence of the minor is determined by

The responsibility of registering under the proper residence is placed upon the student, and it is his duty, at or before registration, if there is any possible question of his residence in Texas under the State law and College rules, to raise the question with the Registrar and have such question settled prior to registration. There can be no change of residence except upon express authorization by the Registrar. Regulations on the nonresident fee are enforced strictly.

Any student who wrongfully pays the Texas rather than the nonresident fee may be assesed a penalty not to exceed $5.

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the legal residence of the person to whom custody is granted by the court until the minor shall have reached the age of 14. After the minor has attained the age of 14, the residence of the minor shall be determined by the residence of the parent with whom the minor has made his home for the 12 months immediately preceding his registration. If the custody of the minor has been granted to some person other than a parent, the residence of that person shall continue to control for so long as the minor actually makes his home with such person. In the absence of any grant of custody, the residence of the parent with whom the minor has made his home for the 12 months immediately preceding his registration shall govern. If the minor has not made his home with either parent, the residence of the father shall control.

4. A student under twenty-one (21) years of age shall not be classified as a resident student until his parents shall have maintained legal residence in this State for at least twelve (12) months. A student under twenty-one (21) years of age whose parent leaves the State and establishes residence in another State shall be classified as a nonresident student. It shall be the responsibility and duty of the student to submit legal evidence of any change of residence.

5. All individuals who have come from without the State of Texas and who are within the State primarily for educational purposes are classified as nonresidents. Registration in an educational institution in the State is evidence that residence is primarily for educational purposes even though such individuals may have become qualified voters, have become legal wards of residents of Texas, have been adopted by residents of Texas, or have otherwise attempted to establish legal residence within the State.

6. The residence of a wife is that of her husband; therefore, a woman resident of Texas who marries a nonresident shall be classified as a nonresident and shall pay the nonresident fee for all semesters subsequent to her marriage. (Exception: A woman student of Texas Technological College who is classified as a resident student and who marries, while a student, a nonresident student of Texas Technological College, shall be permitted to continue to pay the resident fee for the two long-session semesters immediately following her marriage). A nonresident woman student who marries a resident of Texas is entitled to be classified immediately as a resident student and is entitled to pay the resident fee for all subsequent semesters.

7. All aliens shall be classified as nonresident students except that an alien who has applied for naturalization in the United States and has received his first citizenship papers shall have the same privilege of qualifying as a resident student as a citizen of the United States. The twelve (12) months' residence required to establish the status of a resident student shall not begin until after such citizenship papers have been issued to the alien.

8. Officers, enlisted men and women, selectees or draftees of the Army, Army Reserve, National Guard, Air Force, Air Force Reserve, Navy, Naval Reserve, or the Marine Corps of the United States, who are stationed in Texas by assignment to duty within the borders of this State, shall be permitted to enroll themselves, their husband or wife as the case may be, and their children in State institutions of higher learning by paying the tuition fees and other fees or charges provided for regular residents of the State of Texas, without regard to the length of time such officers, enlisted men, selectees or draftees have been stationed on active duty within the State. This does not apply to students, their husbands or wives as the case may be, who are in attendance under contractual arrangements between the College and the Armed Forces of the United States, whereby the student's tuition is paid by the Armed Forces. Any student claiming the benefits of this section must submit at each registration a statement by the Commanding Officer of the student or the Commanding Officer of the student's father, mother, husband or wife, verifying the fact of their military status.

9. Appointment as a member of the teaching or research staffs or the holding of a fellowship, scholarship, or assistantship shall not affect a student's residence status or the tuition fee to be paid.

10. 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 nonresident fee.

Registration Fee for Evening Program.* For each 3 or less semester credit hour course the registration fee is $10, plus any laboratory fee. For each 4 semester credit hour course, $12, plus any laboratory fee. All Evening Program students are required to make a $7 general property deposit.

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 Activity Fee. This is an optional fee of $15 for the Fall Semester and $8 for the Spring Semester. It covers recreational activities, student publications (except *La Ventana*), admission to intercollegiate athletic contests, and admission to the Artists Course numbers.

†*Student Union Fee.* This is a $5 fee that each student must pay each semester of the long session. The fee is $2.50 for each summer term.

Late Registration Fee. A late registration fee of $2 will be charged any student who registers on or after the late date shown in the official calendar.

General Property Deposit. Each student enrolled in the College must make a general 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; pending payment, no credit will be allowed on the work of that semester or term, and the student will be ineligible to re-enter college. This deposit, less charges, will be returned to the student at the termination of his tenure 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 $2 is charged for each semester. For courses in which the semester credit is 4 semester hours or more, the laboratory fee is $4 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 Fees

Ceramics Fee:	
Architecture 3216, 3217	$5.00
Allied Arts 239, 2310, 4311, 4312, 341 (ceramics only)	$5.00
Model Fee:	
Architecture 326, 327, 423, 424	$5.00
Allied Arts 426, 427	$5.00
Course Fees:	
Education 3315	$3.00
Testing Fee for Management 110	$4.00
Service Fees:	
Accounting 441, 442	$4.00
Secretarial Administration 120, 121, 122, 321, 421	$4.00

*Residents of Texas. Nonresident Students $12.50 per semester credit hour.
**See paragraph General Property Deposit.
†S B. No. 232, Regular Session, Fifty-third Legislature.

Music Fees for Private Instruction. The following costs are not covered by the College registration for individual instruction in voice, wind and string instruments offered by the Department of Music. They are payable in full at the time of registration.

For each one of the following courses in applied music:

Private Instructions

Applied Music 115, 116, 215, 216, 315, 316	$15.00
Applied Music 025, 026, 125, 126, 225, 226, 235, 236, 325, 326, 335, 336, 345, 346, 425, 426, 435, 436, 445, 446	$30.00

Practice room and piano rental is payable at the College Business Office:

One hour per day per semester	$5.00
Each additional hour	$2.50
Instrumental practice room (without piano)	$2.50
Musical instrument rental for class strings, woodwinds, brasses (each class)	$2.50

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 3313, Press Photography	$15.00

Graduation Fee. Graduating students will be charged a graduation fee of $5 for each degree granted. The graduation fee will be refunded to the student provided he cancels graduation intentions before the diploma has been printed and other details covering his graduation completed. If this cancellation is not made by the student in sufficient time, he will have to pay the graduation fee again when he next becomes a candidate for the degree.

Refund of Fees. Any student withdrawing officially during either semester will receive a refund on registration and activity fees (less Federal Tax) 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 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.

Refund of tuition and fees will be made when the College is at fault. Refund of tuition or fees will not be made on courses of less than six-week duration. No refund on unused balance of deposits will be made until at least 10 days after the student terminates his tenure here as a student. In no case will fees be refunded to a student

suspended from college by college authorities. Once a student has registered for a laboratory class and has attended the class, no refund of the laboratory fee will be made unless the College is at fault.

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

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

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

Summary of Registration Expenses

Each student should have available at the time of his first enrollment approximately $175 in traveler's checks, cashier's checks, or money orders. 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 resident student to approximate his expense at the time of entering college, the following estimates are offered:

Fall Semester

Registration Fee	$ 25.00
Student Activity Fee (optional)	15.00
Student Union Fee	5.00
General Property Deposit (new student)	7.00
Books and Incidentals (approximate average)	45.00
First payment of room and board in the college dormitory	39.00
TOTAL (estimated)	$136.00

Spring Semester

Registration Fee	$ 25.00
Student Activity Fee (optional)	8.00
Student Union Fee	5.00
General Property Deposit (new student)	7.00
Books and Incidentals (approximate average)	30.00
First payment of room and board in the college dormitory	75.50
TOTAL (estimated)	$150.50

The cost of books and supplies will vary with the different curricula of the College from a minimum of $30 to a maximum of $40. Engineering students are required to purchase their own drawing equipment, slide rule, etc., which, plus books, cost approximately $75 per year, or an average of $37.50 per semester.

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

Registration Fee	$ 25.00	$ 25.00
Student Activity Fee (optional)	15.00	8.00
Student Union Fee	5.00	5.00
General Property Deposit	7.00	
Books and Incidentals	45.00	30.00
Room and Board in College Dormitory	270.80	260.00
TOTAL (estimated)	$367.80	$328.00

Texas Technological College requires a student to live in one of the College's eight dormitories which have a total capacity of 2800. These dormitories are owned and operated by the College.

Students who live with their parents, students who are married and live with their wives or husbands in the City of Lubbock and vicinity, students whose health condition demands special services and living conditions, and students whose part-time employment prohibits their securing meals regularly in a dormitory, may be approved for off-campus residence.

The College reviews the housing of all students and reserves the right, with the above possible exceptions, to require that residence be in the College dormitories.

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 1954-55 year.

Charges for room and board in college dormitories will be $530.80 per nine-month period for the regular double rooms occupied by two students. The payments will be as follows:

September	$39.00	January 27-31	$10.50	
October	65.00	February	65.00	75.50
November	65.00	March		65.00
December	50.50	April		65.00
January 1-26	51.30	May		54.50

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.

If facilities are available, one student may occupy a double room for an additional charge of $7.50 per month.

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

Dormitory Reservations. Application for dormitory reservations will be made to the Office of Dormitory Reservation. A check for $10 should accompany the request. This will serve as a reservation fee, and will be held as a dormitory property deposit. It will be refunded, less any breakage charges, at the end of the year. If a student moves from the dormitory during the semester, the $10 deposit will not be refunded.

Should a student find it impossible to enroll in the College, he may apply for a refund of his reservation fee not later than Aug. 15 for the fall semester, Jan. 15 for the spring semester, May 15 for the first term of summer session, and June 30 for the second term of summer session.

All arrangements for housing accommodations in private dormitories and residences off the campus should be made through the Office of Dean of Student Life.

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 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.

RECOGNITION OF SCHOLARSHIP

Scholarship 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 grades earned in this College will be counted.

Fellowships, Scholarships, Awards, and Loans

All fellowships, scholarships, and awards (with the exception of teaching fellowships) are administered by the College through its Faculty Committee on Scholarships and Awards by designated faculty members or organizations. A student shall be eligible for only one College-administered major fellowship or scholarship during any one semester. In event of multiple awards to the same student, he may have his preference. (The interpretation of "major" in this connection shall not apply to Scholarships for Honor Graduates of Texas High Schools or to other scholarships of $50 or less per year administered by the College.) The payment of all scholarships, fellowships, and awards is subject to the necessary funds being made available by the donors and to the recipient having continued to meet the eligibility prerequisites at the time each installment is due. Correspondence concerning a particular fellowship, scholarship, or award should be addressed as directed in each case.

Graduate Assistantships, Scholarships, and Fellowships

A number of graduate assistantships, scholarships, and fellowships are available to qualified graduate students for work in the various academic departments and some in the counseling program of the College. Students interested in any of these awards are invited to write to the Dean of the Division of Graduate Studies for information and application blanks.

Fellowships and Scholarships

The stipends of all fellowships and scholarships are paid one-half during the fall semester and one-half during the spring semester unless other method of payment is specified. After the registration period has officially closed, fellowships and scholarships which are unassigned because the awardee has not enrolled or has resigned will be regarded as open and may be reassigned.

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 this scholarship should be addressed to the Registrar.

The Barton Foundation Scholarship. Col. T. H. Barton, Chairman of the Board of the Lion Oil Company, has made available a limited fund for scholarships for the payment of tuition of undergraduates above the freshman level in the Division of Arts and Sciences. The

scholarships will be awarded on the basis of financial need, outstanding scholastic achievement, and citizenship. Applications should be made to the Dean of Arts and Sciences.

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.

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 any year whenever conditions are inappropriate. Correspondence concerning this scholarship should be addressed to the Dean of Agriculture.

The Borden Company Foundation Scholarship in Home Economics. The Borden Company Foundation, in a desire to stimulate and recognize scholastic achievement by undegraduate 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 scholarship. The scholarship 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 the senior year. This scholarship may be withheld any year whenever conditions are inappropriate, but in such case only one award shall be made in the succeeding year. Correspondence concerning this scholarship should be addressed to the Dean of Home Economics.

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

The Caprock Chapter (Lubbock) *of the National Secretaries Association Scholarship.* The sum of $50 will be awarded annually to the outstanding junior woman majoring in secretarial administration. Correspondence concerning this award should be addressed to the Head of the Department of Business Education and Secretarial Administration.

The Clayton Fund Scholarship. In order to stimulate and recognize outstanding attainment by West Texas undergraduate students in cotton production, the Clayton Fund will award annually a scholarship of $500 to an entering freshman who designates agronomy as his major. The scholarship will be continued in the amounts of $500 each for the sophomore, junior, and senior years of the same student, provided he maintains a satisfactory record. In order to qualify, the

applicant must provide evidence of a good background and experience in the growing of cotton, and he must be a resident of a West Texas county. (A list of the qualifying counties may be obtained by writing the Dean of Agriculture.) This scholarship is awarded only upon written application which must be made to the Dean of Agriculture before Aug. 1, prior to the freshman year.

C. N. Hilton Scholarships. Mr. C. N. Hilton, President of Hilton Hotels, Inc., has made available to the students in business administration four scholarships of $100 each, to be awarded annually to the applicant in that division who made the highest scholastic average for the two previous long semesters in the freshman, sophomore, junior, and senior years. A recipient of the Hilton Scholarship shall not be eligible for any other similar award. These scholarships are awarded upon application only, but in no case will an award be made to an applicant with less than a 2.00 grade average. Application should be made to the Dean of Business Administration.

D. D. Harrington Freshman Engineering Scholarships. Mr. D. D. Harrington, President of the Panoma Corporation of Amarillo, Texas, has established scholarships in the amount of $1,500. The scholarships are valued from $500 to $750 each. These scholarships are available to outstanding high school graduates who desire to study engineering at Texas Technological College. They are awarded on the basis of scholastic records, character, and financial need. Applications should be addressed to the Dean of Engineering.

Dallas Textile Club Scholarship in Textile Engineering. The Dallas Textile Club has established a scholarship in the amount of $150 for students majoring in textile engineering. The award is made in installments of $75 at the beginning of each semester. The scholarship is available to entering freshmen as well as other textile engineering students. It is contemplated that the scholarship will be renewed each year provided the recipient maintains satisfactory academic progress. Applications should be addressed to the Dean of Engineering.

District 2 4-H Girls Scholarship. The Home Demonstration Club women of District 2 and other interested individuals and firms, in cooperation with the Extension Service of the Agricultural and Mechanical College of Texas, award an annual scholarship in the amount of $500 to a worthy 4-H girl residing in Extension District 2 who is ready for college, and who will study home economics or related subjects.

Dunlap Scholarships. The Dunlap Stores, Lubbock, Texas, contribute annually a sum of money to be used for scholarships for one high-ranking high school graduate who qualifies from each of the high schools in Lubbock, Crosby, Floyd, Hale, Lamb, Hockley, Terry, Lynn, and Garza counties. These scholarships are for $150, to be paid $75 shortly after mid-semester each of the regular semesters. Full information on these scholarships can be obtained from the Dean of Student Life.

Gifford-Hill-Western Incorporated Graduate Fellowship. This fellowship is provided annually to encourage research in water conservation under irrigation in West Texas. Applications should be addressed to either the Head of the Department of Agronomy or the Head of the Department of Agricultural Engineering.

Goldthwaite Tex Toro Company Horticulture and Park Management Scholarship. The Goldthwaite Tex Toro Company of Fort Worth, Texas, has established a $1,200 scholarship for an outstanding graduate, senior, or junior student majoring in horticulture and park management. The recipient must have not less than 1.50 grade average, and shall be ineligible during the same academic year for any other major scholarship administered by the College. The scholarship is awarded upon application, and is paid in monthly installments. Applications should be made to the Head of the Department of Horticulture and Park Management.

Mr. and Mrs. Hiram Parks Scholarships. Through the generosity of Mr. and Mrs. Hiram Parks of Lubbock, Texas, four scholarships of $500 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.

The Hughes Tool Company Scholarship. This scholarship has been established by the Hughes Tool Company for the purpose of fostering interest and ability in the design field of mechanical engineering as applied to product and production engineering. The recipient will be selected on the basis of the above mentioned purpose as well as on the basis of ability to work well and dependably with others and to accept responsibility. The scholarship is valued at $500 for the year, and is payable at the rate of $250 at the beginning of each semester. The recipient is expected to maintain satisfactory progress during the fall semester to be eligible for continuation of the scholarship during the spring semester. The scholarship is open to qualified mechanical engineering students who are beginning their last two full semesters of work or equivalent thereof toward the Bachelor of Science Degree.

J. S. Bridwell Scholarship. Mr. J. S. Bridwell of Wichita Falls has made available an annual scholarship of $400 for a senior student majoring in animal husbandry who is in need of financial assistance and who is planning to engage in practical cattle production. The recipient must have not less than 1.50 grade average, and shall be ineligible during the same academic year for any other major scholarship administered by the College. Applications should be addressed to the Dean of Agriculture.

Kuykendall Foundation Scholarships. The Kuykendall Foundation of Lubbock, Texas, has established an annual scholarship fund of $2,000 from which 8 to 12 scholarships shall be awarded. These scholarships are for freshman students of the South Plains territory and will be awarded on the basis of scholarship, citizenship, and character, with consideration given to need. Applications for these scholarships should be made to the Dean of Student Life.

The LaVerne Noyes Scholarships. The LaVerne Noyes Foundation has approved Texas Technological College as a participant in the funds of a foundation created by the late LaVerne Noyes of Chicago. The income allotted to the College is used for payment of tuition of

veterans of World War I, or the blood descendants of such veterans, provided need of assistance can be established and provided enlistment occurred prior to May 11, 1918, or, if later, led to service overseas prior to Nov. 11, 1918. Only a limited number of scholarships are available. They are open to entering freshmen who graduated in the first quartile of their high school class, and to other students who have a grade-point average of at least 1.50. Scholarships, once awarded, are good for the normal remaining time required for the awardee to complete his degree curriculum, provided funds are available and the holder of the scholarship maintains a satisfactory scholarship and citizenship record and needs financial assistance; but they must be renewed by application each semester. Applications should be addressed to the Assistant Dean of Arts and Sciences.

Lubbock Bar Auxiliary Scholarship. An annual scholarship of $80 is available to a junior or senior woman majoring in pre-law. The applicant must have completed a minimum of 30 semester hours in residence and have at least a 2.00 grade average. If no woman student qualifies, the scholarship may be awarded to a male student majoring in pre-law. Applications should be made to the Head of the Department of Government.

The Lubbock Chapter of Alpha Lambda Delta has made available an annual scholarship of $100 for a sophomore woman student. The recipient must have a minimum grade-point average of 2.50, and must maintain at least a 2.00 average for the fall semester. Participation and leadership in campus organizations and activities shall be an important consideration in awarding the scholarship. Applications should be made to the faculty sponsor of the Texas Technological College Chapter of Alpha Lambda Delta.

Lubbock-Crosby County Medical Society Premedical Scholarships. The Lubbock-Crosby County Medical Society has made available two annual scholarships of $200 each to outstanding premedical students, one for a junior and one for a senior. The scholarships are awarded only upon application, and the recipient must have not less than a 2.00 grade average and must show need of financial assistance. The award may be withheld whenever conditions seem inappropriate. Applications should be made to the faculty premedical advisor.

Lubbock Panhellenic Society Scholarship. Approximately $75 will be awarded to the student in the Division of Home Economics making the highest grades in all her work for the year. The scholarship will be given at the beginning of her sophomore year, providing she continues to major in home economics. Correspondence concerning this scholarship should be addressed to the Dean of Home Economics.

Magnolia Petroleum Company Scholarship in Electrical Engineering. The Magnolia Petroleum Company has established a scholarship for students majoring in electrical engineering with preference being given to senior students. The scholarship is granted on the basis of scholastic ability, financial need, and character. The recipient of the scholarship is subject to final approval by Magnolia Petroleum Company. The scholarship becomes effective at the beginning of the 1953 fall semester and the stipend is $750 for the long session. It is payable in six installments of $80 each and two installments of $135 each. The recipient is expected to maintain satisfactory progress

during the fall semester; otherwise, the scholarship will be withdrawn for the spring semester.

The Mary W. Doak Scholarship. The Alpha Sigma Chapter of Delta Kappa Gamma has established the Mary W. Doak Scholarship to help in the recruitment of promising young women for the teaching profession. The scholarship covers tuition and other entrance fees to the amount of $40 each semester for one year and is to be awarded to a sophomore or junior who has been in residence at Texas Technological College for at least one year. Applications should be addressed to the Chairman of the Scholarships and Awards Committee.

Music Scholarships. The following organizations have made available small funds to be used as scholarships for deserving students who desire to study music: The Allegro Music Club of Lubbock, The Lubbock Music Club, The Lubbock Symphony Association, and The Society for the Preservation and Encouragement of Barber-Shop Quartet Singing in America. For further information, inquire of the Head of the Department of Music.

National Farm Life Insurance Company Scholarships. Scholarships for $150 from the proceeds from the sale of the student directory are available to freshman students enrolling in the College, and will be awarded on the basis of scholarship, citizenship, and character, need being given consideration. Applications for these scholarships should be directed to the Dean of Student Life.

Phillips Petroleum Graduate Fellowship in Agronomy. This fellowship is provided to encourage research in the field of soil fertility, especially with nitrogen fertilizers. Applications should be addressed to the Head of the Department of Agronomy.

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 industry who completes a minimum of 17 semester hours in the fall semester with the highest scholastic average; (2) the sophomore student majoring in animal husbandry or dairy industry having the highest scholastic average; (3) the junior student majoring in animal husbandry with a dairy husbandry option having the highest scholastic average; (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.

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, former 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.

Sears-Roebuck Foundation Scholarship in Agriculture. Sears-Roebuck Foundation has approved at Texas Technological College 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. 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.

Sears-Roebuck Foundation Scholarships in Home Economics. Sears-Roebuck Foundation has approved Texas Technological College to receive certain scholarships for the benefit of students in the Division of Home Economics. 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 Dean of Home Economics.

Scholarships for Qualified Citizens of Latin-American Countries and Possessions of the United States. The Board of Directors of the College has made available scholarships not to exceed five in either semester or term for qualified citizens of Latin-American countries and possessions of the United States, each scholarship providing funds not to exceed $125 per semester of the long session and $35 per six-week term of the summer session. These scholarships may be used for tuition only. To be eligible for Latin-American-United States Possessions Scholarships, a student must be a graduate of a secondary school equivalent to the high school in the United States; be able to speak, read, and write English well enough to permit successful pursuit of regular college courses (in case of doubt, the student being required to pass oral and written examinations prescribed by the Latin-American-U. S. Possessions Scholarships Committee); 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; and make a C average on a minimum course load of 12 semester hours during each semester thereafter, to receive the scholarship in the semester immediately following. In awarding these scholarships the committee considers the financial need of the student and the quality of his grades. Application should be initiated by the student and should be made to the Assistant Dean of Student Life.

Socony-Vacuum Scholarship in Engineering. The Socony-Vacuum Oil Company has established a scholarship in the amount of $750 for the 1954-55 academic year. The scholarship will be given in the general fields of engineering of the petroleum production industry with preference being given to students majoring in petroleum, mechanical, civil, and chemical engineering. The recipient of the scholarship must be an undergraduate who expects to graduate in May or August. The award will be made on the basis of merit, interest in the petroleum industry, and career potentialities. Applications should be made to the Dean of Engineering.

Sophomore Scholarships. Several scholarships are available to sophomore students who have completed the freshmen year at Texas Technological College, with credit for 30 semester hours or more, with a minimum grade-point average of 2.00, and who have evidenced a high quality of citizenship. The funds for these scholarships, the amount of which ranges from $100 to $250 each, are made available from the funds diverted from the Student Emergency Loan Fund.

One-half of the scholarship will be paid each of the regular semesters at midsemester. Applications for sophomore scholarship shall be initiated by the student and shall be made to the Dean of Student Life.

The Southwestern Public Service Company Scholarship in Electrical Engineering. The Southwestern Public Service Company has established a scholarship valued at $750 for students majoring in the field of electrical engineering. The scholarship is open to junior, senior, and graduate students, and is granted on the basis of scholastic ability, character, and financial need. The scholarship is granted on a yearly basis and previous recipients are eligible to reapply for the scholarship in succeeding years, but renewal is not automatic as all applicants will be considered each year. The recipient shall be ineligible during the same year for any other major scholarship administered by the College. The stipend is payable in six installments of $80 each and installments of $135 on Oct. 1 and Feb. 1. Applications should be addressed to the Dean of Engineering.

The Southwestern Public Service Company Scholarship in Mechanical Engineering. The Southwestern Public Service Company has established a scholarship valued at $750 for students majoring in mechanical engineering. The scholarship is open to junior and senior students, and is granted on the basis of scholastic ability, character, and financial need. The scholarship is granted on a yearly basis and previous recipients are eligible to reapply for the scholarship in succeeding years, but renewal is not automatic as all applicants will be considered each year. The recipient shall be ineligible during the same year for any other major scholarship administered by the College. The stipend is payable in six installments of $80 each and installments of $135 on Oct. 1 and Feb. 1. Applications should be addressed to the Dean of Engineering.

Standard Oil Company Scholarships in Geology. The Standard Oil Company of Texas has made available for 1954-55 two scholarships in the amount of $500 each for senior geology majors at Texas Technological College. The scholarships will be awarded on the basis of outstanding scholastic achievement, interest in extra-curricular activities, and citizenship. Applications should be addressed to the Dean of Arts and Sciences.

Standard Oil Company of Texas Scholarships in Engineering. The Standard Oil Company of Texas has made available a scholarship in the amount of $500 for a senior engineering student at Texas Technological College. The scholarship will be awarded on the basis of outstanding scholastic achievement, interest in extra-curricular activities, and citizenship. Applications should be addressed to the Dean of Engineering.

Speech Scholarships. Local citizens and organizations have made available a small fund to be used as scholarships of $100 each annually for outstanding students who desire to study speech. Most of the scholarships derived from this fund will be awarded to entering freshmen on the basis of academic record, quality of participation in high school speech, school citizenship activities, and financial need. One or more may be awarded each year when sufficient funds are available to students above the freshman year, on the basis of academic achievement and quality of participation in the speech program. Applications should be addressed to the Head of the Department of Speech.

Texas Society for Crippled Children Scholarships. The Texas Society for Crippled Children has made available a limited number of scholarships to apply on summer session tuition for students interested in special education for exceptional children. Applications should be addressed to the Head of the Department of Speech.

The Texas Cottonseed Crushers' Graduate Fellowship. This research fellowship was established in 1937, and when available is awarded to a graduate student majoring in animal husbandry. For 1953-54 it amounted to $1,200. Applications should be addressed to the Head of the Department of Animal Husbandry.

The Texas Electric Service Company Scholarship. The Texas Electric Service Company, with general offices at Fort Worth, Texas, has established a $750 annual scholarship. The scholarship is open to a graduate, senior, or junior student majoring in electrical engineering, and is awarded on the basis of scholastic record, character, and financial need. Applications should be addressed to the Dean of Engineering.

Texas Pacific Coal and Oil Company Scholarships. The Texas Pacific Coal and Oil Company has established two scholarships of $750 each annually for sons and daughters of its employes, its retired employes, or of persons who died while employed by the company. Preference will be given to applicants with the best scholastic records who are majoring in courses considered to be of value to the petroleum industry. Applicants who are entering freshmen must furnish certificates from their high school principal that they were in the upper quartile of the graduating classes. The scholarship shall be awarded for one college year only, but recipients who maintain a 2.00 or better grade average may apply for renewal. The stipend is payable in 10 installments of $75 each, distributed equally between the fall and spring semesters. Applications must be mailed by July 1 each year to the Dean of Arts and Sciences.

Texas Technological College Foreign Scholarships. The Board of Directors of the College has made available five $100 scholarships each semester for qualified students who are citizens of foreign countries. The applicant for one of these scholarships must have been enrolled in Texas Technological College a minimum of one semester, and must have established a grade-point average of 1.50, which he must maintain if the scholarship is continued for the second semester of the year in which it has been granted. These scholarships may be used for tuition only. In awarding these scholarships the committee on foreign students considers the financial need of the student and the quality of his grades. Applications for these scholarships must be initiated by the student and made each year. Applications should be made to the Assistant Dean of Student Life.

William L. Ellwood Fellowship. This fellowship consists of income from $10,000, established in 1943 by Mrs. F. H. Chappell, New London, Conn., and Mrs. Harriet E. Keeney, Somerville, 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.

Lubbock Real Estate Board Scholarship. The Lubbock Real Estate Board makes available the sum of $250 each year for a scholarship to be awarded to the junior student who is interested in and is taking courses affecting the Real Estate business. The recipient of this scholarship shall be a resident within Lubbock County and shall be a graduate of a high school in Lubbock County. The recipient is selected during the spring and the award is made at the Real Estate Board's annual banquet in June. Applications should be made to the Dean of the Division of Business Administration.

Awards

The following awards are offered annually:

The American Association of Teachers of German awards annually certificates of merit to the outstanding students enrolled in sophomore and advanced German.

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.

Avalanche-Journal Award. 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 award is given by the Avalanche-Journal Publishing Company, Lubbock, Texas.

The Dairy Industry 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 Industry Club to high ranking individuals in the annual collegiate dairy products judging contest which is held on the campus each year.

The Delta Sigma Pi Scholarship Key is awarded annually by the faculty to the senior male student who upon graduation ranks highest in scholarship for the entire course in business administration.

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

The French Embassy Award is given annually to the most outstanding student of first-year, of second-year and of third-year French.

The Home Economics Club Award. The Home Economics Club annually awards a $25 defense bond to a sophomore student, who, during her freshman year, showed outstanding qualities in leadership, scholastic standing, and interest in extra-curricular activities. This award is made providing the student continues to major in home economics.

The Local Chapter of the National Block and Bridle Club awards gold medals to the six members of the international livestock judging team, to the four members of the national dairy cattle judging team, and to the four members of the national meats 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.

Mary Overton Craig Prize in Chemistry is 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.

National Association of Cotton Manufactures awards annually a medal to the highest ranking senior student in textile engineering.

The National Block and Bridle Club awards a properly engraved plaque to the senior student who has contributed the greatest achieve-

ment to the local chapter of the Block and Bridle Club. The club also awards gold and silver medals to the junior students who rank first and second in the junior livestock judging contests, held annually at the College, and a gold medal to the winner in the Block and Bridle "Little International" livestock show.

Phi Psi Certificate is awarded annually by the Phi Psi National Honorary Textile Fraternity to the outstanding graduating textile engineering student.

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

The Reed and Hefner Scholarship Plaque is awarded each semester to the pledge of Beta Upsilon Chapter of the International Fraternity of Delta Sigma Pi having the highest scholastic standing during the semester of pledgeship.

The Fred W. Standefer Trophy is awarded 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.

Foreign Students (Mrs. Harry Morris) Loan Fund. This loan fund is available to foreign students enrolled in the College. It is primarily designed to meet financial emergencies of foreign students who have been enrolled in Texas Technological College. Applications for foreign student loans should be made in person to the Assistant Dean of Student Life.

The Kathryn Sowder Whatley Loan Fund was established by request of the late Mrs. Eppie Sowder of Lubbock. The fund was established for deserving boys and girls who wish to attend Texas Technological College. Applications should be made to the Assistant Dean of Student Life.

Rotary Student Loan Fund. This loan fund, established by the Lubbock Rotary Club, is available to upperclassmen, primarily of late junior and senior classification. Applications for Rotary student loans should be made to the Dean of Student Life.

Student Emergency Loan Fund. This loan fund is available to any student in the College who has need of a short-time, small loan. This loan fund is made possible through the proceeds from the sale of freshman caps. Application for a Student Emergency Loan should be made to the Assistant Dean of Student Life.

Dr. R. J. Hall Loan Fund was established by bequest of the late Dr. R. J. Hall of Lubbock. The fund is available to upperclassmen only. Applications should be made to the Assistant Dean of Student Life.

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. The fund is available to upperclassmen only. Applications should be made to the Assistant Dean of Student Life.

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. The fund is available to upperclassmen only. Application should be made to the Assistant Dean of Student Life.

Twentieth Century Club Loan Fund. Loans are made either to men or to women with preference being given to upperclassmen. Applications should be made to the Assistant Dean of Student Life.

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.

Engineering Society Loan Fund. The Engineering Society maintains a loan fund which is available to engineering students who have completed at least 50 per cent of the required work toward graduation. Approximately two weeks are required to process a loan. Application should be made to Prof. C. C. Perryman.

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. This fund is administered by the Quarterly Club and is available to graduate women only. Application 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.

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

VOCATIONAL REHABILITATION AID

The Texas Education Agency through the Vocational Rehabilitation Program 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 Texas Education Agency. The local office is located in the old 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.

STUDENT LIFE

JAMES G. ALLEN, *Dean of Student Life*
LEWIS N. JONES, *Dean of Men*
MARJORIE M. NEELY, *Dean of Women*
JAMES B. WHITEHEAD, *Assistant Dean of Student Life*
AMIL D. ANDERSON, *Assistant Director of Student Union*
FRANCES FREESE, *Assistant Dean of Women*
WILLIAM R. GEISERT, *Assistant Dean of Men and Senior Supervisor, Men's Dormitories*
WILLIAM D. SCOTT, *Director of Student Union, and Assistant to the Dean of Student Life*

The office of the Dean of Student Life is concerned with the general welfare of the student. The staff of the Dean of Student Life exerts its efforts toward seeing that every phase of the college experience represents an opportunity for the growth of the student; it bases its program on the premise that all of college life, both in and out of class, represents a real and significant part of educational development.

The office of the Dean of Student Life affords counseling and guidance service to all students enrolled in the College. Through conferences, staff members are in a position to refer the student to the many service agencies available to him on the campus and interested in his welfare. In addition to giving counsel and guidance on personal, social, and individual problems, the staff is prepared through training and experience, to bring the student to full understanding of himself as a part of the rich and full opportunity which is a college education.

The philosophy of the staff of the Dean of Student Life is built upon the fundamental idea of giving the student the greatest opportunity for growth as he makes the many important decisions that are a part of college life. Through its program the staff of the Dean of Student Life seeks to provide the student with the maximum opportunity for the development of his full social, intellectual, moral, and spiritual potentialities.

It is the philosophy of the staff of the Dean of Student Life that their purpose is to assist the student in meeting his problems in an intelligent and constructive way, and in such a manner as to give him the greatest opportunity of individual growth and development in

reaching his own solutions. Through this program the staff of the Dean of Student Life seeks to make possible the student's maximum opportunity for academic achievement.

The dormitory supervisory system is supervised by a staff of trained and experienced personnel. The supervisors in the men's dormitories, and the counselors and graduate assistants in the women's dormitories are selected on the basis of their professional training and special qualifications in the field of counseling and guidance. The dormitory program encourages the full development of the student as an individual and as a member of the group.

Each of the dormitories, both men and women, has its own student government which sets the pattern of living and sponsors a program of cultural, social, and recreational events. Texas Technological College is dedicated to the precept that democracy is the most productive group relationship and recognizes that all people have the obligation and should have the opportunity to learn democratic human relation skills.

Student Activities

The program of student activities at Texas Technological College is sufficiently large and well-rounded to present an opportunity for the constructive expression and development of all types of student interests and abilities. The College believes that a carefully selected and balanced program of activities not only will stimulate the student to his best achievement academically but will so develop and direct his abilities and interests as to make his experience both in college and after graduation happier and more successful.

The activities program is patterned in a manner which encourages democratic processes and develops leadership and citizenship. Through student leadership these activities are geared to the best development of the individual student both as a leader and as a member of a group functioning together democratically.

Eligibility for Participation in Extra-Curricular Activities

The basis of student participation in each extra-curricular activity is set forth in the constitution under which that activity is recognized by the College or in a procedure approved by the College.

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 completed at Texas Technological College and that of the preceding semester on the complete scholastic load.* A student whose average during his last preceding semester in residence before a summer session is less than 1.00, may establish eligibility for the following fall semester by attending one or both terms of the

* 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, Incomplete and F and including repeatedly each re-registration in the same course with a grade of F in the total. A transfer student may establish eligibility by having a C (1.00) average on all courses at the midsemester of his first semester in residence.

summer session and making grades as will bring his average for the preceding semester and the summer term or terms together to 1.00.

A student who has established this eligibility may represent the student body or any recognized organization, department or activity in the College, or may hold an elective or appointive position or office. This eligibility must be satisfied by a student who serves as a College or class officer or representative, or as an officer or representative of a recognized club or organization, or as a member of an academic, departmental or intramural athletic squad or committee.

To be eligible to participate in out-of-town trips or field trips which require absence from any other class than that for which the trip is assigned, a student must have the grade-point average of 1.00 as outlined above, must not be on either scholastic or disciplinary probation, and must have a current academic standing which is satisfactory to his academic dean.

Eligibility for Intercollegiate Athletics

An undergraduate student not on scholarship or disciplinary probation may compete in intercollegiate athletics if he is regularly enrolled, and if he satisfies conference eligibility requirements. Participation in intercollegiate athletics is governed by the athletic conference rules followed by the College and administered by the Athletic Council. No student may 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.

Student Association

All undergraduate students enrolled in the College are automatically members of the Student Association of Texas Technological College. The Student Council is the executive council of the Student Association.

Through the funds it receives from the student activities fee the Student Council supports worthy student enterprises and organizations. It also plans, publicizes, and supervises student elections.

The Student Council sponsors, directs, and supervises deserving student activities in the administration of student affairs. It appoints from its membership representatives on the Artists Course Committee, the Athletic Committee, the Executive Committee of the Board of Student Organizations, the Campus Planning Committee, the Discipline Committee, the Student Welfare Committee, the Student Publications Committee, the Student Union Board, the Committee on Student Organizations, and the Student Traffic Court.

Association of Women Students

Every regularly enrolled woman student is an active member of the Association of Women Students. AWS acts as the coordinating body for all women's clubs on campus, and serves as a central agency in fostering student participation in government within the dormitory system.

Besides many services rendered as the occasion requires, they carry out definite projects for the general welfare of women students.

Board of Student Organizations

The Board of Student Organizations is composed of the presidents of all recognized student organizations on Texas Tech campus. The function of this organization is four-fold: it furthers the welfare of student organizations on Texas Tech campus and encourages and inspires the highest levels of student organization functioning and achievement; it coordinates in making effectual in a practical way all things important to student organizations and the student body of Texas Technological College; it serves as a medium of communications between the administration and the students in recognized College organizations, between the Student Council and members in recognized College organizations, and between the students in recognized organizations and the Student Council; and it trains, encourages, and inspires student leadership in recognized College organizations, as a service to the student body and administration.

The Executive Committee of the Board of Student Organizations is made up of six members elected by the board, and the president of the Student Association and one member of the Student Council. One of the six members from the Board of Student Organizations is elected chairman by the committee. The secretary also is elected by the committee from these six representatives, and serves as the secretary of the Board of Student Organizations.

The function of the Executive Committee of the Board of Student Organizations is to set policies, plan the monthly meetings of the board and determine the agenda for each meeting, and in general direct the business of the organization.

Student Union

Student Union is designed to give the student of the College facilities for recreation and leisure. In addition, a well-balanced program of group activities is planned for the year. The Student Union program includes dances, both ballroom and old-fashioned, movies, receptions, and special entertainment. In a program designed to develop social skills, its calendar for the year will include a number of such activities to be determined by the student committees in charge.

To assist the director of the Student Union and his staff, the following student committees are fundamental in the projection of the program: Committee on Decorations, Committee on Publicity, Committee on Movies, Committee on Hospitality, Committee on Special Events, Committee on Music and Fine Arts, Committee on Dances, Committee on Games and Tournaments. These student committees have the responsibility of shaping the Union-sponsored program to fill the needs of the student body for wholesome recreation.

Intramural Sports Program

Under the supervision of the director of intramural sports, the Department of Health and Physical Education and Recreation offers an intramural program with attractive opportunities for participation in recreative physical activities. Participation is voluntary and open to all students enrolled in the College. The objective of this program is to make available to every student a sport he enjoys, a team on which to play, and fair and even competition.

Publications

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

Musical Organizations

All musical organizations are open to any student officially enrolled in the College who meets academic requirements. Each organization is under the direction of a faculty member of the Department of Music.

The official touring musical organizations for the College are the Choir, the Madrigal Singers, and the Concert Band. Other musical groups include the Festival Chorus, the "B" Band, and the Lubbock Symphony Orchestra. Most of these ensembles allow 1 semester-hour credit per semester. Each group performs a broad repertoire and makes a number of public performances annually.

Forensic and Dramatic Activities

Opportunities are open to all students in the College, meeting general eligibility requirements, for participation in both intramural and intercollegiate forensic activities. These include group discussions, debate, extempore speaking, impromptu speaking, oratory, radio speaking, after-dinner speaking, and similar events. Both contest and non-contest events are held on campus and at other colleges. The *Tech Forensic Union* is active in sponsoring these events.

Every College student meeting general eligibility requirements is invited to participate in the plays presented by the Speech Department and its related organizations, *Sock and Buskin* and *Alpha Psi Omega.* Participation may include acting, stage make-up, lighting, scene design and construction, publicity, ticket sales, and other necessary activities in the production of plays.* Usually three major plays and several one-act plays are produced each season.

Artists Course

The Artists Course Committee, made up of students and faculty, brings to the College each year a number of quality artist programs. During the academic year 1953-54 Jerome Hines, Agnes deMille Dance Theatre, Rise Stevens, Dallas Symphony Orchestra, Euzkadi, and Alfred and Herbert Teltschik were presented to the student body. The student activity fee entitles the student to attend Artists Course numbers.

Religious Emphasis Week

During the fall semester one week is designated as Religious Emphasis Week, during which period the Student Religious Council, made up of representatives of the recognized student religious organizations on the campus, directs a campus-wide religious program. For the fall semester 1954, Nov. 15-18 have been designated as Religious Emphasis Week.

* In a parallel way, Tech Forensics Union and Delta Sigma Rho forward campus-wide speech activities.

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 a week in which the Student Religious Council regularly sponsors a program of student-directed panel discussions on topics suggested by the Willson lecturer.

Varsity Show

Each spring the Student Council sponsors a musical review, known as *The Varsity Show.* This production is student-written, directed, and produced. Although this show draws heavily upon the trained and experienced student talent on the campus, especially that in the Speech and Music Departments, any student who is particularly interested in this project will find an opportunity to participate in some capacity.

Engineers' Show — Home Economics Open House

Each spring the Engineering Society sponsors a two-day showing of engineering exhibits to the public. Annually some 10,000 visitors see this student-planned and produced display of engineering talent.

On the same week end the Home Economics Club holds Open House for all visitors to the campus. Demonstrations in all fields of home economics are on display on this occasion.

All-Western Days

Each spring the Block and Bridle Club and the Texas Tech Rodeo Association sponsor All-Western Days. On this week end, both student body and faculty are invited to dress "Western." The proceeds from the rodeo performances, student-produced in Jones Stadium and open to the public, support a scholarship in the Department of Animal Husbandry and subsidize the activities of the Texas Tech Rodeo Association.

Recognition Service

Recognition Service each spring honors those students who rank scholastically in the upper 3% of their class within their division during either of the preceding two regular semesters and have a 2.25 or better average in the other semester. Students being recognized for the first time receive Individual Honors; those recognized for the second time receive Class Honors; those recognized for the third time receive Divisional Honors; and those recognized for the fourth time receive College Honors. Students recognized with College Honors are presented a gold key by the College.

Student organizations two-thirds of whose membership make a 2.00 or better average during these semesters are also honored on this occasion. Athletic letters and other athletic awards are presented by the Athletic Council at this service. Undergraduate students granted scholarships by the College are recognized on the basis of having made an all-College average of 2.00 or better for the spring and fall period.

As a part of the Recognition Service the Student Council honors those students who have made significant contributions in leadership to the student body.

Clubs and Societies

Recognition of student clubs and societies and the plan under which they function is the assignment of the Student Organizations Committee, a student-faculty committee appointed by the President of the College. Recognition of a student organization automatically gives it the right and responsibility to schedule on the Social and Activities Calendar, and entitles it to the sponsorship of College faculty and administration, and to the use of such College facilities as may be designated for that purpose. The recognition of a club or society on Texas Technological College campus is based on the assumption of the Committee on Student Organizations that such an organization satisfies a student need for professional, scholastic, social, religious, service, or common-interest expression consistent with the best college achievement.

Professional, scholastic, and honorary organizations are responsible also to the dean of the division with which (by virtue of their nature) they are associated.

The Board of Student Organizations, composed of the presidents of all recognized clubs, serves as a coordinating agent for student organizations recognized by the College, the chairman of the executive committee of the Board serving as a member of the Committee on Student Organizations. The Men's Inter-Fraternity Council and the Panhellenic Council serve as governing boards for the two groups of social clubs. The Student Religious Council serves to coordinate the activities of those student religious groups who are active on the campus and who elect to participate in campuswide student religious activities.

Detailed information on the procedure by which a student group may be recognized by the College is available through the chairman of the Committee on Student Organizations.

The Code of Student Affairs is a bulletin stating the college policies on procedures and regulations as they affect both individual students and recognized student organizations.

I. *Honorary Organizations*: An honorary organization is an organization, local or national in scope, whose membership is based upon scholarship. Character and leadership may also be necessary requisites. The measure of scholarship shall be no less than 1.50 grade-point average in all subjects taken and no less than 2.00 grade-point average in the major field or in the field in which the honor society is established. Recognized national chapters of organizations on Texas Tech campus will select members on percentage basis set by national constitution, and local organizations may petition the Committee on Student Organizations for the use of the percentage basis for selection of membership.

Alpha Chi (Junior and Senior)
Alpha Lambda Delta (Freshman Women)
Alpha Phi Mu (Industrial Engineering)
Alpha Zeta (Agriculture)
Forum (Service—Senior Women)
Junior Council (Service—Junior Women)
Kappa Mu Epsilon (Mathematics)
Phi Eta Sigma (Freshman Men)
Phi Upsilon Omicron (Home Economics)
Pi Epsilon Tau (Petroleum Engineering)
Tau Beta Pi (Engineering)
Pi Omega Pi (Business Education)
Pi Sigma Alpha (Government)
Sigma Delta Pi (Spanish)
Sigma Gamma Epsilon (Geology)
Sigma Tau Delta (English)
Theta Sigma Phi (Women's Journalism)

II. *Department, Division, and/or Professional Organizations*: Departmental and divisional clubs are defined as those clubs which are sponsored by a department or division and are means of disseminating information concerning fields of activity to be found in the department or division. They may or may not have professional standards which are requirements for membership. The constitution of a departmental, divisional or professional club will determine the basis of membership.

Agricultural Club
Agricultural Economics Club
Alpha Epsilon Delta (Pre-Medicine)
Alpha Psi Omega (Dramatics)
American Chemical Society (Student Branch)
American Institute of Architects (Student Branch)
American Institute of Chemical Engineers (Student Branch)
American Institute of Electrical Engineers (Student Branch)
American Institute of Industrial Engineers (Student Branch)
American Institute of Mining and Metallurgical Engineers (Student Branch)
American Institute of Physics (Student Branch)
American Military Engineers
American Society of Civil Engineers (Student Branch)
American Society of Mechanical Engineers (Student Branch)
Army Signal Association
Arnold Society of Air Cadets (Air Force R.O.T.C.)
Block and Bridle (Agriculture)
Business Education Club
Capa y Espada (Spanish)
Dairy Industry Club
Delta Sigma Pi (Business Administration)
Department of Music Student Executive Council
Der Liederkranz (German)
Engineering Society
Future Farmers of America
Future Teachers of America
Gargoyle Club (Architecture)
Home Economics Club
Infantry Club
International Relations Club
Kappa Alpha Mu (Photography)
Kappa Kappa Psi (Band)
Kappa Phi Kappa (Men's Education)
Le Cercle Francais (French)
Major-Minor Club (Women's Physical Education)
Mu Phi Epsilon (National Women's Professional Fraternity)
Phi Gamma Nu (Business Administration Women)
Phi Psi (Textile Engineering)
Plant Industry Club
Pre-Med Society
Psychology Club
Sam Houston Rifles
Scabbard and Blade
Sigma Iota Epsilon (Business Administration—Management)
Sock and Buskin (Dramatics)
Tau Beta Sigma (Women's Band)
Tech Accounting Society
Tech Biology Club
Tech Geology Club
Tech Institute of Finance
Tech Management Association
Tech Marketing Society
Tech Music Fraternity
Texas Tech Press Club
Texas Tech School Administrators' Club
Textile Engineering Society

III. *Mutual Interest*: A mutual-interest club is any organization whose members are brought together on the basis of common interest in an activity consistent with the objectives of a college education.

Alpha Chi Omega (Greek letter social sorority)
Alpha Phi Omega (Men's Service Organization)
Alpha Tau Omega (Greek letter social fraternity)
Baptist Student Union
Book Reviewers Club
Canterbury Club (Episcopal)

Circle Eight (Square Dance)
Cosmopolitan (Foreign Students)
Delta Delta Delta (Greek letter social sorority)
Delta Gamma (Greek letter social sorority)
Disciples Student Fellowship (Christian Church)
Dolphin Fraternity (Swimming Fraternity)
Double "T" Association (Athletic Lettermen)
Gamma Delta (Lutheran)
Kappa Alpha Theta (Greek letter social sorority)
Kappa Kappa Gamma (Greek letter social sorority)
Kappa Sigma (Greek letter social fraternity)
Kemas (Men's social club)
KTTC (College Radio Station)
Newman Club (Catholic)
Phi Delta Theta (Greek letter social fraternity)
Phi Kappa Psi (Greek letter social fraternity)
Pi Beta Phi (Greek letter social sorority)
Pi Kappa Alpha (Greek letter social fraternity)
Pre-Law Club
Saddle Tramps
Sigma Alpha Epsilon (Greek letter social fraternity)
Sigma Nu (Greek letter social fraternity)
Society of Techonomists (Economics)
Tech Forensics Union
Tech Veterans Association
Texas Tech 4-H Club
Texas Tech Radio Club
Texas Tech Rifle Club
Texas Tech Rodeo Association
Texas Tech Sociology Club
Town Girls' Club
Wesley Foundation (Methodist)
Westminster Student Fellowship (Presbyterian)
Women's Recreational Association
Zeta Tau Alpha (Greek letter social sorority)

IV. *Student Organization Coordinating Agencies*: Six agencies for the coordination of the activities of student organizations in the same classifications are recognized by the Committee on Student Organizations.

Association of Women Students
Board of Student Organizations
Inter-Dorm Senate
- Bledsoe Hall Association
- Doak Hall Association
- Gordon Hall Association
- Horn Hall Association
- Knapp Hall Association
- Sneed Hall Association
- West Hall Association

Men's Inter-Fraternity Council
Panhellenic Council
Student Religious Council

Hazing

The policy of Texas Technological College is clearly determined against hazing in all of its forms. The College will discipline all offenders and will carry out in its processes the spirit of the statutes governing this offense as set forth in Chapter 4-A of Title 15 of Vernon's Criminal Statutes of the State of Texas.

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 responsible for all matters pertaining to the student's academic work. The student is urged to confer regularly with 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 Regulations Effective September 1953

1. The primary regulation concerning absences is that students are expected to be regular and punctual in class attendance.
2. The process of education should provide practical and everyday opportunities for self-management. Responsibility for class attendance is one of the most important and regularly recurring of such opportunities.
3. Absence regulations are based upon the principle of reward for merit on one hand and definite accountability for deficiencies in class attendance and quality of work on the other.
4. Instructors will send absence notices to the dean of the student's division according to the following outline:

For a Student Whose Class Work is Satisfactory

a. When the number of **consecutive** absences in the course equals the equivalent of one week of classes, laboratories or other meetings. (In classes meeting only once per week the equivalent shall be two weeks instead of one.)

For a Student Whose Class Work is Not Satisfactory

a. When the total number of absences in the course, consecutive or otherwise, equals the equivalent of one week of classes, laboratories or other meetings. (In classes meeting only once per week the equivalent shall be two weeks instead of one.)

b. When the total number of absences accumulated becomes sufficient, in the opinion of the instructor, to jeopardize the student's standing in the course.

b. When the total number of absences in the course equals the equivalent of two weeks of classes, laboratories or other meetings. (In classes meeting only once per week the equivalent shall be four weeks instead of two.) Unless an explanation satisfactory to the instructor and the dean can be made by the student he will be dropped from the course with a grade of WF *withdrawal, failing.*

5. Being dropped from a course or courses may result in a load of less than 12 semester hours which would deprive the student of scholastic privileges or even result in his being dropped from the rolls of the College.
6. Absences are counted from the first day of class meeting. Late registration should therefore be avoided. Instructors will keep a daily record of all absences, including those due to illness and official extracurricular activities. Cumulative totals will be reported for each student at midsemester and at the end of the semester on the grade reports of the respective courses.
7. All students who are absent on official off-campus trips will secure a "Record of Eligibility for Out-of-Town Trip" card at the office of the academic dean. After being signed by the trip sponsor this card may be used by the student to show his instructor as evidence of the official nature of his absence and his eligibility to make up examinations, laboratory work, and written reports.
8. Since each student is responsible for all the work of a course, including that which he may have missed while absent, the use of the term "excused absence" is being discontinued. The term "explained absence" is more in keeping with the principles upon which the absence regulations are based. There are therefore no excused absences. Rather the student may and should *explain* his absence to his instructor in order that the instructor may determine whether the student will be permitted to make up examinations, laboratory work, and written reports.

Adding Courses and Changing Sections

After the completion of his registration a student may add a course or change from one section to another in the same course only with the approval of the dean of his division and the instructor (or head of the department concerned). Normally such adjustments are to be requested by the student within the first week of class during either semester of the long session or within a comparable period of class time during the summer session. The dean, however, may find it advisable to make such changes at a later date. This would apply particularly to changes

predicated upon the freshman progress reports. In any event these changes must be made by the student himself and do not become effective until all necessary steps have been taken. The student will secure the required forms for such changes from the office of the dean. Any possible change in fees will be determined by the Business Office.

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 WP is received; if after the first five weeks, the grade of WP or WF will be given as provided in the paragraph entitled **Grades.**

Dropping 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.

Classification of Students

For the purpose of determining eligibility for extracurricular activity and other similar purposes, a student is classified according to the following plan:

Freshman: A regularly enrolled student with all entrance requirements met, who has an insufficient number of hours, or grade points, or both, to be classified as a sophomore.

Sophomore: A regularly enrolled student who has completed not less than 30 semester hours, with 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.

Semester Hour

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 as equivalent to one classroom hour with its preparation.

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.

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.

A student who has part-time employment is required to supply his academic dean with information on his job at registration, so that an

adjustment may be worked out between his scholastic load and his employment. The student beginning part-time employment during the semester should file information on his job with his academic dean immediately. The working student should avail himself of the assistance of the academic dean in the determination of the relationship between his scholastic load and his work load.

Enrollment Without Credit

There are two ways of enrolling in courses without credit when permission is granted.

Visiting the Course as an Auditor. The first method, that of visiting the course as an auditor, 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, laboratory field work, or receiving credit for the course. This permission may not be granted in case the class is crowded, and is not granted to students enrolled in the Evening Program.

Any person desiring to audit a course should first secure the necessary letter of permission from the dean of the division in which the course is given. After he secures the dean's approval he will report to the Cashier's Office and pay a fee of $5 per course. This letter, properly stamped by the Cashier's Office, is the student's 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 the long session, and entitles them to register for residence courses for no grade and therefore for no credit. Such registrations are to be considered on the same basis as registrations in credit courses in making the student's schedule, both in payment of fees and in consideration of the amount of work to be carried. Class cards for such students shall be indicated by the Registrar as "no grade"; such registrations shall not be changed to carry grades after the designated date for adding or dropping a course. 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 grades used, with their interpretations, are A, *Excellent;* B, *Good;* C, *Fair;* D, *Inferior* but passing; Pr., *In Progress;* Inc., *Incomplete;* WP, *withdrawal* during the first five weeks irrespective of whether passing or failing and also 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 sheets and are filed with the Registrar. The Registrar reports all grades to the student's parents 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 in 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 In Progress

The grade, *In Progress* (Pr.), is used to indicate the continuance of a student's work (1) in a course which continues through more than one semester or summer term, including thesis and dissertation courses, and (2) in a course which by the nature of its offering precludes the giving of a grade at an assigned time, such as for the midsemester reports in specified courses.

The grade of *In Progress* means that the student's standing in the course is satisfactory and that the work will be completed at the end of a subsequent semester, summer term, or other grade-giving period.

This grade is not to be confused with or used in lieu of the grade of *Incomplete*. *In Progress* connotes a satisfactory rate of progression, both qualitatively and quantitatively, over that portion of the work to be completed in a given semester or term. *Incomplete* connotes inability, for approved reasons beyond the student's control, to complete all work at the time assigned for the conclusion of the course at the end of a semester or term.

Grade of Incomplete

The grade of *Incomplete* (Inc.) should be given by the instructor only when the student's work in the course has not been fully completed by the time assigned for the conclusion of the course at the end of the semester, or a summer term, for approved reasons beyond the student's control. The grade of Inc. must never be given in lieu of the grade F.

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 becomes 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 sheet 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 midsemester before graduation, any grade of Inc. then standing without action becomes F.

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

Grade of WP or WF

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 WP and his name and grade are to be entered on the final grade sheet.

A grade must be entered for all courses which are dropped. After the fifth week, the grade shall be WF or WP depending upon quality of work being done. After the tenth week, the grade shall be WF unless the drop has been initiated by the dean.

Grade of F

The grade of F is given when a student fails in a course. 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, the grade shall be WF.

Grade Points and Official Grades

In order to encourage students to do the best work of which they are capable, the College considers not only the number of semester hours taken by students but also the grades received in the various subjects and assigns a definite number of grade points for each grade. For the grade of A, the student receives 3 grade points for each semester hour; for the grade of B, 2 grade points for each semester hour; for the grade of C, 1 grade point for each semester hour. The grade of D is a passing grade but does not entitle the student to any grade points whatever. The grades of F, *failure, or* WF, *withdrawal failing,* reduce the grade-point average both for a given semester and the over-all grade-point average since all hours in which grades of F or WF have been made are included in the divisor in the calculation of grade-point averages. (see also pp. 62 and 81.)

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 as set forth under **Requirements for Graduation.** 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 semester hours in this College required for graduation is the required total in his curriculum less the transferred hours accepted in that curriculum. The usual grade-point requirement must be met on work taken in this College only.

Courses in which grades of F and WF have been received may be repeated by the student in residence courses at this College. Courses

in which the grade of D has been received may be repeated with permission of the academic dean provided that the repetition is made at the first opportunity after the grade of D was received. In the case of a repetition of a course the last grade recorded will be the official grade and will be counted, along with corresponding grade points, for meeting graduation requirements.

Physical Education Required

Physical education activity work is a required course for all freshmen and sophomores, both men and women, in addition to the minimum number of hours required in academic subjects for a degree. Four semesters of physical education constitute part of the requirements for all degrees unless one of the following conditions prevails:

1. When approved by the dean, band may be substituted for physical education.
2. Air Science and Military Science, the basic courses, may be taken in place of physical education by any qualified male student. Once entered upon, the satisfactory completion of these basic courses, two years, becomes a requirement for graduation, unless specifically excused by the Department of Air and Military Science and Tactics and the academic dean.
3. Veterans of the Armed Forces may receive credit for this required work on time spent in military service. See **Credit for Educational Achievements During Military Service.**
4. Students who have a doctor's recommendation for limited physical education must enroll in Physical Education 011 (men) or 2113 (women). Students may receive 4 semester hours' credit for these courses by repetition.
5. A student over 25 years of age may of his own volition prefer not to take physical education activity courses. In such cases 3 semester hours of academic work in physical education, preferably Physical Education 133, must be completed by the student.

Credit in physical education activity courses or substitutes therefor is accepted in transfer to the extent that it meets degree requirements, but grade points accumulated in such courses above a C average may not be applied to reduce a deficiency in grade points in other subjects.

SCHOLARSHIP REGULATIONS

Satisfactory Scholastic Progress

A student is considered to be making satisfactory scholastic progress when he is carrying an approved schedule, is not on probation, is failing no courses, and in both the present semester and in his over-all average to date has a grade-point average of 1.00, which is C.

Scholarship Probation

A. To Avoid Being Placed on Probation

To avoid being placed on probation a student registered for 9 or more semester hours must pass in at least 9 hours and make at least 3 grade points during a semester. If registered for less than 9 semester hours, he must pass in all of his courses and make at least 3 grade points. In event of withdrawal before the end of the semester, the number of semester hours carried with a passing grade will be the basis for determining whether the student is to be placed on probation. A student who fails to attain the above minimum levels shall be placed on scholarship probation not later than 20 days after the end of the semester in which the deficiency develops. He will then drop courses in excess of a total load of approximately 12 semester hours, and make any other adjustments expressed or implied in section B below. This 20-day period is necessary to provide for the proper correlation of all grade reports.

B. Probation Status Shall Mean That:

1. The student may not register for more than four courses, approximately 12 semester hours, except upon the approval 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 attend all classes for which he is registered without fail except when prevented by illness. See section on **Eligibility for Extracurricular Activities.**

3. Lack of interest in his studies as evidenced by unnecessary absences or by unsatisfactory grades 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, while on probation, transfer from one division to another only by mutual agreement of the deans concerned.

5. The probation status may not be removed during the semester. A student who withdraws from college, while on scholarship probation shall, upon returning, be under the same probationary status as at the beginning of the semester during which he withdrew, provided that at the time of withdrawal he is complying with the regulations under item numbered A, 1, of this section on **Scholarship Probation.** If his record at the time of withdrawal is below these requirements, he shall be subject to enforced academic withdrawal for failing to remove scholarship probation.

C. To Remove Probation

The requirements for removing probation in semester hours passed and grade points made are increased upward according to the length of time the student has been in college at Texas Technological College and elsewhere. The column at the left in the following table refers to the semester in which the student is attempting to clear his probation.

1. *During the long session*

If the Student Is in His:	*He Must Pass in 9 Hours and Make a Minimum of:*
2nd semester	3 grade points
3rd or 4th semester	6 grade points
5th or 6th semester	9 grade points
7th or following semester	12 grade points

2. *During a summer session*

For the purpose of calculating the number of semesters in college, a six-week term of the summer session is equivalent to one third of a semester.

3. *Combination of a semester and a summer session.*

A student who fails to remove probation during a long session may make a second attempt during the following summer session. Probation will be removed if the minimum number of hours passed during both the semester and the summer session is 17 and the number of grade points made equals the combined figures for the applicable semesters in the minimum grade-point column at the right of the above table.

Scholarship Regulations Applicable to the Summer Session

1. *Student on Probation*

A student may remove probation by attending during a full summer session and by passing a minimum of two thirds of the work he is permitted to take, and earning a minimum of two thirds of the required number of grade points set forth in the preceding table. Failure to remove probation will cause the student to be dropped under **Enforced Academic Withdrawal**. However, the failure of a single course during either term of the summer session will not cause him to be dropped.

2. *Students Who Have Never Been on Probation*

A student who has never been on probation, who registers for either or both terms of the summer session and takes such work as approved by the dean, is not subject to the penalties listed under **Scholarship Regulations**, except the summer version of the Six-Hour Rule, if he enrolls during a regular session semester before again seeking to register during a summer session.

Enforced Academic Withdrawal

A student shall be dropped for a period of one semester if his record places him in any one of the three categories listed below.

1. *Six-Hour Rule*—A student who fails to pass 6 semester hours of residence work in any semester or 4 semester hours in a 12-week summer session shall not be permitted to re-enter until after the lapse of one semester. Any student registered for less than 6 hours during a long session semester or 4 hours during an entire summer session must pass in all his work.

2. *Failing to Remove Scholarship Probation*
A student who is on scholarship probation during a given semester or complete summer session, and fails to remove it according to section C above, shall be dropped for a period of one or more semesters as determined by the regulations under **Readmission of Students Who Have Been Dropped.**

3. *Repeated Probationary Status*
If a student has been on probation and has removed it and again makes a record which places him on probation, he shall be dropped for one or more semesters as determined by the regulations under **Readmission of Students Who Have Been Dropped.**

Readmission of Students Who Have Been Dropped

A student dropped by any of the provisions under **Enforced Academic Withdrawal** above must remain out of the College according to the following schedule:

Dropped for the first time—One semester.
Dropped for the second time—Two semesters.

If a student is dropped during a semester, the fraction remaining shall not be included in either the one or two semesters here indicated.

A student desiring readmission after the lapse of the one or two semesters should consult his academic dean. If the dean approves, the applicant may then petition the President of the College for readmission.

A student who has been dropped for the third time is not eligible to request the permission of his dean to petition for readmission until after the lapse of three semesters. The dean shall then refer the request to the Council of Deans. If the Council approves, the student may then petition the President.

In order for a petition to receive attention in time to permit the student to register without delay, if granted, it should be brought or mailed to the Office of the President at least 10 days before the opening of a semester or summer session.

A student who petitions for reinstatement may be required to take such diagnostic tests at the Testing and Counseling Center as may be necessary to determine whether he is following the course of study for which he is best suited according to his abilities, aptitudes, and interests.

Freshman Progress Reports

All freshmen will receive a grade report at the end of the fourth week of classwork in each semester. An entering freshman who is not passing 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 midsemester 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.

Midsemester Reports

The Registrar's Office will mail to all students a midsemester 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 WP or WF, will be based on the student's standing on the last day of enrollment in each of the specific courses in which he is registered. 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 WP 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.

Transfer from one Division to Another

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 beginning 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 may be transferred to, or enrolled in, another division of the College only by mutual agreement of the deans concerned.

REQUIREMENTS FOR GRADUATION

Undergraduate Degrees

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

1. The minimum residence requirement is 30 semester hours which must apply toward the degree sought. Among these must be the final, advanced courses in the major and minor fields.

A student who has already met the minimum residence and work requirements must also complete the last 30 hours at this College, as stated above, but may complete a maximum of 6 semester hours of the last 30 hours by correspondence* provided such courses are normally offered by correspondence and provided further that these courses will not be the final courses in the major and minor fields.

2. A grade-point average of at least 1.00 is required on all courses completed at this College and is determined by dividing the total number of grade points by the total number of hours as covered by the official grades. In the case of interdivisional transfers neither hour nor grade points will be considered in those courses in which grades of F or WF were made provided they were made prior to the first interdivisional transfer. Such grades made subsequent to the first interdivisional transfer will be considered unless they have been removed by repetition of the course.

3. A candidate may not receive a degree prior to the semester following his application for the degree. This application should be completed not less than two semesters in advance of graduation.

4. 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.

5. The completion of all requirements of the course of study as outlined in the College catalog as determined by the faculty of the division offering the course must be certified to by the dean of that division. The curriculum requirements will be found in the appropriate divisions of the catalog 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, are 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.

6. 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.

7. Graduating seniors are required to complete Personnel Information Forms and present two 2" x 3" glossy photographic prints for filing with the Placement Office prior to receipt of degrees for the purpose

* 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 12 stating his intention to complete the correspondence courses and become a candidate for a degree. If the statement is not filed the student will not be considered a May candidate and his name will not appear on the May graduating list.

of completing the personnel files of the College. This requirement applies to all students whether seeking a position or not.

8 Graduating students will be charged a graduation fee of $5 for each degree granted. The graduation fee will be refunded to the student provided he cancels graduation intentions before the diploma has been printed and other details covering his graduation completed. If this cancellation is not made by the student in sufficient time, he will have to pay the graduation fee again when he next becomes a candidate for the degree.

9. Diplomas are awarded at the regular commencement in May 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 May commencement.

10. To receive a degree, a student must either attend commencement exercises or receive approval for graduating *in absentia.* Application for *in absentia* graduation must be filed in writing with the dean of the division within the time specified in the College calendar.

Graduation Under a Particular Catalog

A student registering in Texas Technological College for the first time may, except for the seven-year limitation described below, complete his work for the degree according to the requirements of the catalog of the year in which he entered Texas Technological College; or the catalog of the year at the end of which he graduates; or that of any intervening catalog with the approval of his dean. The earliest catalog applicable to an interdivisional transfer will be that of the year in which the student transfers to the division from which he receives his degree.

The catalog year shall be considered as beginning with the long session in September. Students entering for the first time in the summer session will be subject to the catalog for the long session immediately following.

Failure to complete the requirements for the degree within seven years after the date the student enters Texas Technological College will subject him to graduation under the regulations effective for the current graduating class.

Texas Technological College reserves the right to institute and make effective, after due notice, during the course of a student's work toward a degree, any new ruling which may be necessary for the general good of the College, and to substitute courses currently offered for those no longer offered.

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.

A formal notice will be sent to each student who is admitted to qualified candidacy only and to his parents by the dean of his division.

Graduate Degrees

For requirements for graduate degrees, see the **Graduate Bulletin.**

ALL-COLLEGE PROGRAMS

Realizing that each and all of the various departments and divisions of the College can contribute to the education of all students, programs of a more general nature are being developed which are not limited to the more specific departmental areas.

Teacher Education

The preparation of teachers is considered an all-college function by Texas Technological College. It is a cooperative program on the part of the several divisions of the College, with the greater number of cooperating departments being in the Division of Arts and Sciences. The basis of this is the belief that the preparation of teachers should be established upon a broad, general program and the required work in professional education. Various curricula may be followed but each leads to the bachelor's degree and to qualification as a teacher under existing laws and regulations.

Preparation for The Study of Law

In general the schools of law do not require specific courses for the completion of admission requirements, but rather these schools expect a student of intellectual maturity and one well grounded in the fundamentals of a liberal education. While many schools of law admit students who have completed only three years of pre-professional work, it is to be noted that a high percentage of those students admitted have their baccalaureate degrees. Hence the pre-legal student should constantly keep in mind the various requirements for the bachelors' degrees.

For the student who may be admitted after only three years of college work a combination is allowed which will permit the student to secure the bachelor's degree from this College upon graduation from a standard three-year college of law. To be eligible for this bachelor's degree the student must have completed a minimum of 96 semester hours of which at least the junior year must have been completed at this College. In addition, the work must have included all requirements for the bachelor's degree with the exception of the completion of the major requirements. Upon completion of these requirements and certification of graduation from the law school the student may petition for the baccalaureate degree from this College.

Counseling and guidance of pre-legal students is given by the Head of the Department of Government who is the official College adviser for pre-law students and through whom recommendations to the law schools should pass. Pre-legal students, regardless of their major field of interest, should consult with him in planning their programs of work.

Latin American Area Studies

This course of study is planned to give students a well-rounded liberal education in several interrelated fields and also basic training for various occupational opportunities in export-import houses,

manufacturing concerns, shipping companies, airway systems, banking institutions, goverment offices, or for journalism, teaching, translating or interpreting. The course of study also gives students excellent preparation for graduate work in area studies.

Students following this course of study will fulfill the standard requirements for the B.A. degree. They will take 18 hours in the following designated area courses: Anthropology 336-7, Archaeology of Mexico; Economics 339, Latin America and the United States; Government 3314, Latin American Governments; History 438, History of Texas: the Colonial Period; History 4323, Spanish Colonial America; History 4324, History of Mexico Since Independence; Sociology 336, Social Life and Culture of Mexico; Economics 3315, Economic Geography of Latin America.

In Spanish, students will complete 12 hours in 400 courses, 6 in language and 6 in literature, except that students who have had no high school Spanish may be permitted to take only 6 hours in 400 courses.

Students in this course of study will complete a major. Suggested majors are: anthropology, economics, education, engineering under the five-year program, foreign languages, government, history, journalism, sociology.

Two field courses in Mexico are offered in alternate summers: Anthropology 336-7 and Spanish 4328-29. These are highly recommended but are not required.

There is a special adviser for the course of study. Students will be referred to him by any of the cooperating departments and should consult him for further information.

Bilingual Secretarial (Spanish or French) Program

This course of study is offered jointly by the Department of Foreign Languages and the Department of Business Education and Secretarial Administration (in the Division of Business Administration). It is designed for students who wish to enjoy the benefits of a liberal education and at the same time prepare themselves in an occupational field.

Students following this course of study receive the Bachelor of Arts degree by fulfilling the basic requirements in that degree. They major in Spanish, or, if they wish to go farther afield, in French, and complete a minor in an academic subject.

In addition they take 26 hours in Secretarial Administration in the following courses: 121-2, 131-2, 235, 321, 331, 333, 338, 421. Credit is allowed in typing and shorthand only for those completing the course of study and upon demonstration of competence in both fields.

Students interested in this course of study should consult the head of the Department of Foreign Languages for information concerning it and future employment opportunities.

The Liberal Arts Approach to Engineering

Students desiring a broader approach upon which to base their studies in engineering may receive the Degree of Bachelor of Arts by completing three years work in the Division of Arts and Sciences with a minimum of 100 semester hours work and by completion of the requirements for one of the various degrees of Bachelor of Science in Engineering at this College. Details of these programs are given

in the section of this catalog describing the work in the Division of Engineering. The three years work must satisfy all graduate requirements for the Degree of Bachelor of Arts at Texas Technological College with the exception of the major requirements. Students who are transfers, provided they have satisfactorily completed the work outlined in the freshman and sophomore years, or its equivalent, may meet the three-year requirement by the completion of the junior year in residence in this division.

Recreation

Other less clearly defined combinations may be effected. For example, the program in Recreation makes use of work offered by several departments and divisions. For the details of this program see "Department of Health, Physical Education and Recreation" in the Division of Arts and Sciences.

DIVISION OF AGRICULTURE

WENZEL L. STANGEL, *Dean*

The aim of the Division of Agriculture is to offer 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.

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.

There is a demand for college-trained men in specialized lines of agriculture, as well as for professional men with an agricultural education. Among 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 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 the Soil Conservation Service, Production and Marketing Administration, and Farmer's Home Administration.

The Degree of Bachelor of Science in Agriculture is conferred upon the student who satisfactorily completes the requirements for graduation outlined on the following pages. This degree is given with majors in agronomy, agricultural engineering, animal husbandry, horticulture and park management, agricultural economics, agricultural education, and dairy industry.

The Division of Agriculture gives graduate work in certain departments leading to the Degree of Master of Science. Discussion of graduate work will be found in this catalog under *The Graduate School.*

CURRICULA IN THE DIVISION OF AGRICULTURE
BACHELOR OF SCIENCE IN AGRICULTURE

Uniform Freshman Year for Students in Agriculture

Freshman Year

First Semester	Credit	Second Semester	Credit
Ag.Ed. 111—Orientation	1	D.I. 131—Principles of Dairying	3
A.H. 131—General Animal Husb.	3	Hort. 131—Plant Propagation	3
Agron. 131—Crop Production	3	Biol. 134—Zoology	3
Biol. 133—Botany	3	Chem. 142—General Chemistry	4
Chem. 141—General Chemistry	4	Eng. 132—English Composition	3
Eng. 131—English Composition	3	P.E., Band, or ROTC	1-2
P.E., Band, or ROTC	1-2		
	18-19		17-18

BACHELOR OF SCIENCE IN AGRICULTURE

AGRICULTURAL ECONOMICS MAJOR

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Ag.Eco. 235—Fund. of Ag. Eco.	3	Ag.Eco. 236—Mktg. Ag. Products	3
Eng. 234—Technical Writing	3	Bact. 231—Bacteriology	3
Chem. 341—Organic Chemistry	4	Agron. 241—Soils	4
Govt. 233—State and Fed. Govt.	3	Speech 338—Bus. & Prof. Speech	3
Math. 230—Agricultural Math.	3	Hort. 231—Veg. Gardening	3
P.E., Band, or ROTC	1	P.E., Band, or ROTC	1
	17		17

Junior Year

First Semester	Credit	Second Semester	Credit
Ag.Eco. 322—Mktg. Ag. Products	2	Ag.Eco. 334—Ag. Pol. & Organ.	3
Ag.Eco. 331—Ag. Stat.	3	A.H. 331—Animal Nutrition	3
Ag.Eco. 333—Cooperative Marketing	3	Ag.Eco. 324—Ag. Prices	2
Ag.Engr. 333—Farm Power & Mach.	3	Ag.Eco. 325—Farm Law	2
*Electives	7	Hort. 339—Plant Insects	3
	18	Electives	5
			18

Senior Year

First Semester	Credit	Second Semester	Credit
Ag.Eco. 411—Seminar	1	Ag.Eco. 412—Seminar	1
Ag.Eco. 421—Land Economics	2	Ag.Eco. 437—Farm Finance	3
Ag.Eco. 433—Farm Management	3	Ag.Eco. 432—Methods in Ag. Res.	3
Rur.Soc. 331—Rural Sociology	3	Rur.Soc. 431—Socio-Eco. Survey	3
Ag.Eco. 436—Trade in Ag. Prod.	3	Electives	7
Electives	5		17
	17		

Hours required for graduation exclusive of P.E., Band, or ROTC—135.

*12 hours of electives must be taken from courses offered in the Division of Agriculture.

BACHELOR OF SCIENCE IN AGRICULTURE

AGRICULTURAL EDUCATION MAJOR

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Ag.Eco. 235—Fund. of Ag. Eco.	3	P.H. 231—Farm Poultry	3
Agron. 241—Soils	4	Ag.Eco. 236—Mktg. Ag. Products	3
Bact. 231—Bacteriology	3	Math. 230—Agricultural Math.	3
Chem. 341—Organic Chemistry	4	Eng. 234—Technical Writing	3
Ag.Engr. 222—Agricultural Surveying	2	A.H. 231—Breeds of Livestock	3
P.E., Band, or ROTC	1	Ag.Engr. 223—Farm Utilities	2
	17	P.E., Band, or ROTC	1
			18

Junior Year

First Semester	Credit	Second Semester	Credit
Govt. 233—State and Federal Govt.	3	Ag.Eng. 322—Farm Shop Metal Work	2
Ag.Engr. 321—Farm Shop Woodwork	2	Agron. 331—Forage Crops	3
A.H. 331—Animal Nutrition	3	Agron. 341—Prin. of Genetics	4
Hort. 339—Farm Insects	3	Ag.Engr. 333—Farm Power & Mach.	3
Electives	6	Hort. 231—Vegetable Gardening	3
	17	Electives	3
			18

Senior Year

First Semester	Credit	Second Semester	Credit
Ag.Ed. 424—Org. & Admin.	2	Ag.Eco. 433—Farm Mgt. & Records	3
Ag.Ed. 322—F. F. A.	2	Agron. 422—Dry Farm Soil Mgt.	2
Ag.Ed. 443—Meth. in High School V.A.	4	Agron. 441—Crop Production	4
Ag.Ed. 432—Meth. in Adult Ag. Ed.	3	A.H.—two production courses	5
Ag.Ed. 461—Student Teaching (6 Weeks)	6	Electives	3
	17		17

Hours required for graduation exclusive of P.E., Band, or ROTC—135.

Note: First and second semesters of senior year are interchangeable. Approximately 50 percent of the senior students qualifying to teach vocational agriculture will take the agricultural education work the first semester and the other 50 percent will take it the second semester.

BACHELOR OF SCIENCE IN AGRICULTURE

AGRICULTURAL ENGINEERING MAJOR

Freshman Year

First Semester	Credit	Second Semester	Credit
E.Or. 111—Orientation	1	Eng. 132—English Composition	3
Eng. 131—English Composition	3	Chem. 142—General Chemistry	4
Chem. 141—General Chemistry	4	Math. 152—Alg. and Anal. Geom.	5
Math. 151—Algebra and Trigonometry	5	Govt. 233—State and Fed. Govt.	3
E.Dr. 131—Engineering Drawing	3	E.Dr. 121—Engineering Drawing	2
P.E., Band, or ROTC	1-2	P.E., Band, or ROTC	1-2
	17-18		18-19

Sophomore Year

First Semester	Credit	Second Semester	Credit
Math. 251—Calculus	5	Phys. 236—Engineering Physics	3
Phys. 235—Engineering Physics	3	Phys. 216—Physical Measurements	1
Phys. 215—Physical Measurements	1	C.E. 334—Surveying	3
C.E. 231—Plane Surveying	3	Agron. 241—Soils	4
Agron. 131—Fund. Crop Prod.	3	A.H. 131—Gen. Animal Husbandry	3
Biol. 133—Botany	3	C.E. 233—Statics	3
P.E., Band, or ROTC	1	P.E., Band, or ROTC	1
	19		18

Junior Year

First Semester	Credit	Second Semester	Credit
Ag.Engr. 321—Farm Shop Woodwork	2	Ag.Engr. 336—Farm Mach., Pow. Mgt.	3
Ag.Engr. 335—Irrig. Prin. & Prac.	3	Ag.Engr. 322—Farm Shop Metal Wk.	2
M.E. 329—Mech. of Machinery	2	C.E. 339—Fluid Mechanics	3
M.E. 334—Elem. of Heat Engr.	3	C.E. 333—Strength of Materials	3
Ag. Eco. 235—Fund. of Ag. Eco.	3	C.E. 312—Fluid Mechanics Lab.	1
Electives	5	Eng. 233—Technical Writing	3
	18	Electives	3
			18

Senior Year

First Semester	Credit	Second Semester	Credit
Ag.Engr. 431—Des. of Farm Bldg.	3	Engr.Sem. 412—Seminar	1
Ag.Engr. 432—Engr. for Soil & Water Conservation	3	Ag.Engr. 437—Des. of F'rm Irrig. Sys.	3
Ag.Engr. 433—Elem. of Trac. Des.	3	Ag.Engr. 434—Rural Electrification	3
E.E. 328—Elem. of E.E.	2	E.E. 329—Elem. of E.E.	2
E.E. 318—Elec. Engr. Lab.	1	E.E. 319—Elec. Engr. Lab.	1
Speech 338—Bus. & Prof. Speech	3	Psychology 230—Intro. to Psy.	3
Electives	3	Electives	5
	18		18

Hours required for graduation exclusive of P.E., Band, or ROTC—140.

BACHELOR OF SCIENCE IN AGRICULTURE

AGRONOMY MAJOR

For Uniform Freshman Year See Above

Crops Option

Sophomore Year

First Semester	Credit	Second Semester	Credit
Ag.Eco. 235—Fund. of Ag. Eco.	3	Hort. 231—Vegetable Gard.	3
Agron. 241—Soils	4	Ag.Eco. 236—Mktg. Ag. Prod.	3
Chem. 341—Organic Chemistry	4	Eng. 234—Technical Writing	3
Govt. 233—State and Fed. Govt.	3	Math. 230—Agricultural Math.	3
Bact. 231—Bacteriology	3	Ag.Engr. 222—Ag. Sur. & Land Map	2
P.E., Band, or ROTC	1	P.H. 231—Farm Poultry	3
	18	P.E., Band, or ROTC	1
			18

Junior Year

First Semester	Credit	Second Semester	Credit
Agron. 331—Forage Crops	3	Hort. 339—Plant Insects	3
A.H. 331—Animal Nutrition	3	Agron. 341—Genetics	4
Ag.Engr. 333—Farm Power Mach.	3	Bot. 331—Plant Physiology	3
Agron. 332—Grain Crops	3	Agron. 342—Crop Ident., Judg., Grad.	4
Botany 332—Plant Pathology	3	Electives	3
Electives	2		17
	17		

Senior Year

First Semester	Credit	Second Semester	Credit
Agron. 422—Dry Farm Soils	2	Agron. 434—Soil Conservation	3
Ag.Eco. 433—Farm Management	3	Agron. 431—Plant Breeding	3
Tex.Engr. 234—Cotton Classing	3	Agron. 410—Seminar	1
Ag.Engr.335—Irrigation Principles	3	Agron. 421—Cotton Production	2
Electives	6	Agron. 423—Soil Fertility	2
	17	Agron. 425—Seed Technology	2
		Electives	4
			17

Hours required for graduation exclusive of P.E., Band, or ROTC.—135.

Range Management Option

Sophomore Year

First Semester	Credit	Second Semester	Credit
Ag.Eco. 235—Fund. of Ag. Eco.	3	Govt. 233—State and Fed. Govt.	3
Agron. 241—Soils	4	Ag.Eco. 236—Mktg. Ag. Products	3
Chem. 341—Organic Chemistry	4	Eng. 234—Technical Writing	3
Bact. 231—Bacteriology	3	Botany 232—Taxonomy	3
Math. 230—Agricultural Math.	3	Ag.Engr. 222—Ag. Survey & Map	2
P.E., Band, or ROTC	1	P.E., Band, or ROTC	1
	18	Electives	3
			18

Junior Year

First Semester	Credit	Second Semester	Credit
Agron. 331—Forage Crops	3	Agron. 341—Genetics	4
A.H. 331—Animal Nutrition	3	Bot. 331—Plant Physiology	3
Biol. 331—Bio-ecology	3	Agron. 333—Range Plants	3
Hort. 339—Plant Insects	3	Vet. 331—Anat. of Farm Animals	3
Electives	5	Electives	5
	17		18

Senior Year

First Semester	Credit	Second Semester	Credit
Agron. 422—Dry Farm Soils	2	Agron. 434—Soil Conservation	3
Ag.Eco. 433—Farm Management	3	Agron. 431—Plant Breeding	3
A.H. 431—Beef Cattle Production	3	Agron. 410—Seminar	1
Agron. 437—Range Plant Mgt.	3	A.H. 433—Sheep Production	3
Agron. 435—Soil Genesis	3	A.H. 438—Range Animal Mgt.	3
Electives	3	Agron. 432—Adv. Range Plant Mgt.	3
	17		16

Hours required for graduation exclusive of P.E., Band, or ROTC.—135.

Soils Option

Sophomore Year

First Semester	Credit	Second Semester	Credit
Ag.Eco. 235—Fund. of Ag. Eco.	3	Ag.Eco. 236—Mktg. Ag. Products	3
Agron. 241—Soils	4	Eng. 234—Technical Writing	3
Chem. 341—Organic Chemistry	4	Math. 230—Agricultural Math.	3
Bact. 231—Bacteriology	3	Hort. 231—Veg. Gardening	3
Govt. 233—State and Fed. Govt.	3	Ag.Engr. 222—Ag. Survey & Map	2
P.E., Band, or ROTC	1	P.H. 231—Farm Poultry	3
	18	P.E., Band, or ROTC	1
			18

Junior Year

First Semester	Credit	Second Semester	Credit
Agron. 331—Forage Crops	3	Hort. 339—Plant Insects	3
A.H. 331—Animal Nutrition	3	Agron. 341—Genetics	4
Ag.Engr. 333—Farm Power Mach.	3	Bot. 331—Plant Physiology	3
Bot. 332—Plant Pathology	3	Agron. 342—Crop Ident., Judg., Grad.	4
Electives	5	Electives	3
	17		17

Senior Year

First Semester	Credit	Second Semester	Credit
Agron. 422—Dry Farm Soils	2	Agron. 434—Soil Conservation	3
Ag.Eco. 433—Farm Management	3	Agron. 431—Plant Breeding	3
Agron. 435—Soil Genesis	3	Agron. 410—Seminar	1
Agron. 439—Soil Microbiol.	3	Agron. 423—Soil Fertility	2
Ag.Engr 335—Irrigation Prin.	3	Agron. 436—Soil Chemistry	3
Electives	3	Electives	5
	17		17

Hours required for graduation exclusive of P.E., Band, or ROTC.—135.

BACHELOR OF SCIENCE IN AGRICULTURE

ANIMAL HUSBANDRY MAJOR

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Ag.Eco. 235—Fund. of Ag. Eco.	3	Bact. 231—Bacteriology	3
Agron. 241—Soils	4	P.H. 231—Farm Poultry	3
Eng. 234—Technical Writing	3	Ag.Eco. 236—Mktg. Ag. Products	3
A.H. 231—Breeds of Livestock	3	Math. 230—Agricultural Math.	3
Chem. 341—Organic Chemistry	4	Vet. 331—Anatomy of Farm Animals	3
P.E., Band, or ROTC	1	A.H. 322—Farm Meats	2
	18	P.E., Band, or ROTC	1
			18

Animal Industry Option

Junior Year

First Semester	Credit	Second Semester	Credit
Govt. 233—State and Fed. Govt.	3	A.H. 331—Animal Nutrition	3
Speech 338—Bus. and Pro. Speech	3	Agron. 341—Prin. of Genetics	4
Vet. 332—Physiol. of Farm Animals	3	Agron. 331—Forage Crops	3
A.H. 321—Livestock Judging	2	Vet. 334—An. San., Dis. Cont.	3
Electives	6	Electives	4
	17		17

Senior Year

First Semester	Credit	Second Semester	Credit
A.H. 432—Animal Breeding	3	A.H. 411—Seminar	1
A.H. 427—Swine Production	2	A.H. 436—Adv. Animal Nutrition	3
A.H. 431—Beef Cattle Production	3	Ag.Eco. 433—Farm Management	3
Ag.Eco. 431—Livestock Marketing	3	A.H. 433—Sheep Production	3
Electives	6	Electives	7
	17		17

Hours required for graduation exclusive of P.E., Band, or ROTC.—135.

Dairy Husbandry Option

Junior Year

First Semester	Credit	Second Semester	Credit
Agron. 331—Forage Crops	3	A.H. 331—Animal Nutrition	3
Vet. 332—Physiol. of Farm Animals	3	Agron. 341—Principles of Genetics	4
A.H. 335—Art. Insem., Ped., Records	3	A.H. 323—Dairy Cattle Judging	2
D.I. 341—Market Milk	4	D.I. 334—Dairy Bacteriology	3
D.I. 313—Dairy Prod. Judging	1	Vet. 334—An. San., Dis. Cont.	3
Electives	3	Electives	2
	17		17

Senior Year

First Semester	Credit	Second Semester	Credit
Govt. 233—State and Fed. Govt.	3	A.H. 436—Adv. Animal Nutrition	3
A.H. 432—Animal Breeding	3	Ag.Eco. 433—Farm Management	3
A.H. 435—Dairy Cattle Production	3	A.H. 411—Seminar	1
Speech 338—Bus. and Prof. Speech	3	A.H. 439—Hormones in An. Prod.	3
Electives	5	D.I. 339—Marketing Dairy Products	3
	17	Electives	4
			17

Poultry Husbandry Option

Junior Year

First Semester	Credit	Second Semester	Credit
Govt. 233—State and Fed. Govt.	3	A.H. 331—Animal Nutrition	3
Vet. 332—Physiol. of Farm Animals	3	Agron. 341—Prin. of Genetics	4
Speech 338—Bus. and Prof. Speech	3	Agron. 331—Forage Crops	3
P.H. 332—Broiler Production	3	P.H. 331—Incubation and Brooding	3
Electives	6	Vet. 334—An. San., Dis. Cont.	3
	18		16

Senior Year

First Semester	Credit	Second Semester	Credit
Ag.Eco. 322—Mktg. Ag. Products	2	Ag.Eco. 433—Farm Management	3
A.H. 432—Animal Breeding	3	A.H. 411—Seminar	1
A.H. 435—Dairy Cattle Production	3	A.H. 436—Adv. Animal Nutrition	3
P.H. 432—Turkey Production	3	P.H. 431—Poultry Production	3
Electives	6	A.H. 439—Hormones in An. Prod.	3
	17	Electives	4
			17

Hours required for graduation exclusive of P.E., Band, or ROTC.—135.

BACHELOR OF SCIENCE IN AGRICULTURE

DAIRY INDUSTRY MAJOR

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Ag.Eco. 234—Fund. of Ag. Eco.	3	Ag.Eco. 236—Mktg. Ag. Products	3
Acct. 244—Elemen. Acct.	4	Eng. 234—Technical Writing	3
Bact. 231—Bacteriology	3	D.I. 222—Dairy Industries	2
Chem. 341—Organic Chemistry	4	Math. 230—Agricultural Math.	3
Govt. 233—State and Fed. Govt.	3	Speech. 338—Bus. & Prof. Speech	3
P.E., Band, or ROTC	1	P.E., Band, or ROTC	1
	18	Electives	3
			18

Junior Year

First Semester	Credit	Second Semester	Credit
D.I. 313—Dairy Prod. Judging	1	D.I. 314—Advanced Judging	1
D.I. 338—Testing Dairy Products	3	D.I. 334—Fund. Dairy Science	3
D.I. 341—Market Milk	4	D.I. 335—Dairy Bacteriology	3
Ag.Eco. 331—Statistics	3	D.I. 337—Dairy Plant Equip.	3
A.H. 331—Animal Nutrition	3	D.I. 339—Mktg. Dairy Products	3
Electives	3	Electives	4
	17		17

Senior Year

First Semester	Credit	Second Semester	Credit
D.I. 412—Starters & Cult. Milk	1	D.I. 411—Seminar	1
D.I. 431—Cheese Making	3	D.I. 422—Cond. & Pwdr. Milk	2
D.I. 434—Buttermaking	3	D.I. 433—Ice Cream Making	3
D.I. 437—Mgt. & Merchandising	3	D.I. 435—Dairy & Food Insp.	3
A.H. 435—Dairy Cattle Production	3	Electives	8
Electives	7		17
	17		

Hours required for graduation exclusive of P.E., Band, or ROTC.—135.

BACHELOR OF SCIENCE IN AGRICULTURE

HORTICULTURE AND PARK MANAGEMENT MAJOR

For Uniform Freshman Year See Above

General Horticulture Option

Sophomore Year

First Semester	Credit	Second Semester	Credit
Chem. 341—Organic Chemistry	4	Agron. 241—Soils	4
Hort. 232—Trees & Shrubs	3	Eng. 234—Technical Writing	3
Hort. 333—Fruit Culture	3	Hort. 231—Vegetable Garden	3
Hort. 234—Commercial Prop.	3	Hort. 233—Annuals & Perennials	3
Ag.Eco. 235—Fund. of Ag. Eco.	3	Hort. 3311—Landscape Planning	3
P.E., Band, or ROTC	1	P.E., Band, or ROTC	1
	17		17

Junior Year

First Semester	Credit	Second Semester	Credit
Ag.Engr. 222—Ag. Surv. & Land Map.	2	Ag.Eco. 236—Mktg. Ag. Products	3
Bot. 332—Plant Pathology	3	Agron. 341—Prin. of Genetics	4
Hort. 334—Floriculture	3	Bot. 331—Plant Physiology	3
Hort. 339—Plant Insects	3	Hort. 324—Turf Management	2
Math. 230—Agricultural Math.	3	Hort. 335—Floriculture	3
Electives	3	Electives	3
	17		18

Senior Year

First Semester	Credit	Second Semester	Credit
Ag.Eco. 433—Farm Management	3	Agron. 431—Plant Breeding	3
Bact. 231—Bacteriology	3	Agron. 436—Soil Chemistry	3
Biol. 333—Bio-ecology	3	Hort. 410—Seminar	1
Govt. 233—State and Fed. Govt.	3	Hort. 431—Pomology	3
Electives	6	Hort. 435—Vegetable Production	3
	18	Electives	4
			17

Hours required for graduation exclusive of P.E., Band, or ROTC.—135.

Park Management Option

Sophomore Year

First Semester	Credit	Second Semester	Credit
Arch. 141—Elementary Drawing	4	Agron. 241—Soils	4
Chem. 341—Organic Chemistry	4	Arch. 142—Elementary Drawing	4
Ag.Eco. 235—Fund. of Ag.Eco.	3	Eng. 234—Technical Writing	3
Hort. 232—Trees & Shrubs	3	Hort. 233—Annuals & Perennials	3
Hort. 234—Commercial Prop	3	Hort. 3311—Landscape Planning	3
P.E., Band, or ROTC	1	P.E., Band, or ROTC	1
	18		18

Junior Year

First Semester	Credit	Second Semester	Credit
Ag.Engr. 222—Ag. Sur. & Land Map.	2	Agron. 341—Prin. of Genetics	4
Hort. 334—Floriculture	3	Hort. 231—Vegetable Gardening	3
Hort. 339—Plant Insects	3	Hort. 324—Turf Management	2
Math. 230—Agricultural Math.	3	Mgt. 331—Indust. Mgt.	3
Electives	6	Electives	6
	17		18

Senior Year

First Semester	Credit	Second Semester	Credit
Govt. 233—State and Fed. Govt.	3	Acct. 231—Indust. Acct. for Eng.	3
Hort. 333—Fruit Culture	3	Agron. 436—Soil Chemistry	3
Hort. 336—Landscape Design	3	Hort. 337—Landscape Design	3
Hort. 422—Des. & Op. of Parks & Rec. Sys.	2	Hort. 410—Seminar	1
Marketing 321—Pub. Rel.	2	Hort. 423—Des. & Op. of Parks & Rec. Sys.	2
Electives	4	Electives	4
	17		16

Hours required for graduation exclusive of P.E., Band, or ROTC.—135.

PRE-VETERINARY MEDICINE

This curriculum is designed to qualify students for entrance to schools of veterinary medicine. Texas Technological College offers only the two-year pre-veterinary medicine curriculum. Students who complete this curriculum may either apply for admission to a school of veterinary medicine or change to one of the four-year curricula in the Division of Agriculture.

Freshman Year

First Semester	Credit	Second Semester	Credit
A.H. 131—General Animal Husbandry	3	Biol. 134—Zoology	3
Biol. 133—Botany	3	*Chem. 231—Qualitative Analysis	3
Chem. 141—General Chemistry	4	Chem. 142—General Chemistry	4
Eng. 131—English Composition	3	Eng. 132—English Composition	3
Math. 130—Algebra	3	Math. 131—Trigonometry	3
M.S 121	2	M.S. 121	2
Ag.Ed. 111—Orientation	1		18
	19		

Sophomore Year

First Semester	Credit	Second Semester	Credit
Chem. 353—Organic Chemistry	5	Chem. 354—Organic Chemistry	5
Eng. 234—Technical Writing	3	Govt. 233—State & Federal Government	3
Phys. 141—General Physics	4	Phys 142—General Physics	4
P.H. 231—Farm Poultry	3	Ag. Eco. 235—Fun. of Ag. Eco.	3
Zoology 234—Invertebrate Morphology	3	D.I. 131—Principles of Dairying	3
M.S. 211	1	M.S. 212	1
	19		19

Department of Agricultural Economics

PROFESSOR McBRIDE. ASSOCIATE PROFESSOR LEONARD.
ASSISTANT PROFESSOR BENNETT.
INSTRUCTOR ASHWORTH.

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 are preparing 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

For Undergraduates

235. Fundamentals of Agricultural Economics. Cr. 3.
Analysis of fundamental economic principles and their application to farm and home problems.

236. Principles of Marketing Agricultural Products. Cr. 3.
Prerequisite: Agricultural Economics 235. Analysis of the various agents performing the functions in the purchase, sale, and distribution of agricultural products.

322. Marketing Agricultural Products. Cr. 2.
Prerequisite: Agricultural Economics 236. Problems and practices involved in the marketing of specific agricultural commodities.

324. Agricultural Prices. Cr. 2.
Prerequisite: Agricultural Economics 331. Study of agricultural prices. Individual research applied to an agricultural commodity of the student's choice.

325. Farm Laws. Cr. 2.
Prerequisite: Agricultural Economics 236. Legal problems and practices affecting the farmer in his business relations with neighbors and the business agents with whom he deals.

331. Agricultural Statistics. Cr. 3. (2-3).
Prerequisites: Junior standing and 3 hours of mathematics. Principles involved in the collection and interpretation of agricultural data.

333. Cooperation in Agriculture. Cr. 3.
Prerequisite: Agricultural Economics 236. Organization and operation of agricultural cooperatives.

334. Agricultural Policies and Organizations. Cr. 3.
Prerequisite: Agricultural Economics 236. An examination of the history of the present farm organizations both public and private. An investigation of current public policies of these organizations in operation in the field of agriculture.

For Undergraduates and Graduates

411. Agricultural Economics Seminar. Cr. 1.
Prerequisite: Senior standing in agriculture. Round table discussion of current economic problems.

412. Agricultural Economics Seminar. Cr. 1.
Prerequisite: Senior standing in agriculture. Round table discussion of current economic problems.

*Superior students in chemistry may take Chem. 231 parallel with Chem. 142. Others will find it advisable to take Chem. 231 following Chem 142 and before Chem 353, to which it is prerequisite.

421. Land Economics. Cr. 2.
Prerequisite: Junior standing in agriculture. Land as a factor of production; classification and utilization; land income, tenure, property rights, deeds, credit, and taxation.

431. Livestock Marketing. Cr. 3.
Prerequisite: Junior standing in agriculture including Agricultural Economics 236. Livestock marketing practices and problems.

432. Statistical Methods in Agricultural Research. Cr. 3.
Prerequisite: Approval of the instructor. Advanced work in the field of statistical research using tests of significance and variability, Fisher's tests, correlation (multiple and curvilinear relationships), Chisquare, regression and analysis of variance and covariance. Application of statistical methods to the field of agricultural research.

433. Farm Management and Records. Cr. 3. (2-3).
Prerequisite: Junior standing in agriculture. The organization and management of the individual farm. Field trips to nearby farms.

434. Advanced Farm Management. Cr. 3.
Prerequisite: Agricultural Economics 433. Functions, organizations, and operations of professional farm management services—research, extension, appraisal, consultation and management.

436. World Trade in Agricultural Products. Cr. 3.
Prerequisite: Senior standing or permission of the instructor. An economic analysis of the trade policies under which the world's supplies of agricultural products are obtained. An analysis of foreign and domestic relationships in world trade affecting agriculture.

437. Farm Appraisal and Finance. Cr. 3. (2-3).
Prerequisite: Junior standing. Valuation of farm real estate and potential income. Farm credit. Functions and practices of lending institutions.

For Graduates

511. Seminar. Cr. 1.
A study of agricultural outlook and similiar material. May be repeated for credit.

533. Marketing Problems. Cr. 3.
Prerequisite: Consent of major professor. Advanced study in the problems and practices in marketing of some selected farm products.

534. Research in Agricultural Economics. Cr. 3.
A selected research problem in agriculture economics, farm management, or rural sociology. May be repeated for credit upon the approval of the major professor.

631-2. Thesis.

RURAL SOCIOLOGY

For Undergraduates

331. Rural Sociology. Cr. 3.
Prerequisite: Junior standing. A study of rural society and its institutions. Rural leadership and community organizations.

For Undergraduates and Graduates

431. Socio-Economic Surveys of Rural Areas. Cr. 3. (1-6).
Prerequisite: R. S. 331 or permission of the instructor. Methods and problems in surveys and research. Extension organization and methods. A survey of a selected county or region will be made and a written report required.

Department of Agricultural Education

PROFESSORS CHAPPELLE, LEACH.
ASSOCIATE PROFESSOR HARGRAVE.

The curriculum in the Department of Agricultural Education is designed to qualify the student to teach vocational agriculture under the Federal Vocational Education (Smith-Hughes) Act, and to supplement the student's instruction in technical and professional agriculture.

Upperclass students in agriculture, regardless of major, who plan to qualify to teach vocational agriculture should observe the following two rules: (1) As soon as decision to qualify is made, fill out necessary

forms in the Department of Agricultural Education; (2) check with the Department of Agricultural Education to see that full advantage is being taken of electives.

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 Graduate School. A statement of courses to be completed for this certification will be furnished upon request.

For Undergraduates

111. Orientation for Agriculture Students. Cr. 1.
Relationship of the student to the college; habits of study. Survey of the field of agriculture, vocational guidance. Required of all freshman students in the Division of Agriculture.

322. Methods in Future Farmer Work. Cr. 2.
Prerequisite: Junior standing in agriculture. Methods of organizing and administering a high school Future Farmer chapter: local, state, and national constitutions, leadership activities, chapter programs of work, advance degrees, national and state F.F.A. awards and contests.

For Undergraduates and Graduates

423. Problems. Cr. 2.
Prerequisite: Senior standing. An investigation and study of problems in the field of vocational agriculture of special interest to the individual student. May be repeated for credit.

424. Organization and Administration of Vocational Agriculture. Cr. 2.
Prerequisite: Senior standing in agriculture. Organization and administration of vocational agriculture in the high school and its relation to all phases of the high school program. State and national school laws, policies and regulations as they are related to vocational agriculture.

426. Advanced Methods in Future Farmer Work. Cr. 2.
Advanced methods of teaching Future Farmer work.

432. Methods in Adult Agricultural Education. Cr. 3. (2-3).
Prerequisite: Senior standing in agriculture. Young farmer, adult farmer and community activities. Preparation of teaching materials. Plans for summer activities and professional improvement.

443. Methods of Teaching Vocational Agriculture in the High School. Cr. 4. (2-6).
Prerequisite: 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.

461. Student Teaching. Cr. 6. (0-18).
Prerequisite: Senior standing in agriculture. Six weeks off the campus supervised observation and student teaching in high school vocational department approved by the Agricultural Education Department. Opportunity for participation in all-day, young farmer, and adult classes.

For Graduates

511. Problems. Cr. 1.
Current problems of the teacher in the field of vocational agriculture. May be repeated for credit.

522. Advanced Methods in High School Vocational Agriculture. Cr. 2.
Advanced methods of teaching vocational agriculture in all-day classes in the high school.

523. Advanced Methods in Adult Agricultural Education. Cr. 2.
Advanced methods of teaching vocational agriculture in part-time and evening schools.

531. Investigation in the Field of Agricultural Education. Cr. 3.
Prerequisite: 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.

631-2. Thesis.

Department of Agricultural Engineering

PROFESSOR WILLIAMS. ASSOCIATE PROFESSOR BOURNS.
INSTRUCTOR JORDAN.

The curriculum in agricultural engineering is under the joint supervision of the Divisions of Agriculture and Engineering.

Agricultural engineering is the application of fundamental engineering principles to the solution of the problems of agriculture.

Courses offered in agricultural engineering are designed to give the student a conception of modern methods of agricultural production and the conservation and utilization of land, buildings, and equipment.

A variety of occupations are open to agricultural engineers, such as, research with experiment stations; extension service; positions with land-grant colleges, and with the government. Also, many agricultural engineers are employed in land reclamation, drainage, soil conservation, and irrigation enterprises; designing; advertising; sales and promotional work with the manufacturers of farm equipment and building materials; rural electrification work with public or privately-owned utilities; editorial work with publishers; appraisal; teaching; farming; and agricultural engineering consultant work.

Students planning to prepare themselves for agricultural engineering work should consult with members of the staff and the curriculum in agricultural engineering.

For Undergraduates

222. Agricultural Surveying and Land Mapping. Cr. 2. (1-3).

Corequisite: Mathematics 230 or equivalent. Techniques in measuring distances and areas; determining elevations and profiles; plotting cross-sections; traversing; use of the planimeter; running grade lines: laying out and checking terraces, irrigation and drainage ditches; area and topographic mapping; use of aerial photographic maps.

223. Farm Utilities. Cr. 2. (1-3).

Domestic water supply and its distribution; plumbing, sewage, refuse, and garbage disposal; fundamentals of electricity and wiring of farm buildings; electrical appliances and equipment; lighting; heating, ventilating, and cooling of farm buildings.

321. Farm Shop Woodwork. Cr. 2. (1-3).

Selection, use and care of hand and simple power carpentry tools. Estimating and selection of building materials. Construction techniques of farm buildings and equipment.

322. Farm Shop Metalwork. Cr. 2. (1-3).

Use of hand and machine tools; forge and cold metal work; soldering and sheet metal; arc and oxy-acetylene welding; pipe fitting; concrete work.

333. Farm Power and Machinery. Cr. 3. (2-3).

Prerequisite: Junior standing. Operation and adjustment of tractors and different types of farm machinery.

334. Farm Tractors. Cr. 3. (2-3).

Prerequisite: Junior standing. Principles of operation of spark ignition and diesel engines. Study of construction, adjustment, operation, and overhaul. Horsepower, efficiency, safety, and cost of operation. Fuels and lubricants. Transmission of power.

335. Irrigation Principles and Practices. Cr. 3. (2-3).

Prerequisite: Ag. Engr. 222 or C.E. 334. Principles and practices of irrigation: irrigation methods, land preparation, movement and storage of water in soils, salinity and its control, quality of water, use of water by plants, irrigation of specific crops, water rights, elements of pumping and costs.

336. Farm Machinery and Power Management. Cr. 3. (2-3).

Prerequisite: M.E. 329 or C.E. 332. Mechanics and materials of farm machinery construction. Adjustment, selection, capacity, and cost of use of farm machinery. Transmission, measurement, and cost of use of farm power.

For Undergraduates and Graduates

430. Agricultural Engineering Problems. Cr. 3.

Prerequisite: Senior standing and approval of the head of the department. The work for this course may be individual study, investigation or design problems of a technical nature for Agricultural Engineering or Engineering students. May be repeated for additional credit.

431. Structural and Functional Design of Farm Buildings. Cr. 3. (2-3).

Prerequisite: C.E. 333. Structural and functional design of farm and ranch structures. Materials. Insulation and air conditioning of farm buildings. Location of equipment. Foundations and construction techniques.

432. Engineering for Soil and Water Conservation and Drainage. Cr. 3. (2-3).

Prerequisites: C.E. 334 and 339. The engineering aspects and design of soil and water conservation structures including terraces, diversion ditches, outlet channels, drop-structures and chutes, and small dams. Design of drainage systems.

433. Elements of Tractor Design. Cr. 3. (2-3).

Prerequisite: M.E. 329 or C.E. 332. Kinematics and dynamics of tractor power application. Drawbar, power take-off, and traction mechanisms. Thermodynamic principles and construction of the internal combustion engine, fuels and carburetion, ignition.

434. Rural Electrification. Cr. 3. (2-3).

Prerequisite: Physics 142 or Physics 236. Application of electricity to farm processes: refrigeration, heat, pumping, ventilating, etc. Rates and costs of electricity for farm uses. Community service plants and facilities. Special uses of lighting. Farm electric distribution system, proper wiring and controls.

435. Farm Mechanics Problems. Cr. 3.

Prerequisite: Senior standing and approval of the head of the department. Individual study of an advanced phase of some agricultural engineering application of special interest to the student, development of techniques in teaching farm shop work, or a special construction project. Open to students in the Division of Agriculture. May be repeated for additional credit.

437. Design of Farm Irrigation Systems. Cr. 3. (2-3).

Prerequisite: C.E. 334, C.E. 339, and Ag. Engr. 335. Principles of design of gravity and sprinkler irrigation systems for the farm. Drilling, development and hydraulics of wells; pumping. Water conveyance structures. Irrigation system efficiency determinations.

Department of Agronomy

PROFESSOR YOUNG. ASSOCIATE PROFESSOR AYERS.
ASSISTANT PROFESSOR LITTLE.
INSTRUCTORS McCALEB, JAYNES, WARD.

The Department of Agronomy provides a curriculum leading to the degree of Bachelor of Science in Agriculture with major work in Agronomy. Courses are offered to provide the student with information in the following fields:

1. The development, production and utilization of field crops.
2. The origin, conservation, and proper management of the soil.
3. The development, conservation, and management of range plants.

The student may select an option in any one of these fields.

Information is provided on operations for dry, humid, and irrigation farming. The agronomy farm with areas of soil under both dry and irrigated farming conditions is maintained for field study and demonstrations. An extensive grass and legume crop nursery with many different species and selections of plants is maintained for studying the identifying and growth characteristics of forage and grassland crops.

Field trips to nearby experiment stations and other points of interest are included as a regular part of many courses to assist in broadening the student's training.

The three options offered by this department permit students to qualify for positions with the Extension Service, the Soil Conservation Service, soil and land management, range management, the seed industry, farm operations and many similar fields of work.

For Undergraduates

131. The Fundamentals of Agronomy. Cr. 3. (2-2).

A survey course. Crops, their classification, identification, distribution, production and use. Tillage and elementary soils. Diseases and pests.

241. Soils. Cr. 4. (3-3).

Prerequisites: Chem. 141, sophomore standing in agriculture. Origin, formation, classification of soils; physical, chemical, and biological requirements; maintenance of soil fertility. Field study of soil-forming materials, soil texture classification, identification and mapping.

331. Forage and Pasture Crops. Cr. 3. (2-3).

Prerequisites: Agron. 131, junior standing in agriculture. The production, harvesting, storage and uses of forage and pasture crops.

332. Grain Crops. Cr. 3. (2-3).

Prerequisite: Agron. 131, junior standing in agriculture. The production, harvesting, storage and use of grain crops. Adaptation, identification, and general improvement.

333. Range Plants. Cr. 3. (2-3).

Prerequisite or parallel: Agron. 331, junior standing in agriculture. The economic value of the range grasses, non-grass forage plants, and poisonous plants. Identification, habitat, palatability, and regions of growth.

341. Principles of Genetics. Cr. 4. (3-2).

Prerequisite: Junior standing. Heredity and variation in plants and animals. History. The chromosome theory in plants, higher animals, poultry and insects. Biometry as applied to genetic data.

342. Crop Identification, Judging and Grading. Cr. 4. (0-8).

Identification of field crops, important diseases which attack them, weed seeds, practice in judging quality and values of seeds and crop products, commercial grain grading.

410. Seminar. Cr. 1.

Prerequisite: Senior standing in agronomy. Assigned readings, current advances. Informal discussions, oral reports, and papers.

441. Crop Production. Cr. 4. (3-3).

Prerequisite: Agronomy 131, 241, and junior standing in agriculture. Not open to agronomy majors. A modified course composed of applied production of fiber, grain and forage crops applicable to Texas. Problems in seed and feed production. Special emphasis on needs of vocational agriculture teachers, county agents, etc.

For Undergraduates and Graduates

421. Cotton Production. Cr. 2.

Prerequisite: Junior standing in agronomy or approval of instructor. Culture, improvement, and classification of cotton. Diseases and insect pests of cotton.

422. Dry Farm Soil Management. Cr. 2.

Prerequisite: Agronomy 241, 331, senior standing in agriculture. Soil moisture conservation, supplemental water supply, permanent farming under the conditions of light or wide seasonal variations of rainfall.

423. Soil Fertility. Cr. 2.

Prerequisite: Agronomy 241, 331, senior standing in agriculture. The nature and sources of plant nutrients, their liberation and conservation. Use of supplements and fertilizers. Irrigation and drainage, inspection trips.

425. Seed Technology. Cr. 2. (1-2).

Prerequisite: Agronomy 342. The analysis of planting seed, including identification, germination, and purity. Methods of producing, processing, storing and marketing pure seed with special emphasis on registered and certified seed; study of state and federal seed laws.

430. Agronomy Problems. Cr. 3.

Prerequisite: Open to all students having satisfactory scholastic records. An investigation of an assigned problem and individual instruction in the field of special interest to the individual student concerned. May be repeated for credit with approval of head of department.

431. Plant Breeding and Improvement. Cr. 3.

Prerequisite: Agronomy 341. Practical application of genetics in the breeding and improvement of plants.

432. Advanced Range Management. Cr. 3. (2-3).

Prerequisite: Agronomy 333, 437 and senior standing in agriculture. Advanced problems of native grassland management involving a study of range history, range research, economic factors of utilization and systems of range grassland management.

434. Soil Conservation and Land Use Planning. Cr. 3. (2-3).

Prerequisite: Agronomy 241, 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).

Prerequisite: Agronomy 241, advanced standing in agriculture. The origin and classification of soils of the world and particularly of the United States.

436. Soil Chemistry. Cr. 3.

Prerequisite: Agronomy 241, 12 hours of chemistry, advanced standing in agriculture. Chemistry of the soil as affected by cultivation, crop rotation, fertilizers, and moisture relationships.

437. Range Plant Management. Cr. 3. (2-3).
Prerequisite: Senior standing in agriculture. Agronomy 331, 333, A.H. 331. Management problems and use of plants and soils under range conditions.

439. Soil Microbiology. Cr. 3.
Prerequisite: Agronomy 241, Bacteriology 231, 12 hours of chemistry, advanced standing in agriculture. Micro-organisms in the soil with emphasis upon the functions of the soil bacteria and their influence upon decomposition of organic matter and soil fertility in general.

For Graduates

511. Agronomy Seminar. Cr. 1, each time taken.
Review and discussion of current literature in the field. May be repeated for credit upon approval of major professor.

534. Agronomy Research. Cr. 3, each time taken.
Prerequisite: Approval of major professor. A specific problem in line with the major interest of the student. May be repeated for credit upon approval of major professor.

535. Research Methods. Cr. 3.
Project outlines, research administration, research organization, fellowships, research budgets, thesis organization and writing, research foundations.

631-2. Thesis.

Department of Animal Husbandry

PROFESSORS MOWERY, STANGEL, HARBAUGH, FINE.
ASSOCIATE PROFESSOR CLONINGER.
ASSISTANT PROFESSORS ANDERSON, *BAUMGARDNER, BOREN, *BURKHART, TURNER.
INSTRUCTOR ALLEN.

The Department of Animal Husbandry, in which students may major as candidates for the Degree of Bachelor of Science in Agriculture, provides 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 buildings, 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.

ANIMAL HUSBANDRY

For Undergraduates

131. General Animal Husbandry. Cr. 3. (2-2).
An introductory course designed to acquaint the student with the importance of livestock and their products in Texas and United States. Types, market classes and grades of cattle, sheep and hogs. Horses. Goats. Livestock markets. Slaughtering and slaughter by-products.

231. Breeds of Livestock. Cr. 3. (2-2).
Prerequisite: A.H. 131. Development of the breeds of beef, dairy and dual-purpose cattle, hogs, horses, sheep and goats. Special emphasis upon the work of recent prominent breeders and the merits of individual animals.

313. Livestock Judging. Cr. 1. (0-3).
Prerequisite: A.H. 321 and approval of head of department. A continuation of A.H. 321. For those students seeking to gain proficiency in livestock judging.

321. Livestock Judging. Cr. 2. (0-6).
Prerequisite: A.H. 231, or junior standing with parallel enrollment in A.H. 231. Selection of breeding and market animals. Carcass yield studies. Comparative showyard judging of cattle, horses, sheep and swine. Inspection trips to farm herds, plants and livestock shows.

*On leave with armed forces.

322. Farm Meats. Cr. 2. (1-3).

Prerequiite: A.H. 131, and sophomore standing. Effects of conformation, quality and finish on dressing percentage, grade of carcass and yield. Slaughtering, cutting, curing and processing. Special health certificate required.

323. Dairy Cattle Judging. Cr. 2. (0-6).

Prerequisite: A.H. 231 or junior standing with parallel enrollment in A.H. 231. Major dairy cattle characteristics. Showyard classification. Comparative judging. Field trips to farm herds and dairy cattle shows.

331. Animal Nutrition and Principles of Feeding. Cr. 3.

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. (2-2).

Wool and mohair production and preparation for market. A study of physical and chemical characteristics; sampling, grading, sorting and securing.

335. Artificial Insemination, Pedigrees and Records. Cr. 3. (2-2).

Prerequisite: Vet. 331 and junior standing. The collection, evaluation and storage of semen. Insemination techniques. Artificial breeding organizations, pedigree compilation and study.

421. Advanced Judging of Livestock, Wool, or Meats. Cr. 2. (0-6).

Prerequisite: A.H. 313, 322, or 323, and approval of head of department. Special work in judging livestock, wool, or meats. Inspection trips to herds, plants, shows and contests.

For Undergraduates and Graduates

411. Animal Husbandry Seminar. Cr. 1.

Prerequisite: Senior standing in agriculture. Assigned subjects. Review of recent investigations. Reports and discussions.

425. Horse Production. Cr. 2.

Prerequisite: Approval of instructor. Breeding, feeding, breaking, training, stabling and shoeing. Gaits. Care of stallion, brood mare and foal. Parasites and diseases.

427. Swine Production. Cr. 2.

Prerequisite: A.H. 331. The swine industry. Breeding, feeding, housing, marketing, fitting for show and sale. Herd records. Diseases, parasites and sanitation. Laboratory practice with farm animals and equipment is done as assigned problems.

431. Beef Cattle Production. Cr. 3.

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 and parasite control. Laboratory practice with farm animals and equipment is done as assigned problems.

432. Animal Breeding. Cr. 3.

Prerequisite: Agron. 341. Genetics applied to the improvement of farm animals. Systems of breeding.

433. Sheep Production. Cr. 3.

Prerequisite: A.H. 331. The sheep industry. Breeding, feeding, shearing, marketing and fitting for show and sale. Farm flock and range management. Disease and parasite control. Laboratory practice with farm animals and equipment is done as assigned problems.

435. Dairy Cattle Production. Cr. 3.

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

436. Advanced Animal Nutrition. Cr. 3.

Prerequisite: A.H. 331. The role of nutrients in the metabolism of farm animals. Nutrient utilization and energy efficiency in production.

438. Range Livestock Production. Cr. 3.

Prerequisite: Agron. 437. Breeds of range livestock and their relationship to management of soil and plant growth. Range economics and ranch management.

439. Hormones in Animal Production. Cr. 3.

Prerequisite: Any one of the following: V.S. 331, Chem. 342, A.H. 435, or approval of instructor. Hormones of the endocrine glands, with special reference to their influence upon milk secretion, egg production, growth and fattening.

For Graduates

533. Current Investigations in Animal Husbandry. Cr. 3.

Prerequisite: Graduate standing and consent of head of department. Investigations of specific problems in line with the major interest of the student. May be repeated once for credit.

631, 632. Thesis.

POULTRY HUSBANDRY

For Undergraduates

231. Farm Poultry. Cr. 3. (2-2).
A general introduction to the poultry industry. Application of those factors concerned with economic production as observed under average farm conditions. Laboratory demonstration in selecting, culling, grading and caponizing.

331. Incubation and Brooding. Cr. 3. (2-3).
Prerequisite: P.H. 231. Factors influencing fertility and hatchability of eggs. Practical chick embryology. Brooding requirements of baby chicks. Costs of production and methods of marketing. The laboratory includes the successful brooding of baby chicks.

332. Broiler Production. Cr. 3. (2-3).
Prerequisite: P.H. 231. Detailed study of broiler production. Influence of strains, environment, feed conversion and mortality upon production costs. The laboratory includes the raising and marketing of finished broilers.

For Undergraduates and Graduates

431. Poultry Production. Cr. 3.
Prerequisite: P.H. 231. Breeding, feeding, management and marketing of poultry and poultry products. Housing types, as influenced by biological and engineering requirements. Disease control and sanitation. Field trips to nearby poultry enterprises.

432. Turkey Production. Cr. 3.
Prerequisite: P.H. 231. The turkey industry. Breeds, breeding, incubation, rearing, housing, feeding, management and marketing. Disease control and sanitation. Field trips to nearby turkey farms whenever possible.

For Graduates

(See A. H. 533.)

VETERINARY SCIENCE

For Undergraduates

331. Anatomy of Farm Animals. Cr. 3.
An introduction to comparative anatomy of domestic animals.

332. Physiology of Farm Animals. Cr. 3.
Prerequisite: Vet. 331. An introduction to physiology of domestic animals.

334. Animal Sanitation and Disease Control. Cr. 3.
Prerequisite: Vet. 332. A consideration of some of the diseases of farm animals, both infectious and non-infectious, also parasites, parasitic diseases and the establishment of immunity through the use of biological products.

Department of Dairy Industry

PROFESSORS WILLINGHAM, HARMON.
ASSISTANT PROFESSOR RENNER.

The Department of Dairy Industry 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.

For Undergraduates

131. Principles of Dairying. Cr. 3. (2-2).
A general survey of the field of dairying; composition of milk; milk analysis; milk production and processing.

222. The Dairy Industries. Cr. 2.
Prerequisite: D.I. 131. Developing the dairying industries, relationship to agriculture; promotion; policies; regulations.

313. Dairy Products Judging. Cr. 1. (0-3).
Prerequisite: Consent of instructor. Commercial grades and classification of dairy products; practice in judging milk, butter, cheese and ice cream; student contests.

314. Advanced Dairy Products Judging. Cr. 1. (0-3).
Prerequisite: Consent of instructor. Commercial grades and classification of dairy products; practice in judging milk, butter, cheese and ice cream; student contests.

334. Fundamentals of Dairy Science. Cr. 3. (2-3).
Prerequisite: D.I. 131, Chem. 142. Chemical and physical principles of basic importance in the processing of dairy products.

335. Dairy Bacteriology. Cr. 3. (2-3).
Prerequisite: D.I. 131, Bact. 231. Study of organisms in milk and dairy products; methods of control.

337. Dairy Plant Equipment. Cr. 3. (2-3).
Prerequisite: D.I. 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.

338. Testing Dairy Products. Cr. 3. (1-6).
Prerequisite: D.I. 131, Chem. 142. Chemical and physical tests used in the processing of dairy products; laboratory control methods for the dairy plant.

339. Marketing Dairy Products. Cr. 3.
Prerequisite: D.I. 131, or approval of instructor. Federal marketing orders; by-products markets, and pricing formula; brokerage policies.

341. Market Milk. Cr. 4. (3-3).
Prerequisite: D.I. 131. 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.

For Undergraduates and Graduates

411. Dairy Seminar. Cr. 1.
Prerequisite: Senior standing in the department. A review of scientific literature; papers and reports; class discussion. Graduate students may repeat for credit.

412. Starters and Cultured Milk. Cr. 1. (0-3).
Prerequisite: D.I. 335. Bacteriology of starters and fermented milks; technique of preparing cultures for use in dairy processing operations.

422. Condensed and Powdered Milk. Cr. 2.
Prerequisite: D.I. 222. The manufacture of condensed milk and milk powder, malted milk, milk casein, commercial buttermilk and whey; field trips.

431. Cheese Making. Cr. 3. (2-3).
Prerequisite: D.I. 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.
Prerequisite: 21 hours in the department and consent of instructor. 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).
Prerequisite: D.I. 131. Problems of the ice cream industry; ingredients, standardization and calculation of mixes; processing; cost studies; field trips.

434. Buttermaking. Cr. 3. (2-3).
Prerequisite: D.I. 131. Problems of the butter industry; processing of sweet and sour cream; plant practice in the manufacture of butter; field trips.

435. Dairy and Food Inspection. Cr. 3. (2-3).
Prerequisite: D.I. 131. Municipal, state and federal dairy and food regulations; methods used in inspection in field; laboratory analysis of dairy and food products; required field trip.

437. Creamery Management and Merchandising. Cr. 3.
Prerequisite: D.I. 222. Organization and control of dairy plants; duties of plant manager; plant plans and construction; ethics and methods of merchandising; required field trip.

For Graduates

531. Dairy Industry Research. Cr. 3. (0-9).
Prerequisite: Consent of major professor. Scientific research in the field of dairy industry. May be repeated for credit.

535. Dairy Bacteriology Research. Cr. 3. (0-9).
Prerequisite: Consent of major professor. Scientific research in the field of dairy bacteriology. May be repeated for credit.

631-2. Thesis. Cr. 6.

Department of Horticulture and Park Management

PROFESSORS URBANOVSKY, ELLE, YOCUM.
INSTRUCTORS ZUKAUCKAS, GOSDIN.

The Department of Horticulture and Park Management offers training in basic horticultural subjects including plant propagation and selection of plant materials, olericulture, pomology, floriculture, landscape gardening, park design, recreation area layouts, and park management. A large greenhouse area, plant propagation house, nursery, orchard, vegetable garden, and hot beds and cold frames are maintained for instructional use in addition to the laboratories and classrooms. Training of students in commercial vegetable crop production, floriculture, and park management are special objectives, along with the general training in horticulture. The large campus area provides a wide variety of ornamental plant species for study and at the same time serves as a laboratory for landscape design and management problems which are common in recreational and park areas.

HORTICULTURE

For Undergraduates

131. Principles of Horticulture. Cr. 3. (2-2).
Fundamental principles and practices of ornamental horticulture, orcharding, vegetable gardening, propagation, and landscaping of small homes.

231. Vegetable Gardening. Cr. 3. (2-3).
Prerequisite: Hort. 131. The basic principles of market gardening and truck farming. Planning, planting and caring for the home garden.

232. Trees and Shrubs. Cr. 3.
Prerequisite: Sophomore standing. Identification, characteristics and use of shrubs, deciduous and evergreen trees of economic and ornamental importance. Offered in 1954 and alternate years.

233. Annuals and Perennials. Cr. 3.
Prerequisite: Sophomore standing. Identification, characteristics culture, and use of annuals, biennials, perennials, bulb crops and outdoor roses.

234. Commercial Propagation. Cr. 3. (2-3).
Prerequisite: Hort. 131, Chem. 142. A study of propagation techniques of commercial nurseries and greenhouse ranges, and the study of the physiological reaction of cutting material.

324. Turf Management and Operation. Cr. 2.
Principles and practices of turf management for specialized areas such as athletic fields, playground areas, golf courses, home lawns, etc.

333. Fruit Culture. Cr. 3. (2-3).
Prerequisite: Hort. 131, junior standing in agriculture. Principles of fruit production; particularly the home orchard. Tree fruits, grapes, and small fruits. Climate, soil, and water requirements. Varieties and cultural practices. Offered in 1954 and alternate years.

334. Principles of Floriculture. Cr. 3. (2-3).
Prerequisite: Hort. 131, 233, 234, Chem. 341, Agron. 241, junior standing. Greenhouse construction, heating, fundamental soil treatment, and the basic principles of flower production and floriculture marketing.

335. Principles of Floriculture. Cr. 3. (2-3).

Prerequisite: Hort. 334, junior standing. Advanced culture and techniques of fertilization, soil maintenance; specific detailed study of greenhouse crops such as chrysanthemums, carnations, stock, and snapdragons.

336. Landscape Design. Cr. 3. (1-6).

Prerequisite: E.Dr. 131, Arch. 141, 142, junior standing. Principles of landscape design, the city home, country estate, gardens, small city parks, and playgrounds. Field trips are included for practical applications.

337. Landscape Design. Cr. 3. (1-6).

Prerequisite: Hort. 336, junior standing. A continuation of Hort. 336 and the fundamental principles of the national, state, and city park department methods of planning.

339. Plant Insects and Their Control. Cr. 3.

Prerequisite: Junior standing in Agriculture or Biology. Important fruit, vegetable, and crop insects and their control. Sprays, methods of spraying and spray calendars.

3311. Landscape Planning and Maintenance. Cr. 3.

Prerequisite: Hort. 232, 233. An introductory course to landscape design with problems in the design of private, semi-private, and public areas, and maintenance of same.

410. Seminar. Cr. 1.

Prerequisite: Senior standing in Horticulture. Assigned readings, current advances, informal discussions, oral reports and papers.

For Undergraduates and Graduates

422. Design and Operation of Parks and Recreation Systems. Cr. 2.

Prerequisite: Junior standing and consent of instructor. The study of the operation, management, administration, and history of city, state, and national parks.

423. Design and Operation of Parks and Recreation Systems. Cr. 2.

Prerequisite: Junior standing and consent of instructor. The study of design and construction of park structures together with the operation, planning, financing, legislation, and recreation use.

425. Horticulture Problems. Cr. 2.

Prerequisite: Open to all advanced students having satisfactory scholastic records. An investigation of a problem in the field of special interest to the individual student concerned.

430. Horticulture Problems. Cr. 3.

Prerequisite: Open to all advanced students having satisfactory scholastic records. An investigation of a problem in the field of special interest to the individual student concerned. Repeated for credit with approval of the Head of the Department.

431. Pomology. Cr. 3.

Prerequisite: Hort. 333, advanced standing in agriculture. The principles underlying fruit production. Temperature, moisture, irrigation, nutrition, fruit setting of pomological fruit.

435. Vegetable Production. Cr. 3. (2-3).

Prerequisite: Hort. 231, advanced standing in agriculture. A study of the practices and problems involved in the commercial production and handling of the important vegetable crops for fresh market processing.

For Graduates

511. Horticulture Seminar. Cr. 1.

Review and discussion of current literature in the field. May be repeated for credit.

531. Horticultural Research. Cr. 3.

Prerequisite: Consent of major professor. An outline of a specific problem of specialized study not included in regular course work. May be repeated for credit with approval of major professor.

631. Thesis.

632. Thesis.

DIVISION OF ARTS AND SCIENCES

R. C. GOODWIN, *Dean*

The principal objective of the Division of Arts and Sciences is to promote the requisites of a general and liberal education directed toward the attainment and enrichment of social and personal culture. Though this is a goal within itself, for purposes of administration, the work of this division is divided into that of the various departments wherein varying degrees of specialization are permitted depending upon the department and the degree sought. Curricula for these specialized programs are to be found on succeeding pages.

Regardless of the finally adopted program of the student, it is believed that the entering year should be of a more general nature. At the time of the preregistration counseling program, each entering freshman will be assigned to a faculty member who will serve as academic counselor and adviser to the student during his freshman year. The student will report to his counselor for such individual conferences or group meetings as may be prescribed for the purpose of orienting himself with academic regulations and procedures, curricula, and degree requirements in the various areas of interest of the student. Unless specifically indicated to the contrary in a particular printed curriculum, each entering student in this Division will pursue upon the advice of his counselor an academic program within the framework of the established freshman year as set forth immediately below.

Prescribed Freshman Curriculum:

1. English composition	6
2. Mathematics, foreign language, science or history	18
3. Electives, if not included under 2 above	6
4. Physical education, band, or ROTC	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. During the sophomore year the student should take English, the second year of physical education, band, or air or military science, and remove all unabsolved freshman requirements. No student will be classified as a senior unless he has completed four separate semesters of physical education, air or 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, the dean will consider all active correspondence courses, grade-point averages, and the student's extra-curricular work.

THE DEGREE OF BACHELOR OF ARTS

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, biological, and social 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 also apply to all other degrees offered by the Division of Arts and Sciences unless specifically shown to the contrary. These minimum requirements are:

1. English 12
2. A foreign language ..... 6-18†
3. Mathematics 0-6*
4. Government 233-4 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 mentioned courses to total a minimum of 123 semester hours not including physical education, band, or ROTC.
9. Physical education, band, or ROTC 4-6

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; not more than 8 hours in applied music and/or music ensemble, except for students offering music as a major or minor. Courses in shorthand and typewriting may not be offered for this degree.

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†See Foreign Language Department for requirements.

*If three and one-half units of mathematics including two of algebra, one of 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 138 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 are required in college, they cannot be offered in the same subject; and one year must be in physical science and one in biological science.

In the majority of cases students completing the requirements for the Degree of Bachelor of Arts will carry their major and minor work in the following departments of this Division:

Biology
Chemistry
Education and Philosophy
English
Foreign Languages
(Spanish and French)
Geology
Government
Health, Physical Education and Recreation
History, Anthropology, and Sociology
Journalism
Mathematics
Music
Physics
Psychology
Speech

Provision is made, however, whereby students may complete either majors or minors in departments of other divisions. The Department of Economics provides excellent training for those students who desire to enter business. The combination of the more professionalized courses of Economics with the Liberal Arts program would be of great advantage to certain students.

Texas Technological College has two strong departments related to art. Allied Arts is associated with Architecture in the Division of Engineering and the Department of Applied Arts is in the Division of Home Economics. The completion of a major in either of these departments and the fulfilling of other degree requirements for the Bachelor of Arts Degree will provide the student with an excellent background for the enjoyment of art and its non-professionalized application.

In all cases the same regulations covering majors within this Division apply to majors taken in other divisions. But unless such work does constitute the major no more than 24 semester hours in the technical or professional subjects of agriculture, business administration, engineering, and home economics may be offered, as electives, for the Degree of Bachelor of Arts.

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.

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. A minimum of two years of college work is required. Many medical schools require three years of college work and some require a Bachelor's Degree.

The following course of study meets the usual premedical requirements. For predentistry students, certain modifications may be advisable.

Freshman Year: The established freshman curriculum should include Chemistry 141-2 and Biology 133-4. If necessary, Mathematics 130 should be included as a prerequisite for Physics 141-2 (see below). The University of Texas School 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. 231—Qualitative Analysis	3	Chem. 232—Inorganic Chemistry	3
Zool. 231—Comp. Vert. Anat.	3	Zool. 232—Comp. Vert. Anat.	3
*Phys. 141—General Physics	4	*Phys. 142—General Physics	4
Eng. 231—Masterpieces of Literature	3	Eng. 232—Masterpieces of Literature	3
Foreign Languages	3	Foreign Languages	3
P.E., Band, or ROTC	1	P.E., Band, or ROTC	1
	17		17

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

Junior Year

First Semester	Credit	Second Semester	Credit
Zool. 331—Animal Histology or		Zool. 332—Comp. Vert. Embry. or	
Bact. 331—Principles of Bacteriology	3	Bact. 332—Principles of Bacteriology	3
Chem. 353—Organic Chemistry	5	Chem. 354—Organic Chemistry	5
Chem. 331—Quantitative Analysis	3	Chem. 332—Quantitative Analysis	3
Govt. 233—American Govt., Org.	3	Govt. 234—American Govt., Funct.	3
Electives	3	Electives	3
	17		17

The Degree of Bachelor of Arts for Premedical or Predental Students: The Degree of Bachelor of Arts for premedical or predental 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. The major selected probably will be chemistry or zoology.

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. The following regulations apply:

1. Of the three years of preprofessional 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 satifactorily completed the work outlined in the freshman and sophomore years, or its equivalent.

2. The three years of work must satisfy all graduation requirements for the Bachelor of Arts Degree at 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 premedical adviser at each registration period. Application for admission to the professional school should be made through his office. Professional Aptitude and Admission Tests may be taken at Texas Technological College.

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 air or military science.
7. Physical Education, Band, or ROTC ..... 4-6 semester hours

Both a major and a minor are required for the Bachelor of Science Degree and each is to be completed within one of the separate subject matter fields of botany, chemistry, geology, mathematics, physics, and zoology. The minimum requirements for the major and minor are 36 and 18 semester hours, respectively, including the required amount of advanced work.

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

BACTERIOLOGY MAJOR

Freshman and Sophomore Years

Biol. 133—Botany	3	Biol. 134—Zoology	3
Chem. 141—General Chemistry	4	Chem. 142—General Chemistry	4
Math. 130 or 121-122	3 or 4	Math. 131—Trigonometry	3
Eng. 131—English Composition	3	Eng. 132—English Composition	3
Eng. 231—Masterpieces of Literature	3	Eng. 232—Masterpieces of Literature	3
Foreign Language	6	Foreign Language	6
Zool. 235—Anat. Phys. Hyg. or Zool. 231—Comp. Vert. Anat.	3	Zool. 236—Anat. Phys. Hyg. or Zool. 232—Comp. Vert. Anat.	3
Chem. 231—Qualitative Analysis	3	Chem. 232—Inorganic Chemistry	3
P.E., Band, or ROTC	2-3	P.E., Band, or ROTC	2-3
Science Elective	3	Science Elective	3
	33-35		33-35

Junior and Senior Years

Bact. 331—Principles of Bacteriology	3	Bact. 332—Principles of Bacteriology	3
Bact. 432—Immunology, Serology	3	Bact. 433—Phys. of Bact.	3
Bact. (junior or senior)	3	Bact. (junior or senior)	3
Bact., Biol. or Bot. (junior or senior)	3	Bact. Biol. or Bot. (junior or senior)	3
Chemistry (junior or senior)	3-4	Chemistry (junior or senior)	3-4
Science Electives	9	Science Electives	6
Economics	3	Economics	3
Electives	2	Electives	6
Govt. 233—Amer. Govt., Org.	3	Govt. 234—Amer. Govt., Funct.	3
Biol. 411—Seminar	1		
	33-34		33-34

BACHELOR OF SCIENCE

BOTANY MAJOR

Freshman and Sophomore Years

Biol. 133—Botany	3
Chemistry, Geology, or Physics (beginning course)	6-8
Math. 130 or 121-122	3 or 4
Eng. 131—English Composition	3
Eng. 231—Masterpieces of Literature	3
Foreign Language	6
Bot. 231—Plant Groups	3
Zool. 231—Comp. Vert. Anat.	3
P.E., Band, or ROTC	2-3
	32-36

Biol. 134—Zoology	3
Chemistry, Geology, or Physics (beginning course)	6-8
Math. 131—Trigonometry	3
Eng. 132—English Composition	3
Eng. 232—Masterpieces of Literature	3
Foreign Language	6
Bot. 232—Taxonomy	3
Zool. 232—Comp. Vert. Anat.	3
P.E., Band, or ROTC	2-3
	32-35

Junior and Senior Years

Bot. 331—Plant Physiology	3
Botany (junior or senior)	3
Bact., Biol., or Bot. (junior or senior)	6
Chem., Geol., or Phys. (begin. course)	3-4
Approved science electives	9
Economics	3
Approved electives	2
Govt. 233—Amer. Govt., Org.	3
Bot. 411—Seminar	1
	33-34

Bot. 339—Plant Anatomy	3
Botany (junior or senior)	3
Bact., Biol., or Bot. (junior or senior)	6
Chem., Geol., or Phys. (begin. course)	3-4
Approved science electives	6
Economics	3
Govt. 234—Amer. Govt., Funct.	3
Approved electives	6
	33-34

BACHELOR OF SCIENCE

ZOOLOGY MAJOR

Freshman and Sophomore Years

Biol. 134—Zoology	3
Chem., Geol., or Phys. (begin. course)	6-8
Math. 130 or 121-122	3 or 4
Eng. 131—English Composition	3
Eng. 231—Masterpieces of Literature	3
Foreign Language	6
Zool. 231—Comp. Vert. Anat.	3
Bot. 231—Plant Groups	3
P.E., Band, or ROTC	2-3
	32-36

Biol. 133—Botany	3
Chem., Geol., or Phys. (begin. course)	6-8
Math. 131—Trigonometry	3
Eng. 132—English Composition	3
Eng. 232—Masterpieces of Literature	3
Foreign Language	6
Zool. 232—Comp. Vert. Anat.	3
Bot. 232—Taxonomy	3
P.E., Band, or ROTC	2-3
	32-36

Junior and Senior Years

Zool. 331—An. Histology, or Zool. 334—Entomology	3-6
Zoology (junior or senior)	0-3
Bact., Biol., or Zool. (jr. or sr.)	6
Chem., Geol., or Phys. (begin. course)	3-4
Approved science electives	9
Economics	3
Govt. 233—Amer. Govt., Org.	3
Approved electives	2
Zool. 411—Seminar	1
	33-34

Zool. 332—Embryology, or Zool. 333—Parasitology	3-6
Zoology (junior or senior)	0-3
Bact., Biol., or Zool. (jr. or sr.)	6
Chem., Geol., or Phys. (begin. course)	3-4
Approved science electives	6
Economics	3
Govt. 234—Amer. Govt., Funct.	3
Approved electives	6
	33-34

BACHELOR OF SCIENCE

CHEMISTRY MAJOR

Freshman Year

First Semester	Credit	Second Semester	Credit
Chem. 141—General Chemistry	4	Chem. 142—General Chemistry	4
*Math. 121—Algebra	2	*Math. 122—Algebra	2
*Math. 131—Trigonometry	3	*Math. 132—Analytic Geometry	3
Eng. 131—English Composition	3	Eng. 132—English Composition	3
Phys. 141—General Physics, or Science elective	4-3	Phys. 142—General Physics, or Science elective	4-3
P.E., Band, or ROTC	1-2	P.E., Band, or ROTC	1-2
	17-18		17-18

Sophomore Year

First Semester	Credit	Second Semester	Credit
Chem. 231—Qualitative Analysis	3	Chem. 232—Inorganic Chemistry	3
Chem. 331—Quantitative Analysis	3	Chem. 332—Quantitative Analysis	3
*Math. 231—Diff. and Integ. Calc.	3	*Math. 232—Diff. and Integ. Calc.	3
Ger. 131—Beginning German	3	Ger. 132—Beginning German	3
Science elective, or Phys. 141—General Physics	3-4	Science elective, or Phys. 142—General Physics	3-4
P.E., Band, or ROTC	1	P.E., Band, or ROTC	1
	16-17		16-17

Junior Year

First Semester	Credit	Second Semester	Credit
Chem. 353—Organic Chemistry	5	Chem. 354—Organic Chemistry	5
Chem. 441—Physical Chemistry	4	Chem. 442—Physical Chemistry	4
Ger. 233—Scientific German	3	Ger. 234—Scientific German	3
Eng. 233—Technical Writing	3	Free elective	3
Science elective	3	Science elective	3
	18		18

Senior Year

First Semester	Credit	Second Semester	Credit
Chem. 411—Seminar	1	Chem. 412—Seminar	1
Govt. 233—Amer. Govt., Org.	3	Govt. 234—Amer. Govt., Funct.	3
Economics	3	Economics	3
Senior Chemistry	3	Senior Chemistry	3
Eng. 231—Masterpieces of Literature	3	Eng. 232—Masterpieces of Literature	3
Science or Mathematics elective	3	Science or Mathematics elective	3
	16		16

*If the student's high school algebra is insufficient, Math. 130 should be taken instead of Math. 121-2. Math. 131 will then be shifted to the spring and Math. 132 either to the summer or to the fall of the sophomore year. In the latter case Math. 232 ought to be taken in the following summer in order to take Chem. 441-2 (a prerequisite for some senior chemistry) 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—Analytic Geometry	3	Math. 234—Algebra	3
Math. 231—Differential Calculus	3	Math. 232—Integral Calculus	3
Eng. 231—Masterpieces of Literature	3	Eng. 232—Masterpieces of Literature	3
Foreign Language	3	Foreign Language	3
Science	3-4	Science	3-4
P.E., Band, or ROTC	1	P.E., Band, or ROTC	1
	16-17		16-17

Junior and Senior Years

First Semester	Credit	Second Semester	Credit
Math.* (junior and senior)	12	Math. (junior or senior)	12
Govt. 233—Amer. Govt., Org.	3	Govt. 234—Amer. Govt., Funct.	3
Eco. 231—Principles of Economics	3	Eco. 232—Principles of Economics	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—General Geology	3	Geol. 132—General Geology	3
Chem. 141—General Chemistry	4	Chem. 142—General Chemistry	4
Foreign Language 131, or		Foreign Language 132, or	
E.Dr. 131—Engineering Drawing	3	E.Dr. 121—Engineering Drawing	2-3
Math. 130—Algebra	3	Math. 131—Trigonometry	3
Eng. 131—English Composition	3	Eng. 132—English Composition	3
P.E., Band, or ROTC	1-2	P.E., Band, or ROTC	1
	17-18		16-17

Sophomore Year

First Semester	Credit	Second Semester	Credit
Foreign Language 231, or		Foreign Language 232, or	
Math. 132—Analytics	3	Elective	3
Geol. 231—Mineralogy	3	Geol. 232—Mineralogy	3
Geol. 235—Adv. Gen. Geol.	3	Geol. 236—Adv. Hist. Geol.	3
Biol. 133—Botany, or		Biol. 134—Zoology, or	
Phys. 141—General Physics	3-4	Phys. 142—General Physics	3-4
Eng. 231—Masterpieces of Literature	3	Eng. 232—Masterpieces of Literature	3
P.E., Band, or ROTC	1	P.E., Band, or ROTC	1
	16-17		16-17

SUMMER

Geol. 363—Field Geology 6

Junior Year

First Semester	Credit	Second Semester	Credit
Geol. 333—Petrol., Min. Op. & Petrol.	3	Geol. 334—Petrol., Min. Op. & Petrol.	3
Geol. 335—Paleontology	3	Geol. 336—Paleontology	3
Eco. 231—Principles of Economics, or		Eco. 232—Principles of Economics, or	
*Eco. 235—Principles of Economics	3	*Eco. Geo. 233	3
Biol. 133—Botany, or		Biol. 134—Zoology or	
Phys. 141—General Physics	3-4	Phys. 142—General Physics	3-4
Elective or		Elective or	
Math. 231—Differential Calculus	3	Math. 232—Integral Calculus	3
	15-16		15-16

Senior Year

First Semester	Credit	Second Semester	Credit
Geol. 433—Structural Geology	3	Geol. 434—Petroleum Geology	3
Geol. 435—Index Fossils or		Geol. 436—Micropaleontology or	
Geol. 437—Sedimentation or		Geol. 438—Sedimentation or	
Geol. 4314—Stratigraphy	3	Geol. 4315—Stratigraphy	3
Science elective	3	Science elective	3
General elective	3	General elective	3
Govt. 233—Amer. Govt., Org.	3	Govt. 234—Amer. Govt., Funct.	3
	15		15

* Only for those who transfer into this division and have had Eco. 235.

BACHELOR OF SCIENCE

PHYSICS MAJOR

Freshman Year

First Semester	Credit
Eng. 131—English Composition	3
Math. 121—Algebra	2
Math. 131—Trigonometry	3
Phys. 141—Elementary Physics	4
Chem. 141—General Chemistry	4
P.E., Band, or ROTC	1-2
	17-18

Second Semester	Credit
Eng. 132—English Composition	3
Math. 122—Algebra	2
Math. 132—Analytics	3
Phys. 142—Elementary Physics	4
Chem. 142—General Chemistry	4
P.E., Band, or ROTC	1-2
	17-18

Sophomore Year

First Semester	Credit
Eng. 231—Masterpieces of Literature	3
Math. 251—Calculus	5
Phys. 235—Engineering Physics	3
Phys. 215—Physical Measurements	1
Geol. 131—General Geology	3
P.E., Band, or ROTC	1
	16

Second Semester	Credit
Eng. 232—Masterpieces of Literature	3
Math. 331—Applications of Calculus	3
Phys. 236—Engineering Physics	3
Phys. 216—Physical Measurements	1
P.E., Band, or ROTC	1
Geol. 132—General Geology	3
Elective	3
	17

Junior and Senior Years

First Semester	Credit
Ger. 131—Beginning German, or French 131—Beginning French	3
Govt. 233—Amer. Govt., Org.	3
Phys. 331—Light	3
Phys. 336—Electricity and Magnetism	3
Phys. 337—Modern Physics	3
Phys. 436—Individual Study	3
Eco. 231—Principles of Economics	3
Math. 434—Advanced Calculus	3
Math. 332—Differential Equations	3
Phys. 423—Electrical Measurements	2
Ger. 233—Scientific German, or French 231—Grammar Readings	3
	32

Second Semester	Credit
Ger. 132—Beginning German, or French 132—Beginning French	3
Govt. 234—Amer. Govt., Funct.	3
Phys. 332—Heat	3
Phys. 341—Elec. Tubes & App.	4
Phys. 338—Modern Physics	3
Phys. 437—Individual Study	3
Eco. 232—Principles of Economics	3
Phys. 435—Mechanics	3
Math. 435—Advanced Calculus	3
Phys. 424—Electrical Measurements	2
Ger. 234—Scientific German, or French 232—Grammar Readings	3
Elective	3
	33

BACHELOR OF SCIENCE

PHYSICS MAJOR

APPLIED PHYSICS OPTION

Freshman Year

First Semester	Credit
Eng. 131—English Composition	3
Math. 121—Alg., Math. 131—Trig., or Math. 151—Algebra, Trigonometry	5
Phys. 141—General Physics	4
Chem. 141—General Chemistry	4
P.E., Band, or ROTC	1-2
	17-18

Second Semester	Credit
Eng. 132—English Composition	3
Math. 122—Alg., Math. 132—Anal., or Math. 152—Algebra, Analytical	5
Phys. 142—General Physics	4
Chem. 142—General Chemistry	4
P.E., Band, or ROTC	1-2
	17-18

Sophomore Year

First Semester	Credit	Second Semester	Credit
Math. 251—Calculus	5	Math. 331—Applications of Calculus	3
Eng. 231—Masterpieces of Literature	3	Eng. 232—Masterpieces of Literature	3
Phys. 235—Engineering Physics	3	Phys. 236—Engineering Physics	3
Phys. 215—Physical Measurements	1	Phys. 216—Physical Measurements	1
M.E. 313—Machine Shop	1	M.E. 314—Machine Shop	1
E.Dr. 131—Engineering Drawing	3	C.E. 233—Statics	3
P.E., Band, or ROTC	1	E.Dr. 132—Engineering Drawing	2
		P.E., Band, or ROTC	1
	17		17

Junior Year

First Semester	Credit	Second Semester	Credit
Ger. 131—Beginning German, or French 131—Beginning French	3	Ger. 132—Beginning German, or French 132—Beginning French	3
Math. 334—Advanced Calculus	3	Math. 335—Advanced Calculus	3
Math. 332—Differential Equations	3	Phys. 338—Modern Physics	3
Phys. 337—Modern Physics	3	Phys. 341—Elec. Tubes and App.	4
Phys. 334—Electricity and Magnetism	3	C.E. 333—Strength of Materials	3
Govt. 233—Amer. Govt., Org.	3	Govt. 234—Amer. Govt., Funct.	3
	18		19

Senior Year

First Semester	Credit	Second Semester	Credit
Phys. 423—Electrical Measurements	2	Phys. 424—Electrical Measurements	2
Phys. 331—Light	3	Phys. 332—Heat	3
Math. 439—Vect. Anal.	3	Phys. 435—Mechanics	3
Ger. 233—Scientific German, or French 231—Grammer Readings	3	Ger. 234—Scientific German, or French 232—Grammar Readings	3
Eco. 231—Principles of Economics	3	Eco. 232—Principles of Economics	3
E.E. 4211—Instrumentation	2	E.E. 4222—Instrumentation	2
E.E. 4121—Instrumentation Lab.	1	E.E. 4122—Instrumentation Lab.	1
	17		17

THE DEGREE OF BACHELOR OF SCIENCE IN EDUCATION

Programs leading to this degree or to the Bachelor of Arts Degree may be followed in qualifying for the various certificates in either elementary or secondary education. The requirements for this degree may be found under "Department of Education." The curriculum leading to the Bachelor of Science in Education with a Physical Education major is outlined under the description of the Department of Health, Physical Education and Recreation.

THE DEGREE OF BACHELOR OF MUSIC

The requirements for the degree under its various options are indicated in the description of the Department of Music.

Department of Biology

PROFESSORS CROSS, LANDWER, STRANDTMANN, STUDHALTER.
ASSOCIATE PROFESSORS SEALEY, CAMP.
INSTRUCTORS HOLMAN, STAFFORD.

Students majoring in bacteriology, botany, or zoology may minor in any of these fields, provided the major and minor are not in the same field. Students majoring in botany for the Bachelor's Degree are expected to complete the following courses in the Department of Biology as a minimum: Biology 133-134, 411; Botany 231, 232, 331, 339; Zoology 231-232; and 12 additional hours in courses of junior and senior rank in bacteriology, biology, or botany. Students majoring in zoology for the Bachelor's Degree are expected to complete the following courses in the Department of Biology as a minimum: Biology 133-134, Zoology 411; Zoology 231-232; and two of the following four—Zoology 331, 332, 333, 334; Botany 231, 232; and 12 additional hours in courses of junior and senior rank in bacteriology, biology, or zoology.

Students majoring in bacteriology will be expected to complete the following courses: Biology 133-134, 411; Zoology 235-236, or 231-232; Bacteriology 331-332, 432, 433, plus 6 semester hours of bacteriology of junior or senior rank, or three semester hours of junior or senior rank and Zoology 333. Dairy Industry 335 may be counted as a course in bacteriology of junior rank.

No grade below C will be accepted on the major for the Bachelor's Degree in the Department of Biology. No grade below C will be accepted on the minor for the Bachelor's Degree, if the major and minor are both in the Department of Biology. No grade below B will be accepted for any graduate course, major or minor, if the student's major is in the Department of Biology.

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 Graduate School.

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

For Undergraduates

131. Bacteriology for Nurses. Cr. 3. (2-3).
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).
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.

For Undergraduates and Graduates

331-2. Principles of Bacteriology. Cr. 3. (2-3).
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 Diseases. Cr. 3.

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.

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

Prerequisite: 6 semester hours of bacteriology. Selected problems in the various fields of bacteriology, according to the needs or interests of the student. May be repeated for full credit in another field or with new materials in the same field.

432. Immunology and Serology. Cr. 3. (2-3).

Prerequisite: 6 semester hours of bacteriology; 10 semester hours of chemistry. The theories of infection and resistance, the production and demonstration of antibodies as well as the action of antigens and the various diagnostic tests.

433. Physiology of Bacteria. Cr. 3. (2-3).

Prerequisite: 6 semester hours of bacteriology; 12 semester hours of chemistry. Chemistry and physiology of bacteria and related microorganisms; the influence of environment on bacterial metabolism, growth and reproduction.

BIOLOGY

For Undergraduates

133-4. Botany and Zoology. Cr. 3. (2-3).

Both botany and zoology are offered each semester; either may be taken first, but both, or their equivalents, must be completed before credit is received toward a degree. Biology 133, botany, emphasizes the important groups of plants, In Biology 134 a survey of general zoology is given, with emphasis on the vertebrates, protozoa, insects, and certain parasitic forms. In both, general principles and concepts are stressed.

332. Teaching of Biology. Cr. 3.

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.

For Undergraduates and Graduates

331. Heredity. Cr. 3.

Prerequisite: 12 semester hours in the Biology Department. Principles of heredity with special reference to practical application in human affairs, heredity mechanisms, and problems.

333. Bio-ecology. Cr. 3. (2-3).

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.

411. Biology Seminar. Cr. 1.

Prerequisite: Senior or graduate standing in bacteriology, botany or zoology. Critical reviews of classical and recent literature and reports of original investigations. May be repeated for full credit.

BOTANY

For Undergraduates

231. Morphology of the Plant Groups. Cr. 3. (2-3).

Prerequisite: Biology 133-4. The morphology of those plant groups not emphasized in Biology 133.

232. Taxonomy. Cr. 3. (2-3).

Prerequisite: Biology 133-4. Principles and practice in the classification of the flowering plants.

For Undergraduates and Graduates

331. Plant Physiology. Cr. 3. (2-3).

Prerequisite: Botany 231-2; or Biology 133-4 and 6 semester hours in horticulture or agronomy; prerequisite or parallel, Chemistry 141. The physiological processes as applied to the seed plants.

332. Plant Pathology. Cr. 3. (2-3).

Prerequisite: Biology 133-4 and six additional hours in agronomy, botany, or horticulture; prerequisite or parallel, Bacteriology 231 or equivalent. Principles underlying the cause, identification, and control of plant diseases.

339. Plant Anatomy. Cr. 3. (2-3).
Prerequisite: Botany 231-2; or Biology 133-4 and 6 semester hours in horticulture or agronomy. Studies of anatomy of the vascular plants.

431. Botanical Microtechnique. Cr. 3. (0-9).
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.

435. Advanced Taxonomy. Cr. 3. (0-9).
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. Plant Geography. Cr. 3.
Prerequisite: 6 semester hours in botany of junior rank; or Biology 133-4 and 12 semester hours in zoology, geology, geography, horticulture, or agronomy. Principles of the geography of plants; vegetation types, especially of North America. Field trips to nearby sections of the country are included as feasible at a minimum of cost to the student.

437. Problems in Plant Geography. Cr. 3.
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 and its underlying principles; origin and composition of floras, especially of North America. 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.

For Graduates

531. Problems in Botany. Cr. 3. (0-9).
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. (0-9).
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 assigned problems. The cost of field trips is held to a minimum. May be repeated for full credit with new materials. Offered at intervals.

631-2. Thesis

ZOOLOGY

For Undergraduates

135-6. Human Anatomy and Physiology. Cr. 3. (2-3).
The elements and fundamental principles of human anatomy and physiology. For nurses only. May not be used as part of the requirements for a major in zoology.

137. Anatomy and Physiology. Cr. 3. (0-9).
Prerequisite: Chemistry 133-4. The gross anatomy and physiology of the human body. The digestive and reproduction systems are emphasized. Given with lecture, laboratory and preparation combined in three 3-hour periods. No outside preparation required. Open only to students of Home Economics and not applicable to degrees in other divisions.

231-2. Comparative Vertebrate Anatomy. Cr. 3. (2-3).
Prerequisite: Biology 133-134. Structure, function and history of the vertebrates with emphasis on the dogfish shark and the cat.

235-6. Anatomy, Physiology, and Hygiene. Cr. 3. (2-3).
Prerequisite: Chemistry 133-134 and sophomore standing. Gross anatomy of the mammalian body; the various physiological processes; the fundamental principles of hygiene and sanitation; the fundamentals of heredity. May not be used as a part of the requirements for a major in zoology. Zoology 236 may be taken before 235.

For Undergraduates and Graduates

331. Animal Histology. Cr. 3. (2-4).
Prerequisite: Zoology 231-232. The study of normal animal tissues. Laboratory assignments are to be completed in the laboratory.

332. Comparative Vertebrate Embryology. Cr. 3. (2-4).
Prerequisite: Zoology 231-232. The embryological development of different vertebrates with emphasis on the chick and the pig. Laboratory assignments are to be completed in the laboratory.

333. Parasitology. Cr. 3. (2-3).
Prerequisite: Zoology 231-232 or Zoology 336. Internal and external parasites, with emphasis on the helminths. Life histories and host relationships.

334. Entomology. Cr. 3. (2-3).
Prerequisite: Zoology 231-232 or Zoology 336; or Biology 133-134 and six semester hours of sophomore rank in the Division of Agriculture. Structure and classification of insects.

335. Insect Taxonomy. Cr. 3. (1-6).
Prerequisite: Zoology 334. A critical study of insect classification. Assigned problems and readings.

336. Comparative Invertebrate Morphology. Cr. 3. (2-3).
Prerequisite: Biology 133-134 and Zoology 231-232, or Geology 335-336. Structure, life history, and evolution of the invertebrates. Field trips and assigned readings.

435. Cytology. Cr. 3. (2-3).
Prerequisite: Biology 331 or Zoology 331 or Zoology 332, or junior standing in botany. A study of the cell in evolution and heredity.

436. Zoological Technique. Cr. 3. (0-9).
Prerequisite: 12 semester hours of zoology above the freshman year. Preparation and interpretation of permanent microscope slides.

4312. Advanced Parasitology. Cr. 3. (2-3).
Prerequisite: Zoology 333 and Zoology 436. Biology, taxonomy, and evolution of parasites, with emphasis on the arthropods.

For Graduates

531. Problems in Zoology. Cr. 3. (0-9).
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. (0-9).
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.

631-2. Thesis.

Courses numbered 300 or above in Bacteriology or Biology may be counted as courses of the same level either in Botany or Zoology.

Botany

(See Biology)

Department of Chemistry and Chemical Engineering

PROFESSORS DENNIS, CRAIG, GOODWIN, HOLCOMB, OBERG, SLAGLE.
ASSOCIATE PROFESSORS ESTOK, LEE, RENARD.
ASSISTANT PROFESSORS SOUTHALL, STUART, WILHOIT.
INSTRUCTORS BROCK, GRYDER.

The Department of Chemistry and Chemical Engineering offers curricula leading to three Bachelor's Degrees. For those who desire a maximum of 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 with supporting work in mathematics and other sciences. This curriculum may be preferred by those who wish to enter industry as chemists. The curriculum for the Degree of Bachelor of Science in Chemical Engineering is based upon the

belief that the student should secure a thorough fundamental training in both chemistry and engineering. This program may be preferred by those students who wish to enter industry as chemical engineers.

All three curricula are designed to fit the student for graduate work as well as the professional pursuits mentioned above.

It is highly desirable that the student's accomplishment be of the best quality. Grades of D will not be accepted in more than 20 per cent of the hours counted in a major in this department. Not more than one D will be accepted in any course.

This department offers the degrees of Master of Science in Chemical Engineering, Master of Science in Chemistry, and Doctor of Philosophy in Chemistry. The requirements for these degrees are outlined in the Graduate Bulletin.

CHEMISTRY

For Undergraduates

133-4. Elementary Chemistry. Cr. 3. (2-3).
Some of the principles and applications of inorganic, organic, and biochemistry. Only for nursing students, physical education majors, and some Home Economics students. This course does not serve as prerequisite for any other course in chemistry. Applicable only to degrees with above majors.

141-2. General Chemistry. Cr. 4. (3-3).
Prerequisite for all other courses in chemistry except 133-4. A general course in chemistry for all students of the College except those mentioned under 133-4.

231. Qualitative Analysis. Cr. 3. (2-3).
Prerequisite: Chem. 141-2 (142 may be parallel). The qualitative separation and the detection of common cations and anions with a thorough consideration of underlying principles.

232. Inorganic Chemistry. Cr. 3.
Prerequisite: Chem. 231. A more extended consideration of those principles of chemistry which normally are not covered sufficiently in a first course.

235. Hydrocarbon Chemistry. Cr. 3.
Prerequisite: Chem. 141-2. A service course for petroleum engineers. The study of the chemistry of hydrocarbons with particular reference to petroleum, natural gas, and synthetic fuels.

236. Analytical Chemistry. Cr. 3. (1-6).
Prerequisite: Chem. 141-2. A service course for petroleum engineering students. Principles of gravimetric and volumetric quantitative analysis.

330. The Teaching of High School Chemistry. Cr. 3.
Prerequisite: 12 hours of chemistry, or consent of instructor. Offered only in summer sessions.

331-2. Quantitative Analysis. Cr. 3. (3-6).
Prerequisite: Chem. 141-2. Prerequisite or parallel: Chem 231 and 232. Gravimetric and volumetric methods of quantitative analysis. Recommended for the development of laboratory technique. Majors in other departments may take Chemistry 332 with special permission without all the usual prerequisites.

341. Introductory Organic Chemistry. Cr. 4. (3-3).
Prerequisite: Chem. 141-2. A study of the compounds of carbon. Primarily for students in Agriculture and Home Economics. Not open to majors in chemistry for credit.

342. Physiological Chemistry. Cr. 4. (3-3).
Prerequisite: Chem. 341 or equivalent. An elementary course in physiological chemistry.

353-4. Organic Chemistry. Cr. 5. (3-6).
Prerequisite: Junior standing in chemistry. A thorough foundation course in organic chemistry for chemical engineering majors, chemistry majors, premedical and other students. Prerequisite for all higher numbered courses in organic chemistry. Divided into sections according to student interest.

For Undergraduates and Graduates

411-2. Chemical Literature and Seminar. Cr. 1.
Prerequisite: Senior standing in chemistry. First semester primarily devoted to training in methods of using chemical literature and chemical libraries. Second semester primarily devoted to study of and reports upon specific topics.

431. Qualitative Organic Analysis. Cr. 3. (1-6).
Prerequisite: Senior standing in chemistry. The indentification of unknowns and the separation and identification of the components of mixtures of organic substances.

433. Inorganic Preparations. Cr. 3. (0-9).
Prerequisite: Senior standing in chemistry. Preparation and purification of inorganic compounds, with emphasis on principles and techniques.

434. Organic Preparations. Cr. 3. (0-9).
Prerequisite: Senior standing in chemistry. The synthesis of organic compounds with special attention to techniques and yields.

436. Biological Chemistry I. Cr. 3. (2-3).
Prerequisite: Senior standing in chemistry. The chemistry of carbohydrates, proteins, lipids, enzymes and other constituents of living systems.

437. Biological Chemistry II. Cr. 3. (2-3).
Prerequisite: Senior standing in chemistry. A study of biochemical processes and their regulation.

438. Physical Chemistry III. Cr. 3.
Prerequisite: Chem. 441-2. Reaction kinetics, thermodynamics, solutions, atomic theory and valence, and other advanced topics.

439. Instrumental Methods of Analysis. Cr. 3. (1-6).
Prerequisite: Senior standing in chemistry. Theory and application of the important instruments used for analysis in industry and research.

441-2. Physical Chemistry I-II. Cr. 4. (3-3).
Prerequisite: Chem. 331-2, 5-6 semester hours in calculus, 6 semester hours in physics. Prerequisite or parallel: Chem. 353-4. The modern theories of chemistry and the methods of physicochemical measurements.

For Graduates

511-2. Graduate Seminar. Cr. 1.
Prerequisite: Graduate standing in chemistry. A seminar for graduate students and staff members. Required of all graduate students majoring in this department. May be taken more than once for credit.

5301. Advanced Inorganic Chemistry I. Cr. 3.
Prerequisite: Chem. 441-2. Atomic structure, nature of the chemical bond, periodic classification of the elements, and the chemistry of representative elements.

5302. Advanced Inorganic Chemistry II. Cr. 3.
Structure of coordination compounds, heteropoly acids, the chemistry of nonaqueous solvents, and other selected topics.

5303. Nuclear Chemistry. Cr. 3.
Prerequisite: Chem. 5301. Theory of nuclear structure, natural and artifical radioactivity, radioactive tracers, and other selected topics.

5304. Selected Topics in Inorganic Chemistry. Cr. 3.
Prerequisite: Consent of instructor. Consideration of special areas of inorganic chemistry not commonly included in other courses.

5314. Advanced Analytical Chemistry. Cr. 3.
Prerequisite: Chem. 331-2. An advanced survey of the general principles and special methods of analytical chemistry.

5315. Spectrographic Analysis I, Emission Spectra. Cr. 3. (2-3).
Prerequisite: Consent of instructor. Physics 331 is recommended. Qualitative and quantitative analysis using emission spectra.

5316. Spectrographic Analysis II, Absorption Spectra. Cr. 3. (2-3).
Prerequisite: Chem. 5315. Identification of compounds and analysis of mixtures by means of their absorption spectra.

5318. Chemical Microscopy. Cr. 3. (1-6).
Fundamental principles and applications of chemical microscopy.

5321. Advanced Organic Chemistry I. Cr. 3.
Prerequisite: Chem. 353-4. An advanced survey of the principles and reactions of organic chemistry.

5322. Advanced Organic Chemistry II. Cr. 3.
Prerequisite: Chem. 5321. Continuation of Chem. 5321.

5324. Quantitative Organic Analysis. Cr. 3. (0-9).
Prerequisite: Chem. 353-4. The quantitative determination of elements and functional groups in organic compounds.

5325. Selected Topics in Organic Chemistry. Cr. 3.
Prerequisite: Chem. 5321. Since the topics may vary from year to year, may be repeated for credit.

5327. Physical Organic Chemistry. Cr. 3.
Prerequisite: Chem. 5321 and 5342. A consideration of the reactions and properties of organic compounds in the light of physicochemical principles.

5328. Mechanisms of Organic Chemistry. Cr. 3.
Prerequisite: Chem. 5327. Modern interpretations of organic reaction mechanisms and rearrangements.

5334. Selected Topics in Biological Chemistry. Cr. 3.
Since the topics may vary from year to year, this course may be repeated for credit.

5335. Physical Biochemistry. Cr. 3.
Prerequisite: Chem. 436, 437. Prerequisite or parallel: Chem. 5342. The application of the principles of physical chemistry to membrane permabilities, membrane potentials, energy metabolism, properties of large molecules and other such problems.

5342. Advanced Physical Chemistry. Cr. 3.
Prerequisite: Chem. 441-2. An advanced survey of the important topics of physical chemistry.

5343. Colloidal Chemistry. Cr. 3. (2-3).
Prerequisite: Chem. 5342.

5344. Kinetics of Chemical Reactions. Cr. 3.
Prerequisite: Chem 5342.

5346. Electrochemistry. Cr. 3.
Prerequisite: Chem. 5342.

5347. Chemical Thermodynamics. Cr. 3.
Prerequisite: Chem. 5342.

5348. Selected Topics in Physical Chemistry. Cr. 3.
Prerequisite: Chem. 5342. Since the topics may vary from year to year, this course may be repeated for credit.

537, 538. Advanced Work in Specific Fields. Cr. 3 to 6.
Prerequisite: Graduate standing and approval of the head of department. Nature of course and amount of credit depend on interest of students. May be taken for chemistry credit by chemistry students, or for chemical engineering credit by chemical engineering students. See same course under Chemical Engineering, Graduate Courses.

631-2. Master's Thesis. Cr. 3.

731, 732. Research. Cr. 3.
Required of students on the Doctor's dissertation, may be repeated for credit as many times as the advisory committee recommends.

831-2. Doctor's Dissertation. Cr. 3.
Required as the final registration for the dissertation.

CHEMICAL ENGINEERING

See listing of courses under "Courses in Chemical Engineering" in Division of Engineering.

Department of Education and Philosophy

PROFESSORS CARROLL, BARNETT, COOPER, GARLIN, JACKSON, STENSLAND.
ASSOCIATE PROFESSORS EVANS, HARTSELL, LITTLE, LIVINGSTON, MECHAM.
ASSISTANT PROFESSORS DAVIDSON, EDWARDS.
INSTRUCTORS BETTENCOURT, STUART, WHEELER.

THE BACHELOR OF ARTS DEGREE IN TEACHER EDUCATION

The standard requirements of the Bachelor of Arts Degree are of sufficient flexibility to permit the incorporation within this curriculum of the work in professional education, necessary under present regulations to qualify the graduate to teach either in the elementary or the secondary schools of Texas. Majors and minors may be selected in any department within the Division of Arts and Sciences, including Education. Other requirements for the degree are the same as for any other program leading to the Bachelor of Arts degree.

THE DEGREE OF BACHELOR OF SCIENCE IN EDUCATION

Texas has set as its goal a program in the field of professional education involving continuing improvement leading toward professional competence for teachers. The Professional Education Curriculum at Texas Technological College is concerned with this same

goal of continuing improvement. This curriculum is based upon the Professional Education Core of 30 semester hours and five broad areas, all constituting either required or elective courses leading toward increasing competence of professional education personnel, particularly the classroom teacher in so far as the baccalaureate degree is concerned. The required Professional Education Core courses include Education 130, 231, 232, 330; 6 hours of electives; with 333, 335, 431, 433 for Elementary and 334, 336, 432, 434 for Secondary. It is contemplated in this Professional Education Curriculum that there will be a common core within the field of professional education itself which will represent a preparation base within each successive year for the four undergraduate years which will be experienced by the preservice members of the education profession. In the first two years of the program relatively little differentiation occurs in this Professional Education Core. In the second two years, however, greater differentiation does occur leading toward the fields of elementary and secondary education. The interrelatedness, however, of these two areas of service is stressed throughout the four years.

A general term referring to the five Broad Area groups of courses supplementing and enhancing the Professional Education Core is that of "General Education." As used herein, this includes the Communicative Arts; the Basic Social Sciences; the Basic Science Arts; the Fine and Practical Arts; and Bases for Healthful Living. Because the courses thus classified are offered throughout the major divisions of the College, it is felt that an unusually fine opportunity exists in the Professional Education Curriculum for the career person in education to acquire those fundamental knowledges, skills, attitudes, and appreciations, including technological and cultural emphases in the total program, recognized as being increasingly essential for teacher competency in modern society.

Just as education in general has set for itself the purposes and goals of self-realization, economic efficiency, human relationships, and civic responsibility, so does the teacher education program involve learning opportunities which make it possible for the preservice members of the profession to have a basic understanding of the world and of the society in which we live and, further, to live well-balanced, useful lives as citizens in general with a special leadership responsibility as teachers with classroom and related opportunities for service to children, youth, and adults.

GENERAL EDUCATION——BROAD AREAS

The following listing of the Broad Areas in General Education is for the reference convenience of the student planning a career in the field of elementary education or secondary education and shows the specific courses with numbers, titles, and units, either required or recommended, within each of the Broad Areas listed. The courses within each of these Broad Area classifications are designed to supplement and complement the courses in the Professional Education Core Curriculum. Note that with the selection of appropriate elective courses, choice of several majors and minors is made available. This is particularly useful for those who want to acquire certification in the secondary school and for the broadening of the technological and culture bases in graduate fields.

BROAD AREAS
COMMUNICATIVE ARTS

Number	Course Title	Units	Elementary	Secondary
Eng. 131-2	English Composition	6	*	*
Eng. 231-2	Masterpieces of Literature	6	*	*
Spch. 239	Developing Speech Competence for Teachers	3	*	**
Spch. 233 or Spch. 338	Voice and Diction / Business and Professional Speech	3		**

BASIC SOCIAL SCIENCES

Hist. 231-2	Eco. and Political History of the U. S.	6	*	**
Govt. 233-4	American Government	6	*	*
Soc. 230	Introduction to Sociology	3		*
Rur. Soc. 432	Rural Sociology	3	*	**
Anthro. 232	Cultural Anthropology	3	*	**
Eco. 237	Economic Geography	3	*	**
Fam. Rel. 433 or Soc. 332	Family Relations / Marriage	3	*	**

BASIC SCIENCE ARTS

Bio. 133-4	Botany and Zoology	6	*	**
Chem. 141-2	General Chemistry	8		**
or Phys. 141-2	Elements of College Physics	8	*	**
or Geol. 131-2	General Geology	6		**
Math. 135	Mathematics in General Education	3	*	
Ch. D. 331	Dev. of Learning in Young Children	3	*	
Mathematics and Science or Lab. Science		6 / 6 / 12		
Psych. 331	Child Psychology	3	*	
Psych. 335	Adolescent Psychology	3		*

FINE AND PRACTICAL ARTS

Ap.A. 337	Art in Elementary Education	3	*	
Ap.A. 338	Art in Elementary Education	3	*	
Music 231	Fundamentals of Music for Elem. Classroom Teachers	3	*	
Music 232	Elem. Music Prin., Practices & Materials	3	*	

BASES FOR HEATHFUL LIVING

P. E.	Freshman Physical Education	2	*	*
P. E.	Sophomore Physical Education	2	*	*
P. E. 230	Health Education in Elementary & Secondary Schools	3	*	*
P. E. 233	P. E. for the Elementary School	3	*	
P. E. 131	Introduction to Physical Education	3		*

Students preparing to teach in the elementary school are advised to follow the four-year schedule outlined in the following. Note that certain courses in the Professional Education Core are either required or recommended for those planning a career in the field of elementary education. Similar requirements or recommendations, together with elective choices, are indicated for the "Broad Areas" discussed above.

* Required
** Recommended

BACHELOR OF SCIENCE IN EDUCATION

ELEMENTARY PROGRAM

Freshman Year

First Semester	Credit	Second Semester	Credit
Ed. 130—Foundations of Education	3	Eng. 132—English Composition	3
Eng. 131—English Composition	3	Biol. 134—Zoology	3
Biol. 133—Botany	3	Hist. 232—Eco. & Pol. Hist. of U. S.	3
Hist. 231—Eco. & Pol. Hist. of U. S.	3	Govt. 233—Amer. Govt., Org.	3
Math. 135—Math. in Gen. Educ.	3	P. E., Band, or ROTC	1-2
P. E., Band, or ROTC	1-2	Free Electives	3
	16-17		16-17

Sophomore Year

First Semester	Credit	Second Semester	Credit
Ed. 232—Educational Psychology	3	Ed. 231—Educational Sociology	3
Eng. 231—Masterpieces of Literature	3	Eng. 232—Masterpieces of Literature	3
Govt 234—Amer. Govt., Funct.	3	Spch. 239—Dev. Spch. Comp. for Teachers	3
Chem. 141—General Chemistry, or Phys. 141—Elem. of College Phys., or Geol. 131—General Geology	4-3	Chem. 142—General Chemistry, or Phys. 142—Elem. of College Phys., or Geol. 132—General Geology	4-3
Music 231—Fundamentals of Music for Elem. Classroom Teachers	3	Music 232—Elem. Music Prin., Practices, and Materials	3
P.E., Band, or ROTC	1	P.E., Band, or ROTC	1
	16-17		16-17

Junior Year

First Semester	Credit	Second Semester	Credit
Ed. 330—Prin. of Modern Educ.	3	Ed. 333—Curri. Dev. in Elem. Educ.	3
Psy. 331—Child Psychology	3	Ed. 335—Elem. Educ. Meth.	3
P. E. 230—Health Ed. in Elem. & Sec. Schools	3	P. E. 233—P. E. for the Elem. School	3
Ap.A. 337—Art in Elem. Educ.	3	Ap.A. 338—Art in Elem. Educ.	3
Elective	3	Ch. D. 331—Dev. of Learning in Young Children	3
	15		15

Senior Year

First Semester	Credit	Second Semester	Credit
Ed. 431—St. Obser. & Teach. in Elem. School	3	Ed. 433—Adv. Student Obser. & Teach in Elem. School	3
Education Elective	3	Education Elective	3
Rur. Soc. 432—Rural Sociology	3	Anthro. 232—Cultural Anthropology	3
Eco. 237—Economic Geography	3	Fam. Rel. 433—Family Relations, or Soc. 332—Marriage	3
Free Electives	6	Free Electives	3
	18		15

Students preparing to teach in the secondary school are advised to follow the four-year schedule outlined in the following. Note that certain courses in the Professional Educational Core are either required or recommended for those planning a career in the field of secondary education. Similar requirements or recommendations, together with elective choices, are indicated for the "Broad Areas" discussed in the above. Transfer students, however, who have attained junior standing in standard colleges may be considered on an individual basis.

BACHELOR OF SCIENCE IN EDUCATION

SECONDARY PROGRAM

Freshman Year

First Semester	Credit	Second Semester	Credit
Ed. 130—Foundations of Education	3	Eng. 132—English Composition	3
Eng. 131—English Composition	3	P.E. 131—Introduction to P.E. or	
*Mathematics	3	P.E. 133—Pers. & Com. Health	3
Hist. 231—Eco. & Pol. Hist. of U. S., or		*Mathematics	3
Speech 131—Fundamentals of Speech	3	Hist. 232—Eco. & Pol. Hist. of U. S., or	
*Science	3-4	Speech 233—Voice and Diction	3
P. E., Band, or ROTC	1-2	*Science	3-4
	16-18	P. E., Band, or ROTC	1-2
			16-18

Sophomore Year

First Semester	Credit	Second Semester	Credit
Ed. 232—Educational Psychology	3	Ed. 231—Educational Sociology	3
Eng. 231—Masterpieces of Literature	3	Eng. 232—Masterpieces of Literature	3
Govt. 233—Amer. Govt., Org.	3	Govt. 234—Amer. Govt., Funct.	3
Teaching Major	3	Teaching Major	6
Soc. 230—Introduction to Soc.	3	Teaching Minor	3
P.E., Band, or ROTC	1	P.E., Band, or ROTC	1
	16		16

Junior Year

First Semester	Credit	Second Semester	Credit
Ed. 330—Prin. of Modern Educ.	3	Ed. 334—Curric. Dev. in Sec. Educ.	3
Psy. 335—Adolescent Psychology	3	Ed. 336—Sec. Educ. Meth.	3
P.E. 230—Health Ed. in the Primary & Secondary Schools	3	Teaching Major	3
Teaching Major	6	Teaching Minor	3
Teaching Minor	3	Free Electives	3
	18		15

Senior Year

First Semester	Credit	Second Semester	Credit
Ed. 432—St. Obser. & Teach in Sec. School	3	Ed. 434—Adv. Student Obser. & Teach. in Sec. School	3
Educational Elective	3	Educational Elective	3
Teaching Major	3	Teaching Major	3
Teaching Minor	3	Teaching Minor	6
Free Electives	3		
	15		15

Note that in the above curriculum schedule for the field of secondary education, choice must be made in the sophomore year of the major field in which the student desires to prepare himself for teaching. At this time also, the student must elect a minor field in which he likewise desires to prepare for teaching. These teaching majors and minors are available in the various fields of the Division of Arts and Sciences. 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 of the teaching major include 18 hours in one subject or general area, 12 hours above the basic course, and 6 hours in each of two other subjects or general areas. The 24 hours of the teaching minor include 12 hours in one subject or general area, 6 hours above the basic course, and 6 hours

* Secondary majors may take 12 semester hours of laboratory science, or 6 semester hours of mathematics and 6 semester hours of science. Students who have had a biological science in high school should take a physical science to balance their program in basic science arts.

in each of two other subjects or general areas. Special requirements are made for music education (vocal or instrumental majors) and for physical education as outlined elsewhere in this catalog. Certificate requirements are outlined in Appendix B of this catalog.

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

Unless specifically shown to the contrary, all requirements pertaining to the Bachelor of Arts Degree apply also to the Bachelor of Science in Education.

The courses indicated in the above, for both elementary and secondary education, may be used to satisfy requirements for teachers certificates valid in Texas and other states. Students seeking placement in teaching positions in other states may consult the Head of the Department of Education for assistance in obtaining information about certification requirements in these other states. Teacher certificates and other certificates relating to public school personnel are specified by law or Texas Education Agency regulations or are in the process of having such regulations prepared for them.

Both elementary and secondary school teachers are required to have specified course work in student observation and teaching and advanced student observation and teaching. A continuum of observation experiences of teaching situations begins in the freshman year and carries through to the completion of the senior year. Ordinarily the student teaching experience is scheduled in the senior year.

In addition to the courses listed below, certain others, particularly in methods, may be scheduled. These others may be found in the various departments of the College. For example, English 338. "The Teaching of English in the Secondary School," is described under the Department of English.

For Undergraduates

130. Foundations of Education. Cr. 3.
Major purposes of education in democracy. Social significance of education as profession. First stage continuum—observation of teaching.

231. Educational Sociology. Cr. 3.
Prerequisite: Sophomore classification. Sociological principles as basic knowledge in professional education. Practicum observations of schools as community centered. Continuum—observation of teaching.

232. Educational Psychology. Cr. 3.
Prerequisite: Sophomore classification. Psychological principles as basic knowledge in professional education. Continuum—observation of teaching.

431. Student Observation and Teaching in the Elementary School. Cr. 3.
Prerequisite: Upper division classification, 18 hours in education and educational psychology, including Education 333 and 335 or consent of department. Advanced stage of the continuum in observation and student teaching in the elementary school.

*432. Student Observation and Teaching in the Secondary School. Cr. 3.
Prerequisite: Upper division classification, 18 hours in education and educational psychology, including 6 hours in secondary education or consent of department. Advanced stage of the continuum in observation and student teaching in the secondary school.

433. Advanced Student Observation and Teaching in the Elementary School. Cr. 3.
Prerequisite: Upper division classification, 18 hours in education and educational psychology, 6 hours in elementary education, including Education 431, or consent of department. Final stage in the observation and student teaching continuum with emphasis on preparation and utilization of curricular resources in the elementary school classroom.

*434. Advanced Student Observation and Teaching in the Secondary School. Cr. 3.
Prerequisite: Upper division classification, 18 hours in education and educational psychology, 6 hours in secondary education, including Education 432 or consent of department. Final stage in the observation and student teaching continuum, with emphasis on preparation and utilization of curricular resources in the secondary school classroom.

* The instructor for selected sections of these courses may be a joint appointee of the Department of Education and the department in which the student teacher is developing a teaching major.

For Undergraduates and Graduates

330. Principles of Modern Education. Cr. 3.
Prerequisite: Upper division classification Education as foundation of democracy. Socio-economic and cultural-anthropological bases of best practices in professional education.

333. Curriculum Development in Elementary Education. Cr. 3.
Prerequisite: Upper division classification. Sharing in purposing, planning and action in curriculum development program. Continuing study of basic life needs of children, areas of interest, resource materials and learning experiences for ideas, knowledges, skills, attitudes and appreciations.

334. Curriculum Development in Secondary Education. Cr. 3.
Prerequisite: Upper division classification. Sharing in purposing, planning and action in curriculum development program. Continuing study of imperative needs of youth, subject area materials and resources, unit theory and development, goals of self-realization, human relationships, economic efficiency and civic responsibility.

335. Elementary Education Methods. Cr. 3.
Prerequisite: Upper division classification. Creating, motivating and enriching learning opportunities. Utilizing group processes, material and social resources, and cooperating in the whole program. Continuum—observation of teaching in the elementary school.

336. Secondary Education Methods. Cr. 3.
Prerequisite: Upper division classification. Motivating the learning process. Analysis of group techniques, problem solving, project plans, supervised study. Utilizing material, equipment, and personnel resources. Evaluation. Continuum—observation of teaching in the secondary school.

430. History and Philosophy of Education. Cr. 3.
Prerequisite: Upper division classification. Influences of historical developments and philosophical concepts upon education as the foundation of our American democracy.

435. Educational Evaluation. Cr. 3.
Prerequisite: Upper division classification and 12 hours in education and educational psychology. Bases and techniques of appraisal, tests, polls, measurement, data treatment and interpretation. Utilization of individual and group processes and action in continuing programs of educational evaluation.

436. Public School Administration. Cr. 3.
Prerequisite: Upper division classification and 18 hours in education and educational psychology. Detailed analysis of the principles and problems involved in the organization and administration of a school system.

437. Public School Relations. Cr. 3.
Prerequisite: Upper division classification and 18 hours in education and educational psychology. Organization of the program, media of approach to the public, and appraisal of the program. Emphasis on participation in school program by the several "publics."

438. Supervision and Curriculum Development. Cr. 3.
Prerequisite: Upper division classification and 18 hours in education and educational psychology. Principles, planning, organization, and techniques of supervision and curriculum development in both secondary and elementary education.

4312. Elementary School Organization and Administration. Cr. 3.
Prerequisite: Upper division classification and 18 hours in education and educational psychology. The responsibilities of the elementary school personnel in the administration, supervision, and curriculum development for the elementary school.

4313. Secondary School Organization and Administration. Cr. 3.
Prerequisite: Upper division classification, including one course in secondary education. Relationship of secondary schools to American democracy.

4315. Audio-Visual Education. Cr. 3.
Prerequisite: Upper division classification, including one course in elementary or secondary education. General courses with emphasis on projection equipment care and utilization and on basic techniques in using multi-sensory materials at all levels of teaching.

4316. Workshop in Curriculum Development. Cr. 3.
Prerequisite: Upper division classification and a course in curriculum development. Emphasis on useful living based on fundamental attitudes, skills, knowledges, appreciations. Group work with experience, interest and resource units and areas.

4317. Curriculum Development Practicum. Cr. 3.
Prerequisite: Upper division classification and one course in student teaching. Emphasis on development of curriculum plans and materials as related to classroom teaching.

4323. Applied Curriculum Development. Cr. 3.
Prerequisite: Upper division classification. Emphasis on application of curriculum development materials to actual local school situations.

4324. Applied Curriculum Practicum. Cr. 3.
Prerequisite: Upper division classification. Emphasis on production of curriculum materials for actual local school situations.

4325. Children's Literature. Cr. 3.
Prerequisite: 12 hours in education and educational psychology, including a course in elementary education, and upper division classification. Introduction to literature, both new and old, prose and poetry, for children under 12, including standards for judging and criteria for selecting books.

4326. Reading Development in Elementary School. Cr. 3.
Prerequisite: Upper division classification, including one course in elementary education. Developing a fundamental reading program with emphasis on reading improvement for children with special reading problems.

For Graduates

5139. Advanced Administration Workshops. Cr. 1.
Prerequisite: Graduate classification. 18 hours in education and educational psychology. 6 hours in administration or experience as an administrator, and approval of education department. Sequence of workshops on such emphases as administration of: guidance, adult education, business services, maintenance and operation, schoolhouse planning, and audio-visual education. May be taken for a minimum of 2 and a maximum of 6 semester hours credit by repeating the course for credit.

530. Advanced Educational Psychology. Cr. 3.
Prerequisite: Graduate classification and 18 hours in education and educational psychology. The trends of psychology as related to problems of education. Such topics as learning, motivation, emotions, adjustment, measurements, personality are reviewed.

532. Philosophy of Education. Cr. 3.
Prerequisite: Graduate classification and 18 hours in education and educational psychology. Comparative analysis of major social philosophies and their application to the field of education in our American democracy.

534. Advanced Educational Sociology. Cr. 3.
Prerequisite: Graduate classification and 18 hours in education and educational sociology. Advanced study and application of sociological principles as basic knowledge in professional education.

535. Federal, State, County and Local School Administration. Cr. 3.
Prerequisite: Graduate classification, 18 hours in education and educational psychology, approval of the Education Department. Emphasis on the development and relatedness of the several aspects of educational administration.

536. Elementary School Administration. Cr. 3.
Prerequisite: Graduate classification, 18 hours in education and educational psychology, approval of the Education Department. Emphasis on elementary school personnel, responsibilities for curriculum development, detail of administration, and modern supervision.

537. Secondary School Administration. Cr. 3.
Prerequisite: Graduate classification, 18 hours in education and educational psychology, approval of the Education Department, analysis of curriculum, functions of administration. Study of master schedule, personnel, finance, and related aspects of organization. Emphasis on sharing processes with communities.

538. Advanced Audio-Visual Education. Cr. 3.
Prerequisite: Graduate classification, 18 hours in education and educational psychology, approval of the Education Department Emphasis on administration of audio-visual service. Analysis, procurement, accounting, and distribution of audio-visual materials and equipment. Special emphasis on preparation of personnel and development of physical facilities in audio-visual centers.

539. Administration of Business Services. Cr. 3.
Prerequisite: Graduate classification, 18 hours in education and educational psychology, approval of the education department. Emphasis on best modern practices in school business services. Review of such practices. Preparation of essential resource materials.

5312. Elementary Supervision and Curriculum Development. Cr. 3.
Prerequisite: Graduate classification, 18 hours in education and educational psychology, approval of the Education Department. Emphasis on modern trends in supervision in the elementary school and its relationship to the curriculum development program.

5313. Secondary Supervision and Curriculum Development. Cr. 3.
Prerequisite: Graduate classification, 18 hours in education and educational psychology, approval of the Education Department. Emphasis on modern trends in supervision in the secondary school and its relationship to the curriculum development program.

5314. Advanced Curriculum Development. Cr. 3.
Prerequisite: Graduate classification, 18 hours in education and educational psychology, approval of the Education Department. Emphasis on the preparation of curriculum materials including units or areas of experience, interest, resource, and action. Individualized curriculums, techniques of group work in curriculum development.

5316. Junior College Education. Cr. 3.
Prerequisite: Graduate classification, 18 hours in education and educational psychology, approval of the Education Department. Emphasis on the function of the emergent junior college in terms of terminal education and senior college preparation. Review of best practice in junior college programs.

5317. Advanced Curriculum Practicum. Cr. 3.
Prerequisite: Graduate classification, 18 hours in education and educational psychology, approval of the Education Department. Development of curriculum resources, including plans and materials for special schools and school systems, applications of techniques of group work to develop programs in real school situations.

5318. Audio-Visual Education Practicum. Cr. 3.

Prerequisite: Graduate classification, 18 hours in education and educational psychology, approval of the Education Department Intensive evaluation of audio-visual resources. Evaluation based upon selected and class developed criteria. Resource unit placement.

5319. Audio-Visual Production. Cr. 3.

Prerequisite: Graduate classification, 18 hours in education and educational psychology, approval of the Education Department. Emphasis on sources, production, application, and integration of resource materials with a whole curriculum development program.

5321. Individual Study in Education. Cr. 3.

Prerequisite: Graduate classification, 18 hours in education and educational psychology, approval of the Education Department. Individual study on special aspects of professional education. Regular and detailed conferences with the assigned professor(s). Enrollment limited to students who have completed the first stage (Master's degree) of graduate work in education and who have been recommended for this course by the Education Department Committee on Individual Study. May be repeated for credit.

5322. Foundations of Educational Research. Cr. 3.

Prerequisite: Graduate classification and 18 hours in education and educational psychology. Study and application of methods of educational research. Emphasis on unique character of obtaining, processing, interpreting and utilizing significant educational data.

5331. Human Development in Education. Cr. 3.

Prerequisite: Graduate classification, 18 hours in education and educational psychology, approval of the Education Department. Emphasis on study of the whole individual as defined by data from the major human study fields.

5337. Advanced Supervision Workshop. Cr. 3.

Prerequisite: Graduate classification, 18 hours in education and educational psychology, 6 hours in supervision or experience as a supervisor and approval of Education Department. Devoted to the problems of developing supervisory and leadership programs for urban and non-urban areas. Concentrated work sessions to develop both personal abilities and cooperative plans for improving educational programs.

5338. Foundations of Special Education. Cr. 3.

Prerequisite: Graduate classification, 18 hours in education and educational psychology, and approval of Education Department. Survey of education for the exceptional child including major developments in special education. Comprehensive study of the literature. personnel, and best field practices.

5341. Developing Arithmetic Programs in Elementary Education. Cr. 3.

Prerequisite: Graduate classification, 18 hours in education and educational psychology, and approval of the Education Department. A study of the development and educative functions of arithmetic in the elementary school curriculum.

5342. Developing Reading Programs in Elementary Education. Cr. 3.

Prerequisite: Graduate classification, 18 hours in education and educational psychology, and approval of the Education Department.

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

Prerequisite: Graduate classification, 6 hours in science, 18 hours in education and educational psychology, and approval of the Education Department. Emphasis on the methods and materials for developing in children understanding of their natural and physical environment.

5344. Developing Language Arts Programs in Elementary Education. Cr. 3.

Prerequisite: Graduate classification, 12 hours of English and/or speech including six hours of English Composition, 18 hours in education and educational psychology, and approval of the Education Department. The organization and administration of functional language arts programs. Involves a study of the practical applications of research findings and modern theory upon the teaching of the language arts in the elementary school.

5345. Developing Social Studies Programs in Elementary Education. Cr. 3.

Prerequisite: Graduate classification, 18 hours in education and educational psychology, and approval of the Education Department. Emphasis on the place and utilization of the basic social studies throughout the elementary education area.

5351. General Education Seminar. Cr. 3.

Prerequisite: Completion of first stage, or fifth year, of graduate work in education and approval of admissions committee of Education faculty. Basic course for second stage of graduate work in education Emphasis upon thorough and unified understanding of whole field of professional education.

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

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for this seminar. Discussion and research in history and philosophy of education in a comprehensive sense with judicious application of derived principles of the specific needs and interests of the individual student.

5353. Seminar in Comparative Education. Cr. 3.

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for this seminar. Emphasis upon a comprehensive study of the educational systems of the world in relatively recent and current times. Education as an instrumentality for world peace. Individual attention to problems of special concern.

5354. Seminar in Educational Sociology. Cr. 3.

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for this seminar. Comprehensive review of the literature in the specific field of educational sociology. Discussional analysis of the sociological significance of current problems in our democracy and in the world as related to the professional field of education.

5355. Seminar in Elementary Education. Cr. 3.

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for the seminar. Intensive study of trends in modern elementary education with emphasis on best practice.

5356. Seminar in Secondary Education. Cr. 3.

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty for this seminar. Intensive study of trends in modern secondary education with emphasis on best practice.

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

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for the seminar. Comprehensive analysis of the junior college movement in the United States with identification of significant junior college programs. Intensive study of the literature. Discussional analysis of the junior college as the community college. Individualized study of administration, curriculum development, and similar problems.

5358. Seminar in Educational Administration. Cr. 3.

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for this seminar. Intensive review of the whole field of educational administration with emphasis on both basic references and periodical sources. Pattern of discussional analysis based upon individuation of seminar personnel.

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

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for the seminar. Dynamic structure and depth of current developments in supervision and curriculum development with intensive research on current best practices, including work of local, state, and national professional organizations.

5361. Seminar in Health Education. Cr. 3.

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for the seminar. Group research on best practice programs in health education in public schools. Study of relationship with other agencies. Specialized study of particular problems by individual members of seminar.

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

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for this seminar. Detailed group planning of whole audio-visual education programs for variety of school systems and intermediate service agencies.

5364. Seminar in Educational Psychology. Cr. 3.

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for this seminar. Comprehensive review of the literature in the specific field of educational psychology. Discussional analysis of the application of the results of professional education.

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

Prerequisite: Graduate classifcation. 18 hours in education and educational psychology; approval of the education department; and class members must be teachers who are in service. Continuing development of teacher competence in secondary education through study in actual school situations.

5372. In-Service Development of Elementary Education Programs. Cr. 3.

Prerequisite: Graduate classification, 18 hours in education and educational psychology; approval of the Education Department; and the class members must be teachers who are in service. Continuing development of teacher competence in elementary education through study in actual school situations.

631, 632. Thesis Seminar. Cr. 3 each.

Required of students following the Master's thesis degree plan. Selection of and work upon an action research problem or a course research problem.

731, 732. Dissertation Seminar. Cr. 3 each.

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

831-2. Doctor's Dissertation. Cr. 6.

Required as the final registration for the dissertation.

ADULT EDUCATION

For Graduates

5315. Adult Education. Cr. 3.
Prerequisite: Graduate classification, 18 hours in education and educational psychology, approval of the Education Department. Comparative analysis of the place and function of adult education in the modern program of public education. Review of best practice and analysis of need for particular types of adult education work in selected communities.

5328. Adult Education Administration. Cr. 3.
Prerequisite: Education 5315. Emphasis on the problem of administration of adult education programs, particularly in public education agencies. Concentrated readings and evaluation of programs and practices in individually selected areas, comparative studies of trends in other countries.

5329. Program Planning in Adult Education. Cr. 3.
Prerequisite: Education 5315, or consent of the Education Department. Program planning in public education agencies, organized groups, community councils. Emphasis on patterns of cooperation, effective means of communication and production of selected program units. Evaluation of methods in adult education, use of mass media in adult education

5332. Democratic Group Processes. Cr. 3.
Prerequisite: Graduate classification, 18 hours in education and educational psychology, approval of the Education Department. Analysis of the basis for democratic group process, leadership functions in groups, discussion as means of communication and education. Methods of educating leaders in community groups.

5362. Seminar in Adult Education. Cr. 3.
Prerequisite: Completion of first stage or fifth year of graduate program in education, approval by faculty committee for the seminar. Comprehensive review of current ideas and practices in adult education in the United States and other countries. Review of the current literature. Discussion analysis of selected community problems, programs prepared around books, radio, TV and motion pictures. Individual attention to special concerns. May be repeated for credit.

PHILOSOPHY

Students may major or minor in philosophy. By special permission, the following courses in other fields may be applied on the major in philosophy: Government 433 and 434, Education 430 and 532, Adult Education 5332.

For Undergraduates

230. Introduction to Philosophy. Cr. 3.
Prerequisite: Sophomore classification. Problems involved in the interpretation of the nature of knowledge, reality, and value.

238. Ethics. Cr. 3.
Prerequisite: Sophomore classification. Problems of individual and social conduct.

For Undergraduates and Graduates

332. History of Philosophy. Cr. 3.
Prerequisite: Junior classification. Philosophical systems developed by the great philosophers of the world.

333. Development of American Philosophy. Cr. 3.
Prerequisite: Junior classification. Integrated study of peculiarly American philosophy, beginning with colonial times, ending with recent trends

335. Oriental Philosophies. Cr. 3.
Prerequisite: Junior classification. Survey of the views of important philosophic thinkers of the Orient, with particular emphasis upon those of China and India.

337. Logic. Cr. 3.
Prerequisite: Junior classification. Introduction to deductive and inductive methods.

431. Aesthetics. Cr. 3.
Prerequisite: Senior classification or consent of instructor. Interpretations of the nature of beauty and analysis of the aesthetic experience.

432. Philosophy of Value. Cr. 3.
Prerequisite: Senior classification or consent of instructor. Analysis of the nature and validity of values; exploration of the possibility of an integrated value system.

436. Philosophy of Religion. Cr. 3.
Prerequisite: Senior classification or consent of instructor. Survey of historical and contemporary religious movement.

438. Seminar in Philosophical Problems. Cr. 3.
Prerequisite: Senior classification and major or minor in philosophy. Readings on selected topics, reports, and conferences.

4351. Structure and Dynamics of Philosophical Thought. Cr. 3.
Prerequisite: Graduate or upper division classification. An analytical and historical inquiry into the major areas of philosophical speculation; purpose includes achieving an integration of individual thinking.

Department of English

PROFESSORS CAMP, ALLEN, GATES, GUNN, STROUT.
ASSOCIATE PROFESSORS GILLIS, McCULLEN, MURPHY, TEAGUE.
ASSISTANT PROFESSORS CARTER, MALE,* NALL, WHITE.
INSTRUCTORS BOWLING, CARLOCK, GAHRING, GREEN, KELLEY, LEWIS, MILES, REEVES, RUSHING, RUSSELL, WELLBORN, WILSON.
PART-TIME INSTRUCTORS BRIDGES, COPELAND, MIZZELL**.

Students of all divisions are required to take Freshman English (English 131-132, English 151-132, or English 133-134) to fulfill the requirements for a Bachelor's degree. All entering freshmen will take a standardized achievement test in English. Students who receive extremely low scores in the achievement test are required to complete 8 hours of English Composition to fulfill the requirements for graduation. Such students will enroll in the five-hour course designated English 151 the first semester of their freshman year. Students who fail English 131 are likewise required to complete 8 hours of English Composition to fulfill the requirements for graduation. Such students will not repeat English 131, but will enroll in English 151. Upon completion of English 151, the student will enroll in English 132.

Students who receive a score of 80 or better in the achievement test may enroll in English 133, Advanced Composition and Literature for Freshmen. Those students who receive a C or better in English 133 will be allowed to enroll in English 134; those receiving D must complete their six hours of English by taking English 132. Those students who receive A in English 131 will be eligible to complete their six hours of Freshman English by taking English 134 in the second semester.

Sophomore students in the Division of Agriculture will take English 234, and most of the students in the Division of Engineering will take English 233. All other students, including those in the Department of Architecture (Design and Commercial Art Option), will take English 231-2. Students who have completed English 133-134 with a grade of B or better will be permitted the option of completing required courses in English by taking two of the following junior courses: English 335, Introduction to Shakespeare; 337, Major Victorian Poets; 3320, American Drama; 3324, Modern European Drama.

To enroll in advanced courses in English, students must have completed 12 semester hours of English in 131-2 or 133-4 and 231-2 or their equivalents. A student majoring in English and a student with a teaching major in English must complete at least 30 hours in English. Those minoring in English or taking a teaching minor must complete at least 18 hours in English.

A student must receive at least a C on an advanced course in English if he wishes to have it count toward a major, minor, or teaching major or minor in English. In all English courses, regardless of

* On leave, 1953-4.
** Fall semester only.

rank, a student must demonstrate an adequate command of correct and effective English or receive an F in the course.

English majors are required to consult with the department head, especially before they select advanced English courses, to plan a well-rounded program of studies. In their freshman year English majors are urged to elect History 133-4 (English History) instead of History 131-2.

Candidates for the Degree of Doctor of Philosophy in English will be accepted subject to the general requirements of the Graduate School. These students must complete at least one graduate course in nine specific fields of English and American literature, and must concentrate with additional courses in one of these fields (or two or more closely related fields) and write their dissertation in that field. For a minor subject (at least 18 graduate hours) the department recommends work in history, foreign languages, or speech. All graduate students in English should take English 531, preferably near the beginning of their graduate program.

For Undergraduates

131-2. English Composition. Cr. 3 each.
The essentials of good, correct and effective general writing. Reading and the discussion of examples of good literature. Class discussions, regular themes, outside reading, individual conferences.

133. Advanced Composition and Literature for Freshmen. Cr. 3.
Designed for those who demonstrate unusual ability in English fundamentals as measured by English placement tests. Emphasis on expository writing and reading of various types of literature.

134. Advanced Composition and Literature for Freshmen. Cr. 3.
Continuation of English 133. Narrative writing, descriptive writing. Reading of various types of literature.

151. English Composition. Cr. 5.
This course covers essentially the same material to be found in English 131 but is designed for students who make very low grades on the English placement test or who fail English 131.

231-2. (Formerly 237-8) Masterpieces of Literature. Cr. 3 each.
A careful study of outstanding literary masterpieces. In English 231, Greek plays, Chaucer, Shakespeare, and Milton are read. In 232, instructors will select outstanding novels, poems, plays, or biographies written during the eighteenth, nineteenth, and twentieth centuries. Required course for most sophomore students

233. Technical Writing for Engineers. Cr. 3.
Essentials of correctness and effectiveness in technical writing. Regular themes, reports, and a long term report. Required of sophomore engineering students, except those in the Department of Architecture (Design and Commercial Art Options).

234. Technical Writing for Students of Agriculture. Cr. 3.
Themes, reports, and much practical experience in writing. Required of sophomores in Division of Agriculture.

331. The Short Story. Cr. 3.
A careful study of some of the outstanding writers of the short story.

332. American Drama. Cr. 3.
A survey of the great American plays, particularly those of the contemporary period. May be taken as a second-year course by those who receive B in 134.

333. Modern European Drama. Cr. 3.
Representative plays from Ibsen to some of the more recent European dramatists. May be taken as a second-year course by those who receive B in 134.

334. Creative and Professional Writing. Cr. 3.
Study of the various techniques of creative writing. Limited to those who have received a B or better in Freshman English.

335. Introduction to Shakespeare. Cr. 3.
Study of Shakespeare's life and of some of his outstanding comedies, tragedies, and histories. May be taken as a second-year course by those who receive B in 134.

336. Masterpieces of World Literature. Cr. 3.
A study in English of some of the great books of the ancient and medieval world.

337. Major Victorian Poets. Cr. 3.
Careful study of the poetry of Tennyson, Browning, and Arnold May be taken as a second-year course by those who receive B in 134.

338. Teaching of English in the Secondary Schools. Cr. 3.
Problems of teaching English in the secondary school. Study of effective methods and materials. It may be counted as English or Education by English majors.

For Undergraduates and Graduates

430. Chaucer. Cr. 3.
Close reading of "The Canterbury Tales" and "Troilus and Criseyde"; more rapid review of other works; Chaucer's art, thought, and life in relation to his cultural environment.

432. Shakespeare. Cr. 3.
Careful study of some of the outstanding plays of Shakespeare. (This course will not duplicate any material in English 335.)

434. Milton and His Age. Cr. 3.
A careful study of most of Milton's poetry and prose.

435. English Romanticism. Cr. 3.
Selections from the works of the Pre-Romanticists. Poetry and poetic principles of Wordsworth and Coleridge.

436. The Later Romantic Poets. Cr. 3.
Selections from the poetry of Scott, Byron, Shelley and Keats; biography and background.

438. History of the English Language. Cr. 3.
A study of the principal changes which the English language has undergone from the beginning to the present and the relationship of these changes to the cultural development of the English-speaking peoples.

439. American English. Cr. 3.
History, characteristics, dialects, and present study of the English language in American with some reference to British and Dominions English. Special emphasis on dialect and idioms of the Southwestern United States.

4311. The Neo-Classical Age. Cr. 3.
Dryden, Rise of Journalism, Defoe, Addison, Steele, Swift, Pope.

4312. Age of Johnson. Cr. 3.
Detailed study of Samuel Johnson and his contemporaries. Boswell, Goldsmith, Walpole, Burke, and others.

4314. Literature of the English Renaissance. Cr. 3.
Poetry and prose of the sixteenth and early seventeenth century.

4319. Victorian Literature. Cr. 3.
Outstanding poetry and prose of the nineteenth century. (Not to be taken by those who have credit in English 337.)

4322. Literature of the Southwest. Cr. 3.
Study of the literary contributions of the Southwest to American life.

4323. American Literature and Its Backgrounds. Cr. 3.
The Puritan influence, the Age of Reason, the Romantic Movement to Whitman.

4324. American Literature and Its Backgrounds. Cr. 3.
From Whitman to the present time. A continuation of 4323 but either part may be taken separately.

4325. The American Novel. Cr. 3.
Representative works of the outstanding American novelists of the nineteenth century.

4327. English Novel from Lyly to Scott. Cr. 3.
Development of the English novel. Reading examples from Elizabethan fiction, novels of Richardson, Defoe, Fielding, Austen, Scott.

4328. English and Foreign Fiction from 1825 to 1910. Cr. 3.
Novels of Dickens, Thackeray, Hardy, Balzac, Tolstoy, and others.

4329. Contemporary American and British Literature. Cr. 3.
Poetry and novels of the twentieth century.

4331. Pre-Shakespearean Drama. Cr. 3.
From the beginnings through Marlowe.

4332. Elizabethan Drama through 1642. Cr. 3.
From Jonson to the closing of the theaters.

4333. Philosophical Ideas in Literature. Cr. 3.
Tracing the evolving philosophical ideas in English and American literature. (May be repeated for credit with the permission of the instructor.)

4334. Literary Interpretation and Criticism. Cr. 3.
A survey of the outstanding works of literary criticism from Aristotle to the present time.

4351. Appreciation of the Literature of Western Civilization. Cr. 3.
A careful study in English of certain of the literary masterpieces of the Western World from the fourteenth century through the twentieth century. May be taken by graduate students in secondary education to complete a part of a composite minor.

For Graduates

4335. Principles of Language. Cr. 3.
A survey of the structure of English, with some reference to related languages. Consideration of current linguistic concepts and investigations in the fields of grammar, syntax, phonetics, spelling and dialect study. Special attention to the problems of standards and levels of usage. Designed for graduate students in elementary education

530. Studies in Middle English Literature. Cr. 3.
A graduate seminar in Chaucer and his contemporaries. This course may be repeated for credit.

531. Bibliography and Methods of Literary Research. Cr. 3.
Compilation of bibliographies; examination of primary and secondary sources; problems of style and organization presented by the research paper in literature. Should be taken by all graduate students in English at the earliest possible time.

533. Studies in Renaissance Literature. Cr. 3.
A seminar course in English literature from 1500 to 1660, with the exception of Shakespeare's works. This course may be repeated for credit.

534. Old English. Cr. 3.
A study of the Old English language and of its literature, with especial emphasis upon "The Beowulf."

535. Studies in Nineteenth Century English Literature. Cr. 3.
This course may be repeated for credit.

536. Studies in American Literature. Cr. 3.
This course may be repeated for credit.

538. Studies in the English Romantic Poets. Cr. 3.
This course may be repeated for credit.

539. Studies in Eighteenth Century Literature. Cr. 3.
This course may be repeated for credit.

5319. Studies in Shakespeare. Cr. 3.
This course may be repeated for credit.

631-2. Master's Thesis. Cr. 3 each.

731. Research. Cr. 3.

831-2. Doctor's Dissertation. Cr. 3 each.

Department of Foreign Languages

PROFESSORS DOWLING, GATES, QUALIA. ASSOCIATE PROFESSORS HAMILTON, STREHLI. ASSISTANT PROFESSOR TUCKER. INSTRUCTORS B. ALEXANDER, T. ALEXANDER

The Department of Foreign Languages offers instruction in German, French, Latin, and Spanish. Portuguese may be offered when there is sufficient demand. Interested students should consult the head of the department in the spring. The Department also calls attention to the course in New Testament Greek offered by the Department of Biblical Literature.

Sufficient work is offered for a major in Spanish or French and a minor in German or Latin. Courses leading to the Degree of Master of Arts are offered in Spanish.

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 languages requirement in another language, however. In this case, 24 semester hours are sufficient for a major. Fields which may be effectively combined with a foreign language are English, speech, social sciences, and journalism. Inquiries should be made to the Head of the Department.

The Department cooperates with other departments in two special courses of study, Latin American Area Studies and Bilingual Secretarial Program (see pages 84, 85).

Students who wish to teach in elementary or high school should consult the head of the department.

The B.A. Degree requirement in foreign languages: Students who had no foreign language in high school, or who repeat a language begun in high school, 18 hours. Students who had two units in the same language in high school, 12 hours in one language. Students who had 3 or 4 units in high school, 6 hours in the same language in a 300 course.

***For Undergraduates**

FRENCH

131-2. A Beginning Course in French. Cr. 3 each.
Oral practice, elementary reading, and grammar.

231-2. A Second Course in French. Cr. 3 each.
Prerequisite: French 131-2, or two units of high school French. Reading, cultural background, conversation and composition.

331-2. Introduction to French Life and Literature. Cr. 3 each.
Prerequisite: French 231-2, or the equivalent. Reading of little masterpieces of the nineteenth century. Study of cultural background. Conversation, composition, and grammar review. Conducted chiefly in French.

GERMAN

131-2. A Beginning Course in German. Cr. 3 each.
Oral practice, elementary reading, and grammar.

231-2. A Second Course in German. Cr. 3 each.
Prerequisite: German 131-2, or two units of high school German. Reading, cultural background, conversation and composition.

233-4. Scientific German. Cr. 3 each.
Prerequisite: German 131-2, or two units of high school German. The reading of specially prepared scientific texts in German with grammar review to assist in the interpretations. For pre-medical and science students.

331-2. Introduction to German Life and Literature. Cr. 3 each.
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. German 331-2 and 333-4 may not both be counted toward a degree.

333-4. Intermediate Scientific German. Cr. 3 each.
Prerequisite: German 233-4, or the equivalent. Advanced reading in various scientific fields to meet needs of students. German 331-2 and 333-4 may not both be counted toward a degree.

LATIN

131-2. A Beginning Course in Latin. Cr. 3 each.
Forms, word formation, the fundamentals of syntax, common quotations, phrases, and terms, 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.
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 relating to special subjects. May not be counted in meeting foreign language requirements.

231-2. A Second Course in Latin. Cr. 3 each.
Prerequisite: Latin 131-2, or two units of high school Latin. Selections from Caesar, Pliny, and Cicero. A review of Latin grammar, informal instruction in mythology and antiquities, and a study of common quotations, phrases and terms.

331-2. Latin Readings. Cr. 3 each.
Prerequisite: Latin 231-2, or three or four units of high school Latin. The nature and content of this course will vary to meet the needs of the individual student.

SPANISH

131-2 A Beginning Course in Spanish. Cr. 3 each.
Oral practice, elementary reading, and grammar.

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*All courses numbered 100 through 300, except Latin 133, require the completion of the second semester in order to receive credit for the first.

231-2. A Second Course in Spanish. Cr. 3 each.
Prerequisite: Spanish 131-2, or two units of high school Spanish. Reading, cultural background, conversation and composition.

331-2. Introduction to Spanish Life and Literature. Cr. 3 each.
Prerequisite: Spanish 231-2, or three or four units of high school Spanish. The history, geography, literature, and customs of Spain. Reading of representative novels, dramas, and lyrics of the nineteenth century. A review of grammar. Composition and conversation based on readings. Conducted chiefly in Spanish. Spanish 331-2 and 333-4 may not both be counted toward a degree.

333-4. Introduction to Spanish American Life and Literature. Cr. 3 each.
Prerequisite: Spanish 231-2, or three or four units of high school Spanish. The history, geography, literature, and customs of Spanish American countries. A review of grammar. Composition and conversation based on readings. Conducted chiefly in Spanish. Spanish 331-2 and 333-4 may not both be counted toward a degree.

*For Undergraduates and Graduates

FRENCH

431. The Modern Drama. Cr. 3.
Prerequisite: French 331-2, or the equivalent. The drama of France from 1636 to 1900. Conducted chiefly in French.

432. The Modern Drama. Cr. 3.
Prerequisite: French 331-2, or the equivalent. A continuation of French 431.

433. The Literature of the Nineteenth Century. Cr. 3.
Prerequisite: French 331-2, or the equivalent. A study of French literature of the nineteenth century, exclusive of the drama. Conducted chiefly in French.

434. The Literature of the Nineteenth Century. Cr. 3.
Prerequisite: French 331-2, or the equivalent. A continuation of French 433.

435. Readings in French Literature. Cr. 3.
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. Conducted chiefly in French.

436. Readings in French Literature. Cr. 3.
Prerequisite: French 331-2, or the equivalent. A continuation of French 435.

SPANISH

431. Nineteenth-Century Prose. Cr. 3.
Prerequisite: Spanish 331-2, or the equivalent. Certain nineteenth-century novels, essays, and short stories representing the various tendencies and regions. Lectures, written reports. Conducted chiefly 'n Spanish.

432. Nineteenth-Century Prose. Cr. 3.
Prerequisite: Spanish 331-2, or the equivalent. A continuation of Spanish 431.

433. Modern Drama and Poetry. Cr. 3.
Prerequisite: Spanish 331-2, or the equivalent. Drama and poetry from the Romantic movement to the generation of 1898. Lectures, written reports. Conducted chiefly in Spanish.

434. Modern Drama and Poetry. Cr. 3.
Prerequisite: Spanish 331-2, or the equivalent. A continuation of Spanish 433.

436. Advanced Composition and Conversation. Cr. 3.
Prerequisite: Spanish 331-2, or the equivalent. A practice course emphasizing idiomatic, everyday Spanish and practical phonetics. Review of important grammatical constructions. Recommended for prospective teachers and travelers. Conducted in Spanish.

437. Advanced Composition and Conversation. Cr. 3.
Prerequisite: Spanish 331-2, or the equivalent. A continuation of Spanish 436.

4312. The Prose of the Golden Age. Cr. 3.
Prerequisite: Spanish 331-2, or the equivalent. The important prose writers from 1499 to 1650. Reading of representative works, lectures, collateral reading, and reports. Conducted chiefly in Spanish.

4313. The Prose of the Golden Age. Cr. 3.
Prerequisite: Spanish 331-2, or the equivalent. A continuation of Spanish 4312.

4314. The Drama of the Golden Age. Cr. 3.
Prerequisite: Spanish 331-2, or the equivalent. The drama of the seventeenth century. Reading of representative plays, lectures, and discussions. Conducted chiefly in Spanish.

4315. The Drama of the Golden Age. Cr. 3.
Prerequisite: Spanish 331-2, or the equivalent. A continuation of Spanish 4314.

* Credit may be received for either semester of all courses listed in this category without the completion of the other. Students may enter the second semester without having had the first.

4316. A Survey of Spanish Literature. Cr. 3.
Prerequisite: Spanish 331-2, or the equivalent. The history of Spanish literature to the nineteenth century Recommended for majors in Spanish. Required for graduate majors. Conducted chiefly in Spanish.

4317. A Survey of Spanish Literature. Cr. 3.
Prerequisite: Spanish 331-2, or the equivalent. A continuation of Spanish 4316.

4318. Readings in Contemporary Spanish Literature. Cr. 3.
Prerequisite: Spanish 331-2, or the equivalent. A survey of the litearary scene in Spain from 1898 to the present. Reading of representative novels, dramas, and poetry. Collateral reading and written reports. Conducted chiefly in Spanish.

4319. Readings in Contemporary Spanish Literature. Cr. 3.
Prerequisite: Spanish 331-2, or the equivalent. A continuation of Spanish 4318.

4324. Readings in Spanish American Literature and Civilization. Cr. 3.
Prerequisite: Spanish 331-2, or the equivalent. The nature and content of this course will vary to meet the needs of the students. Lectures and readings. Conducted chiefly in Spanish.

4325. Readings in Spanish American Literature and Civilization. Cr. 3.
Prerequisite: Spanish 331-2, or the equivalent. A continuation of Spanish 4324.

4326. Survey of Spanish American Literature. Cr. 3.
Prerequisite: Spanish 331-2, or the equivalent. The history of Spanish American literature from colonial days to the present. Readings, lectures, reports. Conducted chiefly in Spanish.

4327. Survey of Spanish American Literature. Cr. 3.
Prerequisite: Spanish 331-2, or the equivalent. A continuation of Spanish 4326.

4328-29. Spanish Civilization. Cr. 3 each.
Prerequisite: Spanish 331-2, or the equivalent. A study of the various phases of Spanish civilization in Mexico: history, arts, language, literature, and customs. Offered in alternate summers in Mexico City.

METHODS

Foreign Language 4311. Teachers' Course in Methods of Teaching Foreign Languages. Cr. 3.
Prerequisite: French, German, Latin, or Spanish 331-2 or 333-4 and 6 semester hours of education. Instruction in scientific methods of teaching foreign languages with as much practice work as possible. May be counted as education or as foreign language. Required of those preparing to teach a foreign language.

For Graduates

SPANISH

5312. Studies of Spanish and Spanish American Literature. Cr. 3.
Prerequisite: Consent of the Head of the Department. The nature and content of this course will vary to meet the needs of the individual students. Credit given for either semester of this course as often as course is repeated.

5313. Studies in Spanish and Spanish American Literature. Cr. 3.
Prerequisite: Consent of the Head of the Department. A continuation of Spanish 5312.

631. Thesis. Cr. 3.

632. Thesis. Cr. 3.

Department of Geology

PROFESSORS WADE*, SIDWELL. ASSOCIATE PROFESSORS BOND, BRAND, DENNIS, WARN**. ASSISTANT PROFESSORS ARPER, O'GARA. INSTRUCTOR KEESEE.

The functions of the Department of Geology are twofold: first, through the Bachelor of Arts Degree to give the student a thorough background in the fundamental principles of geology, the application of which would permit him to continue in any of the specialized branches of the science; second, through the Bachelor of Science Degree to direct the student through a curriculum which will prepare him for specialization in any of the following branches: structural geology, mineralogy, petrology, paleontology, economic geology, sedimentology, ground water geology, petroleum geology, and field geology.

Students desiring to follow the Bachelor of Arts curriculum should include the following courses: Geology 131-2, 231-2, 235-6, 335-6, 433.

Geology majors should consult with the head of the department concerning graduate courses.

For Undergraduates

131-2. General Geology. Cr. 3. (3-2).
The first semester involves a study of geologic features and processes of the earth; the second, an introductory study of the earth's geologic history. A foundation course for all additional work in geology and a general course for cultural development.

231-2. Mineralogy. Cr. 3. (2-3).
Prerequisite: Geology 131-2, Chemistry 141-2. Methods of identification of minerals; blowpipe analysis; crystallography; occurrence and properties of minerals with emphasis on their occurrence in rocks.

233. General Geology for Engineers. Cr. 3. (2-3).
Similar to Geology 131-2 but a shorter course adapted to the special needs of engineering students other than petroleum students; especially for students in civil engineering.

235-6. Advanced General and Historical Geology. Cr. 3. (2-3).
Prerequisite: Geology 131-2. The first semester is advanced work in physical geology with emphasis on structural geology and geomorphology. The second semester, historical geology of North American continent; emphasis on environments as related to tectonics.

For Undergraduates and Graduates

333-4. Petrology, Mineral Optics, and Petrography. Cr. 3. (1-6).
Prerequisite: Geology 131-2, 231. Megascopic and microscopic characteristics of igneous, sedimentary and metamorphic rocks; fundamental theory of light as pertaining to optical properties; identification of minerals in fragments and thin sections with the petrographic microscope. Graduate credit for minors only.

335-6. General Paleontology. Cr. 3. (2-3).
Prerequisite: Geology 131-2, junior standing. The detailed structure, basis of classification and geologic history of the various groups of invertebrates. Graduate credit for minors only.

337. Ground Water. Cr. 3.
Prerequisite: Geology 231-2, 235-6. Principles of the occurrence, recharge, movements and discharge of ground water. (Graduate credit with permission of Department Head and Graduate Dean.)

338. Metallic Ores. Cr. 3.
Prerequisite: Geology 231-2, 235-6. Principles of the occurrence, processes, and structure of metallic ore deposits. Offered in alternate years. (Graduate credit with permission of Department Head and Graduate Dean).

339. Non-Metallic Deposits. Cr. 3.
Prerequisite: Geology 231-2, 235-6. Principles of the occurrence, processes and structure of non-metallic deposits exclusive of fuels. Offered in alternate years. (Graduate credit with permission of Department Head and Graduate Dean).

363. Field Geology. Cr. 6.
Prerequisite: Geology 235-6. Field application of principles of stratigraphy, structural geology and methods of geological surveys. Required of all majors in the Department of Geology. (Graduate credit for minors only).

*Head of Department effective July 19, 1954.
**On leave 1953-54.

433. Structural Geology. Cr. 3.
Prerequisite: Geology 235-6. Systematic analysis of the deforming processes and resultant structures in the earth's crust. Emphasis on practical problems in economic geology.

434. Geology of Oil and Gas. Cr. 3.
Prerequisite: Geology 433. Problems of the origin, migration and accumulation of oil and gas. Systematic analysis of factors affecting exploration and exploitation in various types of oil and gas fields.

436. Micropaleontology. Cr. 3. (1-6).
Prerequisite: Geology 335-6. Morphology, classification, and distribution of Foraminifera, Ostracods, Conodonts, and other microscopic fossils; methods of collection and preparation.

437. Sedimentation, Environments. Cr. 3. (2-3).
Prerequisite: 24 hours of geology. The origin, composition, texture and environments of sediments. Laboratory work with emphasis on subsurface methods.

438. Sedimentation, Products. Cr. 3. (2-3).
Prerequisite: 24 hours of geology. Emphasis on classification, origin, sedimentary structures, color and alteration of sedimentary rocks. Laboratory study involves insoluble residues.

4314. Principles of Stratigraphy. Cr. 3.
Prerequisite: Geology 231-2, 235-6. Stratigraphic methods, geochronology, stratigraphic nomenclature, stratigraphic maps, paleoncology, correlation methods, sedimentary facies, sedimentary tectonics.

4315. Paleozoic, Mesozoic, Cenozoic Stratigraphy. Cr. 3.
Prerequisite: Geology 4314. Advanced historical geology of North America with emphasis on the application of stratigraphic principles, paleogeography, source areas, sedimentary facies.

4316. Aerial Photo Interpretation. Cr. 3. (2-3).
Prerequisite: Geology 235-6. Geomorphic and geologic interpretation. Use of steroscopes and vertical control instruments. Aerial photographs converted to maps.

For Graduates

531. Advanced Sedimentation. Cr. 3.
Prerequisite: Graduate standing in geology and consent of Head of Department. Relation of orogeny and climate on environments and source of sediments

532. Advanced Sedmentation. Cr. 3.
Prerequisite: Consent of Head of Department. Continuation of Geology 531.

533. Structures of Oil and Gas Reservoirs. Cr. 3.
Prerequisite: Consent of Head of Department. Regional geology of the petroliferous provinces of North America followed by detailed examination of selected productive fields. The last half of the semester is given to a consideration of electrical logging, subsurface maps, and development geology.

535. Advanced Work in Specific Fields. Cr. 3.
Prerequisite: Consent of Head of Department. Course and credit depend upon preparation and need of the student.

536. Advanced Work in Specific Fields. Cr. 3.
Prerequisite: Consent of Head of Department. Continuation of Geology 535.

538. Geology of Southwest. Cr. 3.
Reading and discussion on geology and physiographic evolution of the Southwest. Offered in alternate years.

539. Advanced Invertebrate Paleontology. Cr. 3.
Prerequisite: Geology 335-6. Identification and study of typical faunas from various Paleozoic formations. The study involves the nature of the organisms, their habitats, and ecological relationships.

5311. Stratigraphic Micropaleontology. Cr. 3.
Prerequisite: Geology 436. Foraminifera, Bryzoa Conodonts, and Ostracods: emphasis on morphology and stratigraphic range.

5313. Stratigraphy of United States. Cr. 3.
A survey of formations in United States with study of the principles of correlation and their application.

5319. Eolian Sedimentation. Cr. 3. (2-3).
Prerequisite: Geology 437-8. Identification, characteristics and significance of materials resulting from past and present Eolian processes. Includes study of soils, loess, volcanic ash, bentonites, dune sands and dust.

5322. Advanced Field Geology. Cr. 3. (1-6).
Prerequisite: Elementary field geology. Solution of advanced field problems requiring application of geologic principles, mapping and aerial photo interpretation. Written report required.

5324. Problems in Sedimentation. Cr. 3.

5326. Problems in Stratigraphy. Cr. 3.

5327. Problems in Micropaleontology. Cr. 3.

5328. Problems in Structural Geology. Cr. 3.
631-2. Thesis.
731, 732. Research. Cr. 3.
Required of students working on the Doctor's dissertation. May be repeated for credit as many times as the advisory committee recommends.
831-2. Doctor's Dissertation. Cr. 6.
Required as the final registration for the dissertation.

GEOGRAPHY

For Undergraduates

231, 232. Principles of Geography. Cr. 3 each.
Geographic factors including relief, climate, industries, communication and economic resources.

For Undergraduates and Graduates

331. General Meteorology. Cr. 3. (2-3).
Prerequisite: Geology 131-2, or Physics 141-2, or Geography.
Descriptive and theoretical meteorology and analysis of terrestrial, hydrospheric and atmospheric factors of weather and climate.
332. Practical Meteorology. Cr. 3. (2-3).
Prerequisite: Geography 331. Care and use of meteorological instruments and interpretation of charts and maps. Methods of observing and recording weather.

Department of Government

PROFESSORS DAVIS, ABERNATHY*, JACKSON. ASSOCIATE PROFESSORS FULLER, KENNEDY. INSTRUCTORS ADAMS**, MACK, ODEN*. PART-TIME INSTRUCTORS DAULEY, ELLIS, GRIFFITH. GRADUATE FELLOWS STIARWALT, DE SHAZO, ERICSON, STREET.

Completion of at least one introductory course in national and state government is required of all students who graduate from Texas Technological College. In this introductory course, the Department of Government endeavors to give all students the basic understanding of governmental processes that are needed for responsible citizenship, intelligent voting, and successful leadership in public affairs.

For those who desire a more intensive study, a major or a minor containing a well-rounded program is offered in government. The major is based on the principles of a liberal education, with attention to the social sciences, and emphasis on the theory and practice of governments. Such a major or minor can be shaped to serve as vocational preparation in any of seven different fields:

1. Careers in public administration on the national, state or local levels.
2. Preparation for entry into law school.
3. Training for the foreign service.
4. The teaching of government or social science, on the secondary or college level.
5. Journalistic or radio work in collecting, reporting, or commenting on news of a political nature.
6. Research in public affairs for private industrial or commercial firms, labor unions, or endowed research institutes.
7. Preparation for a political career.

* Leave of absence, Spring Semester, 1954.
** Leave of absence, 1953-54.

A major or minor in government, designed for no specific vocational purpose, is also available for students who seek a liberal education centered around politics, government, and political processes.

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. 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.

The Department of Government offers a special major on the graduate level for students interested in city manager training or work in municipal government. The course work is of an interdepartmental nature and includes courses with special emphasis on problems of municipal government. After graduation, students may be placed as an intern in some Texas city.

The Department of Government also cooperates in the Latin American Area Studies course. (See pages 84 and 85 in the section "All-College Programs" in this catalog.)

Students majoring in government should take certain basic courses in all fields of government. At the beginning of the junior year several alternative fields of emphasis are offered from which the student may choose. They are:

American Government (National, State, and Local)
Comparative Government (British, Russian, and Latin American)
International Relations (Foreign Service)
Public Administration (Government Service—National, State, Local)
Political Theory (European, American, Modern)
Public Law (Pre-law)

Students interested in investigating such a major or a minor are invited to call by the Department of Government to examine sample curricula. Such curricula are intended as guides and a great deal of flexibility is permitted, so that each student may take courses in line with his own particular interests.

For Undergraduates

233. 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.

234. American Government, Functions. Cr. 3.
A study of the functions and services of the government of the United States, the states in general, and Texas in particular. This course will follow Government 233 and will be taken by most students who take 6 hours in government.

For Undergraduates and Graduates

331. Local Government. Cr. 3.
A study of the organization of city and county government in the United States; the various forms of local government; interdepartmental relations; city-state relations; city-nation relations and an introduction to the administrative problems of local units of government.

332. European Political Ideas. Cr. 3.
A study of the political ideas expressed by the great thinkers from ancient times to the present with emphasis upon reading from the classics.

333. American Political Ideas. Cr. 3.
The lives and ideas of leading political thinkers of the United States from the colonial period to the present.

334. Political Parties. Cr. 3.
An analysis of political parties showing party history, functions, organization, finance, nominations, campaign methods, and elections.

335. International Politics. Cr. 3.
Problems and issues which arise in the family of nations; organizations and techniques to cope with these problems; the principles of international conduct.

336. United States Foreign Policy. Cr. 3.
Emphasis is placed upon the process of making foreign policy the constitutional framework for the conduct and control of American foreign policy, and a study of the problems and issues of the contemporary period with sufficient historical perspective to give meaning to its development.

337. Public Administration, Organization. Cr. 3.
Principles of administrative organization; distribution of administrative functions together with the structure of all units of government, who are charged with the carrying out of the public policy.

338. Public Administration, Procedure. Cr. 3.
The chief problems of national, state, and local units of government, including budgeting, accounting, reporting, purchase and supply, personnel, promotion, demotion, removal, and retirement.

339. Legislation. Cr. 3.
An analysis of the structure, organization, and procedure of American legislative bodies, showing the problems and principles of law making.

3312. British Government. Cr. 3.
Study of the principles, policies, and practices of the government of Great Britain with emphasis on comparisons with France and the United States, and the impact of Britain on the development of democracy.

3313. Russian Government. Cr. 3.
Study of the development, structure, and operation of the government of the U.S.S.R. with emphasis on the impact of the Soviet Union upon the rest of continental Europe, and the techniques of dictatorship.

3314. Latin-American Governments. Cr. 3.
The constitutional development, governmental organization, political forces and trends and contemporary political problems of leading nations of Latin America.

3315. Government and Business. Cr. 3.
The role of government in the field of business and in the American economy. A study of public policy on aids to business, on regulation of business and public utilities, on government participation in business, and on government responsibility for maintaining full employment and a healthy economy. Also a study of the voice of business in government and the political activities of business.

3316. Government and Labor. Cr. 3.
The role of government in labor problems. Legislative, administrative and judicial policies relating to organization of workers, industrial disputes, wages and hours, child labor, workmen's compensation, labor as monopoly, social security, etc. Also a study of labor's voice in government and the political activities of labor.

431. American Constitutional Law, Powers. Cr. 3.
Interpretation of the constitution of the United States based primarily upon supreme court decisions. Emphasis on the powers of government.

432. American Constitutional Law, Limitations. Cr. 3.
Interpretation of the constitution of the United States based primarily upon supreme court decisions. Emphasis on limitations on both the state and national governments.

433. Modern Political Ideas. Cr. 3.
An analytical study of the ideas of modern political writers, emphasizing a comparison and contrast of twentieth century philosophies of democracy, fascism, and communism.

435. International Organization. Cr. 3.
The perspective of this course is a view of the United Nations with consideration given to the historical aspects and processes of international organization, and the practice of governments in the United States.

436. International Law. Cr. 3.
Deals with the historical background and the nature and scope of international law; the organization of the community of nations; the general rights and duties of states; and the problems of applying law to international relations. The writings of outstanding publicists, as well as legal cases, are critically evaluated.

437. Political Geography. Cr. 3.
Study of the principal political areas of the world from the point of view of politico-geographic factors of power including size, location, population, political and social organization, natural and industrial resources, and national morale.

438. Local Administration. Cr. 3.
A study of governmental functions performed by local units of government such as planning, zoning, water supply, recreation, police and fire protection, public works, and municipal finance

439. Administrative Law. Cr. 3.

Organization and procedure of federal and state administrative agencies; distinction between legislative, executive and judicial powers; delegation of powers; the nature of power vested in administrative agencies; requirements of due process; judicial control over administrative action.

4351. Political Ideologies and Institutions. Cr. 3.

This course is designed to afford mature students an acquaintanceship with the broad fields, the literature, and ideological concepts of political science, and is particularly designed to be of value to those in public education or government service.

For Graduates

531. Reading and Research. Cr. 3.

A directed course of intensive readings and research in particular fields. May be used either as an individual study course or as a seminar. May be repeated in different fields of emphasis.

631-2. Thesis. Cr. 6.

Department of Health and Physical Education, and Recreation

PROFESSORS KIREILIS, JENNINGS, DABNEY. ASSOCIATE PROFESSORS PHILBRICK, RAINEY, ROBISON. ASSISTANT PROFESSOR HOYLE. INSTRUCTORS WESTBROOK, KELLOGG.

For Men and Women

The Department offers the following degrees: Bachelor of Science in Education with a major in Physical Education, Bachelor of Arts with a major in Physical Education, and a Bachelor of Arts with a major in Recreation. Students desiring to become coaches or physical educators should seek the physical education degree and those desiring to work in city recreation programs, camps, and allied areas should seek a recreation major degree. Further information in regard to these degrees should be secured from the Department Head.

Each student who plans to major or minor in physical education must bring each year from his or her family physician, a complete physical examination report. The form for this examination should be secured from the Physical Education Department.

REQUIRED SERVICE COURSES FOR MEN

It is the purpose of the Physical Education Department to give each student the opportunity to develop physically, socially, and mentally, by providing a wide variety of physical education activities in which students may participate. With this in mind, all students must fulfill the following requirements in obtaining 4 semester hours credit in physical education: receive a passing grade in an individual, dual, and team activity. The fourth activity selected may be any one of the activities listed in the physical education service curriculum. Students who pass any one course may not repeat the same course for additional credit.

Individual Activities	Dual Activities	Group Activities
011. Adapted Sports	0121. Handball	0141. Touch Football
012. Beginning Swimming	0122. Badminton	0142. Basketball
013. Advanced Swimming	0123. Wrestling	0143. Soccer
014. Life Saving	0124. Fencing (Foil)	0144. Speedball
016. Elementary Tumbling	0125. Social Dancing	0145. Softball
017. Golf	0126. Fencing (Saber-Epee)	0146. Folk Dance
018. Archery	0127. Tennis	0147. Volleyball
019. Track and Field	0128. Advanced Tennis	
0111. Bowling		
0112 Weight Lifting		
0113. Advanced Bowling		
0114. Fly and Bait Casting		

INTRAMURAL SPORTS FOR MEN

It is the purpose of the Department of Intramural Sports to provide every student in the College with the opportunity to participate in the sport of his choice as often as time and inclination permit.

Competition is conducted in individual, dual, and team sports to enable the student to choose the type of game best suited to his interests and abilities. Participation is entirely voluntary.

The intramural sports now offered are badminton, basketball, bowling, fencing, golf, handball, ping pong, softball, swimming, tennis, touch football, track, volley ball, and weight lifting.

REQUIRED SERVICE COURSES FOR WOMEN

Four semesters of physical education are required of all women students during the freshman and sophomore years. One hour credit is given each semester.

111. Body Conditioning. Required of all freshmen women other than Majors. The remaining three semesters may be elected from the courses listed below
210. Tap Dance
211. Riding
212. Tennis
215. Basketball
216. Soccer and Speedball
217. Folk Dance
218. Volley Ball
219. Stunts and Tumbling
2111. Golf
2112. Swimming
2113. Body Mechanics for the individual. May be substituted for required courses on the advice of a physician and the head of the department.
2114. Field Hockey
2115. Badminton
2116. Social Dance
2117. Archery
2118 Modern Dance
2119. Softball

BACHELOR OF SCIENCE IN EDUCATION HEALTH AND PHYSICAL EDUCATION MAJOR FOR MEN

Students seeking a minor in Health Education, Physical Education, or Recreation will be required to complete the following courses:

Health Education: 133, 230, 436, 4326, 4321, and 437.

Physical Education: 121, 122, 133, 221, 222, 230, 3311, and three hours of physical education electives.

Recreation: 121, 122, 221, 222, 4324, 332 or 326, 331 and 439, or 4323 and Field Experience.

Students minoring in the above fields will be required to complete 12 semester hours of science.

Health and Physical Education majors will follow the curriculum listed below:

HEALTH AND PHYSICAL EDUCATION MAJOR SECONDARY PROGRAM

Freshman Year

First Semester	Credit	Second Semester	Credit
Chem. 133—Gen. Inorg., Org. & Biol.	3	Chem. 134—Gen. Inorg., Org. & Biol.	3
Ed. 130—Foundations of Education	3	Eng. 132—English Composition	3
Eng. 131—English Composition	3	Speech 233—Voice & Diction	3
Speech 131—Fundamentals of Speech	3	P.E. 133—Pers. & Comm. Hyg.	3
P.E. 122—Fund. Baseball & Basketball	2	P.E. 121—Fund. of Football & Track	2
P.E.	1	P.E.	1
	15		15

Sophomore Year

First Semester	Credit	Second Semester	Credit
Zool. 235—Human Anat & Phys.	3	Zool. 236—Human Anat. & Phys.	3
Ed. 232—Educational Psychology	3	Ed. 231—Educational Sociology	3
Govt. 233—Amer. Govt., Org.	3	Govt. 234—Amer Govt., Funct.	3
Eng. 231—Masterpieces of Literature	3	Eng. 232—Masterpieces of Literature	3
Soc. 230—Introduction to Sociology	3	P.E. 230—Health Ed. in Elem. & Sec. Schools	3
P.E. 221—Theory & Prac., Indiv. Sports.	2	P.E. 222—Theory & Prac., Team Sports	2
	17		17

Junior Year

First Semester	Credit	Second Semester	Credit
Ed. 330—Prin. in Mod. Edu.	3	**Ed. 334—Cur. Dev. in Sec. Edu.	3
**Psy. 335—Adolesent Psychology	3	**P.E. 3311—Meth. or 233 Elem. Meth.	3
P E. 332—Care & Prev. of Ath. Inj.	3	*P.E 322—Elementary Aquatics	2
*P.E. 321—Sq. & Folk Dance (Tumb.)	2	Minor	3
P.E. 323—Sports Officiating	2	Electives	6
Minor	3		17
	16		

Senior Year

First Semester	Credit	Second Semester	Credit
**Ed. 432—Student Obs. & Teach.	3	**Ed. 434—Curriculum Practicum	3
P.E. 436—Phys. Exam. & Cor.	3	P.E 437—Measurement	3
P.E. 4322—Org. & Admin. of Ath. Prog.	3	P.E. 422—Theory of Coaching Football & Basketball	2
Electives	3	P.E. 438—Curriculum	3
Minor	3	P.E. 431—Kinesiology	3
	15	Minor	3
			17

HEALTH AND PHYSICAL EDUCATION, AND RECREATION FOR WOMEN

Physical Education majors and minors must complete the requirements for the Bachelor of Science in Education or for the Bachelor of Arts degrees. Candidates for the Bachelor of Arts degree will complete the usual requirements for that degree. The curriculum leading to the Bachelor of Science in Education will be found below.

Students seeking a minor in Health Education, Physical Education or Recreation will be required to complete the following courses:

Health Education: 133, 230, 436, 4326, 437, and 4321.

Physical Education: 123, 124, 125, 126, 230, 131, 4311, 2118 and 217, and three hours of advanced electives.

Recreation: 123, 124, 125, 126, 133, 321, or 322, 331 and 439 or 4323 and Field Experiences.

Students minoring in the above fields will be required to complete 12 hours of science.

The student desiring to major in Health and Physical Education for the degree, B.S. in Education, will follow the curriculum below:

Freshman Year

First Semester	Credit	Second Semester	Credit
Ed. 130—Foundation of Education	3	Eng. 132—English Composition	3
Eng. 131—English Composition	3	Speech. 233—Voice and Diction	3
Speech 131—Fundamentals of Speech	3	Chem. 134—Gen. Inorg., Org. & Biol.	3
Chem. 133—Gen. Inor., Org. & Biol.	3	P.E. 133—Pers. & Comm. Hyg.	3
P.E. 131—Introduction to P E.	3	P E. 126—Team Sports	2
P.E. 125—Team Sports	2	*P.E. 2116—Social Dance	1
***P.E. 2118—Modern Dance	1		15
	18		

*Satisfies one semester of physical education requirement.

**Students seeking an elementary emphasis will substitute elementary courses for secondary courses.

***Fulfillment of four semesters of physical education above 123 required for B.S. in Ed. Degree.

Sophomore Year

First Semester	Credit	Second Semester	Credit
Ed. 232—Educational Psychology	3	Ed. 231—Educational Sociology	3
Eng. 231—Masterpieces of Literature	3	Eng. 232—Masterpieces of Literature	3
Zool. 235—Human Anat. & Phys.	3	Zool. 236—Human Anat. & Phys.	3
Govt. 233—Amer. Govt., Org.	3	Govt. 234—Amer. Govt., Funct.	3
P.E. 230—Health Education	3	**P.E. 233 or Elective	3
P.E. 123—Individual Sports	2	P.E. 124—Individual Sports	2
	17		17

Junior Year

First Semester	Credit	Second Semester	Credit
Ed. 330—Prin. in Mod. Ed.	3	**Ed. 334—Cur. Dev. in Sec. Ed.	3
**Psy. 335—Adolescent Psychology	3	Soc. 230—Introduction to Sociology	3
P.E. 328—Technique of Sports	2	P.E. 329—Technique of Sports	2
*P.E 321—Square and Folk Dance	2	P.E. 3313—Dance Methods	3
Minor	3	*P.E. 322—Swimming	2
Electives	3	Minor	3
	16		16

Senior Year

First Semester	Credit	Second Semester	Credit
**Ed. 432—Student Obs. & Teach.	3	**Ed. 434—Curriculum Practicum	3
P E. 4311—Meth. in Sec. Schools	3	P.E. 431—Kinesiology	3
P.E. 436—Phys. Exam. & Cor.	3	P.E. 437—Measurement	3
Minor	3	Minor	3
Electives	3	Electives	3
	15		15

*Fulfillment of four semesters of physical education above 123 required for B.S. in Ed. Degree.

**Students seeking an elementary emphasis will substitute elementary courses for secondary courses.

BACHELOR OF ARTS
MAJOR IN RECREATION

In addition to a major in physical education, the department also offers a B.A. degree with a major in recreation. The general requirements for the Bachelor of Arts degree will be met. The core program in this field consists of the following courses: P.E. 133, 4320, 439, and 331; Speech 233; Education 330; Psychology 230 and 436. The areas of emphasis available at the present time are Sports and Dance, Arts and Crafts, Music, and Dramatics.

A Recreation major must complete work in the Sports and Dance area; in addition he must select one other area from the following: Arts and Crafts, Music, or Dramatics.

The courses to be taken in the Sports and Dance Area are: P.E. 131, 122, 221, 222; 323 and 4324, or 4325 and field experiences. (men) P.E. 131, 123, 124, 125, 126; 128 and 129 or 4325 and field experiences. (women).

Courses in the Arts and Crafts area are:

Applied Arts 131 or 133, 232, 437. 15 semester hours of the following: Applied Arts 231, 233, 331, 332, 425, 426, 427, 434, 435, 438. Allied Arts 133, 239.

Music courses are: Music 131-2, Applied Music 1113-1114, 1123-1124, Music Education 327. 6 hours electives.

Dramatics courses are: Speech 319 (taken twice) 231, 234, 333, 334, and 431.

Professional Courses for Undergraduates

Courses listed below are co-educational unless designated "For Men" or "For Women."

121. Fundamentals of Football and Track. Cr. 2. (0-6). (Men)
Practice in fundamental skills such as blocking, tackling, passing, and kicking in football. Also individual offensive and defensive play. Practice in individual skills in track and field events. Approximately three-fifths of the semester will be devoted to football and two-fifths of the semester to track.

122. Fundamentals of Baseball and Basketball. Cr. 2. (0-6). (Men)
Practice in fundamental skills, such as pitching, catching, fielding, and batting in baeeball; dribbling, passing, shooting, pivoting, etc., in basketball. Also individual offensive and defensive play. Two-fifths of a semester will be devoted to baseball and three-fifths to basketball.

123. Individual Sports. Cr. 3. (0-4). (Women)
Skills, tactics, and rules in the individual sports of tennis and badminton.

124. Individual Sports. Cr. 2. (0-4). (Women)
Skills, tactics, and rules in the individual sports of archery and golf.

125. Team Sports. Cr. 2. (0-4). (Women)
Skills, tactics, and rules in the team sports of hockey, speedball, and soccer.

126. Team Sports. Cr. 2. (0-4). (Women)
Skills, tactics, and rules in the team sports of volleyball, basketball, and softball.

131. Introduction to Physical Education. Cr. 3.
Brief introduction to the field of physical education, its philosophy, aims, objectives, principles, and potential values.

133. Personal and Community Health. Cr. 3.
Fundamentals of health, dealing with personal hygiene; community health problems; causes and prevention of disease in the family as related to individual and community health.

221. Theory and Practice of Individual Sports. Cr. 2. (0-6). (Men)
Course is designed to prepare students as physical educators in junior and senior high schools, colleges, and as community recreation leaders. It covers the rules and fundamentals of tennis, handball, and badminton.

222. Theory and Practice of Team Sports. Cr. 2. (0-6). (Men)
Continuation of P.E. 221. Covers the rules and fundamentals of volley ball, softball, speedball, and soccer.

230. Health Education in the Elementary and Secondary Schools. Cr. 3.
Basic principles and procedures of health education and their application to the total school health program.

233. Physical Education for the Elementary School. Cr. 3.
A method and content course dealing with the theory and practice of physical education

310. Health Education Workshop. Cr. 1. (10-25). Lasts one week.
Study of problems in health education and methods of implementation and coordination of local and state resources.

321. Square and Folk Dance (Tumbling). Cr. 2. (0-6).
The course stresses fundamental skills, selection of materials, methods of instruction in folk, square dancing (and/or tumbling—Men).

322. Elementary Aquatics. Cr. 2. (0-6).
Practice of swimming fundamentals from beginner's swimming through life saving; also includes principles, methods of teaching, leading to water safety instructor's certificate, principles of pool management, theory of coaching swimming, and introduction to synchronized swimming.

323. Sports Officiating. Cr. 2. (1-3). (Men)
Prerequisite: P.E. 0141, 0142, 0145, 221, and 222, or consent of instructor. Designed to prepare qualified teachers as officials of interscholastic sports. Covers the ethics, rules, and mechanics involved.

326. First Aid. Cr. 2. (Women)
Red Cross standard, advanced, and instructors' courses.

328. Technique of Sports. Cr. 2. (Women)
Prerequisite: 123, 124, 125, and 126. Emphasis on skill analysis and officiating.

329. Technique of Sports. Cr. 2. (Women)
Prerequisite: 328. A continuation of P.E. 328.

331. Recreational Methods. Cr. 3.
Material appropriate for small and large groups, different age levels, and various situations. Consideration of philosophy and method; practice in planning and leading recreation.

3311. Methods of Teaching Physical Education in High School. Cr. 3. (Men)
Prerequisite: 6 semester hours of physical education and 6 hours of education. Aims and methods of teaching physical education in junior and senior high school.

3313. Theory and Practice of the Dance. Cr. 3. (Women)
Prerequisite: Physical Education 210, 321, and 2118. Rhythm analysis, practice, and procedure in dance.

332. First Aid; Care and Prevention of Athletic Injuries. Cr. 3. (3-2). (Men)
American Red Cross First Aid Course leading to a standard first aid certificate, including athletic training and an analysis of common athletic injuries, their care, and prevention.

Professional Courses for Undergraduates and Graduates

422. Theory of Coaching Football and Basketball. Cr. 2. (2-2). (Men)
Prerequisite: P.E. 121 and P.E. 122. A study of offensive and defensive systems and strategies, scouting methods, public relations, and professional ethics.

431. Kinesiology. Cr. 3. (1-2).
Prerequisite: 12 hours of science. A study of the principles of human motion. Anatomical and mechanical analysis of everyday and physical education activities emphasized for the purpose of promoting normal physical development and improvement of performance.

4311. Physical Education for the Junior and Senior High School. Cr. 3. (Women)
Prerequisite: Junior standing in physical education. Methods and materials of physical education in the secondary school.

432. Physiology of Exercise. Cr. 3.
Prerequisite: 12 hours of science. The effect of muscular activity on the processes of the body.

4321. Methods and Techniques of Driver Instruction. Cr. 3. (3-2).
Prerequisite: 6 hours of physical education and 6 hours of education and junior standing. Preparation of high school teachers in driver education, which includes classroom and behind-the-wheel techniques. All prospective teachers will have the opportunity to teach beginners.

4322. Organization and Administration of Interscholastic and Intercollegiate Athletic Programs. Cr. 3. (Men)
A study of methods in organizing and administering the interscholastic and intercollegiate athletic program. Study is given to the following items: staff, program, budget, health and safety, facilities, publicity, history, duties of an athletic director, and national, state, and local controls.

4323. Organization and Administration of Camps. Cr. 3.
Prerequisite: 6 hours of physical education and 6 hours of education. A study of organization and administration of different types of camps including objectives, organization, routine administration, and evaluation.

4324. Organization and Administration of Intramural Sports. Cr. 3. (Men)
Administrative procedures connected with organization, records, equipment, program, and staff duties. Includes sports officiating, which covers the ethics, rules, mechanics, and practice.

4326. Safety Education. Cr. 3. (3-2).
A study of prevention of accidents in home, industry, and recreation. This includes Red Cross standards, advanced, instructors, and safety courses.

436. Physical Examinations and Corrective Physical Education. Cr. 3.
Prerequisite: 6 hours of science. Practice in administering screening tests with interpretation of findings; organization of programs in physical education for the physically handicapped.

437. Measurements in Physical Education. Cr. 3.
Techniques in physical education. Survey of tests used in physical education and methods of administering tests and using data.

438. Curriculum Development in Physical Education. Cr. 3.
Principles of curriculum planning in physical education.

439. Organization and Administration of Recreation Programs. Cr. 3.
Study of community recreation, its significance, leadership, facilities, and organization of programs with special consideration of the contribution of physical education.

Professional Courses for Graduates

531. Administration of Physical Education. Cr. 3.
Prerequisite: Major in health and physical education or B.S. in Education with physical education minor, including P.E. 437, and 438 or equivalent. A study of principles, problems and procedures for administering physical education programs. The course is especially designed for school administrators, athletic directors, physical education directors, and city directors.

532. Supervision of Physical Education. Cr. 3.
Prerequisite: Same as P.E. 531. A study of principles, problems, relationships, and procedures in the supervision of elementary and high school physical education programs.

533. Facilities for Physical Education. Cr. 3.
Prerequisite: Same as P.E. 531. A study of principles, terminology, and standards for planning, construction, use and maintenance of facilities.

534. Administration of the School Health Program. Cr. 3.
Prerequisite: 6 hours of health education and 12 hours of science. A course for teachers, coaches, and school administrators who desire an understanding of a well-balanced health program.

Department of History, Anthropology and Sociology

DISTINGUISHED PROFESSOR RISTER. PROFESSORS EAVES, HOLDEN,* KINCHEN, McKAY, WALLACE. ASSOCIATE PROFESSOR PEARCE.** INSTRUCTOR SMITH. PART-TIME INSTRUCTORS HUGHES, MASON.

HISTORY

Students may major or minor in history in the Bachelor of Arts Degree program, and may choose history as a teaching major or minor in the Bachelor of Science in Education Degree work. Thirty semester hours in history and Anthropology 231 and 232 are required of history majors.

All courses numbered above 300 are advanced courses; junior classification or higher is prerequisite to enrollment in advanced courses.

Candidates for the Degree of Doctor of Philosophy in History and for the Master of Arts Degree with a major in history will be accepted subject to the general requirements of the Graduate School. Doctoral candidates may major in American history with European history as the first minor.

This department cooperates in the Latin American Area Studies program (see pages 84 and 85 in this catalog) and participates in the American Civilization program, an interdepartmental major for doctoral candidates.

Requests for further information should be addressed to the Head of the Department.

For Undergraduates

131-2. Basic Social Science: Development of Civilizations. Cr. 3 each.
Man in the social world; a study of economic, political, religious and intellectual aspects of culture and their relation to modern society; special emphasis on the rise of Western civilization.

133-4. Economic and Political History of England. Cr. 3 each.
Economic, legal and cultural development of the English people.

231-2. Economic and Political History of the United States. Cr. 3 each.
Discovery, colonization, colonial institutions; nationalism; slavery; expansion; sectionalism; the Civil War; Reconstruction; industrial and social problems; domestic and foreign affairs; the U. S. in the twentieth century.

330. Teaching History in High Schools. Cr. 3.
Modern techniques in teaching history in junior and senior high schools. Credited either as history or education.

331. Classical Civilizations: Greece and Rome. Cr. 3.
Prerequisite: junior classification or higher. Greek and Roman civilizations and their contributions to Western civilizations.

*On leave from Head of Department, 1953-54. Resigned as Head of Department effective Aug. 31, 1954.
**Acting Head of Department, 1953-54. Head of Department beginning Sept. 1, 1954.

332. Medieval Civilizations. Cr. 3.
Prerequisite: junior classification or higher. Europe during the Middle Ages; the feudal system; chivalry; the crusades; the Church; guilds; the growth of towns.

430. English Colonial America. Cr. 3.
Prerequisite: junior classification or higher. Exploration; settlement; development of American institutions and culture.

4311. The Old South. Cr. 3.
Prerequisite: junior classification or higher. History of slavery in the United States; the South as an economic, social and political unit; secession.

4312. The Civil War and Reconstruction. Cr. 3.
Prerequisite: junior classification or higher. The South during and after the war; reconstruction policies; radical rule and its overthrow; the disputed election of 1876.

4313. History of the United States, 1877-1899. Cr. 3.
Prerequisite: junior classification or higher. The rise of "Big Business"; the Populist movement; imperialism.

For Undergraduates and Graduates

Prerequisite: junior classification or higher.

333. Europe, 1500-1789. Cr. 3.
The Renaissance and the Reformation; the Age of Discovery; the Old Regime; the "Enlightenment."

334. The French Revolution and Napoleon. Cr. 3.

335. Modern Europe, 1815-1918. Cr. 3.

336. Europe Since 1918. Cr. 3.
Settlements at Versailles; the search for security; geopolitical aspects of the twentieth century wars; the Second World War; the U. N.; the "Cold War."

337. Tudor and Stuart England. Cr. 3.
The establishment of a strong monarchy; break with the Roman Church; rise of sea power; contest between king and Parliament; the Commonwealth; Restoration; supremacy of Parliament; colonial policies.

338. Eighteenth and Nineteenth Century England. Cr. 3.
Rise of the cabinet; Whig vs. Tory; the Industrial Revolution; the Napoleonic wars; reform; the Irish question; development of the Commonwealth.

339. Twentieth Century Britain. Cr. 3.
Political and social reform; education; the labor movement; effects of the First and Second World Wars.

3311. The Canadian Dominion. Cr. 3.
Evolution of the Dominion; relations with other dominions in the British Empire.

3312. History of Russia. Cr. 3.
The making of Russia; czarist Russia; the Revolution; political, economic and social changes; the Second World War and its aftermath.

3313. The Far East. Cr. 3.
Japan and China in the nineteenth and twentieth centuries; Japanese imperialism; the Second World War and its aftermath.

3314-15. Contemporary Europe; A Travel Course. Cr. 6.
A field course to be conducted in summer; lectures on and visits to cultural centers and historic sites in western Europe—the continent and the British Isles. Scheduled for summer of 1954.

3316. The Near East in Modern Times. Cr. 3.
Turkey, Iran, Iraq, Egypt, Israel, and Arab states.

432. Constitutional History of the United States to 1865. Cr. 3.
English background; Confederation; formation and adoption of the Constitution; governmental organization; early amendments; the United States Bank; nullification; the Texas question; slavery in the territories; the Dred Scott Case; secession.

433. Constitutional History of the United States Since 1865. Cr. 3.
The Civil War amendments; reconstruction constitutions; new state constitutions; income tax; prohibition and suffrage amendments; interstate commerce; recent developments.

434. Diplomatic History of the United States to 1865. Cr. 3.
Diplomatic affairs during the Revolution; negotiations leading to the purchase of Louisiana; acquisition of Florida; the Oregon and Texas questions; the Mexican cession and the Gadsden Treaty; Civil War diplomacy.

435. Diplomatic History of the United States Since 1865. Cr. 3.
Foreign relations during the Reconstruction and Big Business eras; Caribbean affairs; policies in Latin America; the First World War and after; the United Nations.

436. History of the United States, 1789 to 1829. Cr. 3.
The formation of the national government; rise of political parties; nationalism; the War of 1812; the tariff; cultural and social developments.

437. History of the United States, 1829-1860. Cr. 3.
Jacksonian democracy; party politics; growing sectional tensions; crisis of 1850; cultural and social aspects.

438. History of Texas; the Colonial Period. Cr. 3.
Exploration; Spanish-French rivalry; Spanish and Mexican policies; Anglo-American settlement; friction between Anglo-Americans and Mexicans; revolution.

439. History of Texas; the Republic and Early Statehood. Cr. 3.
Domestic and foreign affairs of the Republic; annexation; Mexican War; westward extension; Civil War, Reconstruction; the Indian problem; cattle kingdom; settlement of West Texas.

4316. History of the United States, 1900 to 1932. Cr. 3.
The Progressive era; the First World War; post-war readjustments; life in the 1920's.

4317. History of the United States Since 1932. Cr. 3.
The Depression; the New Deal and its record; life in the 1930's; the Second World War; the U. N.

4321. Constitutional and Political History of Texas Since 1875. Cr. 3.
Early constitutional developments in Texas; background, formation and adoption of the Constitution of 1876; amendments; political development with emphasis on recent decades.

4322. Life in the Southwest. Cr. 3.
A study of the overlapping and fusion of Indian, Spanish-American and Anglo-American cultures in the American Southwest; extent of institutional and cultural amalgamation.

4323. Spanish Colonial America. Cr. 3.
Discovery, exploration and colonization of the New World; Spain's colonial policies; the Church in Hispanic America; background of the struggles for independence.

4324. History of Mexico Since Independence. Cr. 3.
Political history of Mexico from the struggles for independence to the present.

4326. Social and Cultural History of Texas. Cr. 3.
Amusements, architecture, religion, immigration, journalism and literature of the colonial period, the republic and early statehood.

4327. History of the American Frontier, 1763-1803. Cr. 3.
Settlement of the Piedmont, the Old Northwest and the Old Southwest; border institutions, folkways, government; the frontier and the Indian.

4328. The Trans-Mississippi West, 1803 to the Present. Cr. 3.
Development of territories; traders and trappers; trail blazing; the Indian problem; livestock industry; railroads; new farming techniques; rise of cities; the modern era.

4351. Patterns of World History. Cr. 3.
The major institutional elements in modern civilization.

For Graduates

4335. History Appreciation for Elementary Teachers. Cr. 3.
Enrollment limited to graduate students majoring in Elementary Education.

530. Seminar in Southwestern History. Cr. 3.

531. Seminar in Texas History. Cr. 3.

532. Seminar in American History. Cr. 3.

533. Seminar in European History (British or Continental). Cr. 3.

534. Historical Methods and Historiography. Cr. 3.

535. The American Heritage. Cr. 3.
A study of democratic traditional concepts and institutions which have shaped the American way of life. About one week or ten days will be devoted to each study problem, such as social democracy, religious freedom, and free enterprise.

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

731-2. Doctoral Research. Cr. 6.

831-2. Doctoral Dissertation. Cr. 6 (For bookkeeping purposes).

ANTHROPOLOGY

Anthropology 231 and 232 are required of all majors and minors in anthropology. For students wishing to take advanced courses in anthropology as electives, junior classification or higher is required. Other courses which may be applied on a major in anthropology are: Clothing and Textiles 335; Sociology 332, 334, 336, 431; Philosophy 436.

In the Master's degree program, anthropology may be used as a minor only.

For Undergraduates

231. The Nature of Man. Cr. 3.
The physical development of man from his origin.
232. Cultural Anthropology. Cr. 3.

For Undergraduates and Graduates

Prerequisite: junior classification or higher.

330. Cultures and Peoples of the Southwest. Cr. 3.
A survey of the prehistoric cultures and living Indian people of the area.
333. Social Customs of the Plains Indians. Cr. 3.
The Plains cultures and their relationship to environment; ethnology and historical contact.
334. Races, Peoples and Languages of North America. Cr. 3.
Pre-Columbian culture areas, linguistic groups and physical types.
335. Archaeology of America North of Mexico. Cr. 3.
A survey of prehistoric sites and cultures.
336-7. Archaeology of Mexico. Cr. 6.
A field course. Lectures, reading, research, and visits to archaeological sites in the vicinity of Mexico City. Conducted biennially in the summer.
431. Field Archaeology. Cr. 3.
Mapping, excavating and preparing reports on archaeological sites.
433-4. Southwestern Archaeology. Cr. 6.
A field course. Lectures, research and excavation. Summer only.
4351. Origins of Social Customs and Institutions. Cr. 3.

For Graduates

531. Seminar in Anthropology. Cr. 3.
Anthropological literature and topics; bibliography.
532. Seminar in Anthropology. Cr. 3.
Anthropological literature and topics; bibliography.

SOCIOLOGY

Sociology 230 and 233 are required courses for all majors and minors, and Sociology 211 and 212 and Anthropology 231 and 232 for all majors in sociology. For students wishing to take advanced courses in sociology as electives, junior classification or higher is required. Other courses which may be applied on a major in sociology are: Anthropology 330 and 333; Philosophy 436; Psychology 434. Minimum requirement for majors in sociology: 30 semester hours.

For Undergraduates

211. Problems in Community Health. Cr. 1.
Health problems as they affect the community, the family, the individual.
212. Problems in Community Health. Cr. 1.
Health problems as they affect the community, the family, the individual.
230. Introduction to Sociology. Cr. 3.
233. Current Social Problems. Cr. 3.

For Undergraduates and Graduates

Prerequisite: junior classification or higher.

332. Marriage. Cr. 3.
History, present status, current problems, and the future of the marriage institution.
333. American Minority Problems. Cr. 3.
Socio-cultural backgrounds of the American minority groups. Majority-minority group relations.
334. Patterns of Cultural Tradition. Cr. 3.
The origin of social institutions in Europe.

336. Social Life and Culture of Mexico. Cr. 3.
Comparison of social institutions and problems of Mexico with those of the United States.

337. Social Organization and Movement. Cr. 3.
Analysis of the organization of social relations: groups, institutions, societies; positions and roles in the modern division of labor, castes, classes, and races; types of collective action arising in crowds, mobs, strikes and mass movements.

338. The Sociology of the Person. Cr. 3.
An examination of the significant effects of group membership on individual behavior; the socio-dynamics of abnormal behavior.

3311. Population Problems. Cr. 3.
Population theories; implications in growth, composition and size of populations; control policies.

3312. Community Organization. Cr. 3.
An analysis of the community in its ecological, cultural and social aspects. Emphasis on the practical problems of community organization in rural and urban settings.

431. Regional Patterns in American Life. Cr. 3.
Comparative study of regional patterns in the United States.

432. Problems in Social Work. Cr. 3.
Basic principles of and practices in social case work; supervised training with local agencies. Prerequisite: senior standing or consent of instructor.

433. Criminology. Cr. 3.
A study of delinquency and crime. Prerequisite: senior standing or consent of instructor.

436. The Development of Sociological Thought and Theory. Cr. 3.
Survey of the leading theories concerning the nature of society and social change from classical times to the present.

437. Social Change. Cr. 3.
Aspects of stability and continuity in social change; theories of progress; contemporary social trends.

For Graduates

531. Seminar in Social Problems. Cr. 3.
For majors and minors in sociology Research in sociological problems.

532. Research Methods in Sociology. Cr. 3.
Analysis of methods of sociological research; interpretation of data.

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

Department of Journalism

PROFESSOR HEITMAN. ASSISTANT PROFESSORS ALLEN, VERNON.

Students majoring in journalism are required to complete 36 semester hours including Journalism 230, 231, 232, 336 or 337, 338 or 339, 430, and 333 or 434; for a minor in journalism, Journalism 231 and 232 must be included in the 18 hours required. Ability to use the typewriter is necessary before students are admitted to Journalism 231. Economics 231 and 232 and Psychology 230 or Philosophy 230 are required for a major in journalism.

For Undergraduates

230. Introduction to Journalism. Cr. 3.
A brief survey of journalism directed toward giving the student an understanding of communication agencies in modern life and the professional opportunities in the broad field, following a study of the history of American journalism.

231. Newspaper Reporting and Writing. Cr. 3.
Problems and methods of gathering and writing news. Practice assignments. Prerequisite to all higher journalism course numbers for majors and minors.

232. Newspaper Reporting and Writing. Cr. 3. (2-3).
Prerequisite: Journalism 231. Reporting and writing for College newspaper. Putting into practice principles learned in Journalism 231.

330. Typography. Cr. 3.

Mechanics of printing and publishing; choice of types and their arrangement; type harmony and readability; copy fitting; make-up of newspaper and magazine pages; engraving, duplicating processes, and presses. Individual study and research.

331. Newspaper Feature Articles. Cr. 3.

Special feature stories; sources for subjects, collection of facts; much practice in writing the news feature, side feature, color story.

336, 337. Advanced Reporting. Cr. 3. (1-6).

Reporting and writing for College newspaper and other media. Consideration of complex news stories, interpretive pieces. In second semester, reporting of public affairs.

338, 339. News Editing. Cr. 3. (1-6).

Laboratory course in newspaper copy desk work, including copyreading, headline writing, make-up, and proofreading. Desk assignments on College newspaper.

3311. Agricultural and Home Economics Journalism. Cr. 3.

Prerequisite: Junior standing Designed for agricultural and home economics students. Preparation in the principles of gathering and writing news and feature stories and magazine articles, in their respective fields. Lectures on editing and marketing copy, and on preparing the radio newscast.

3313. Press Photography. Cr. 3. (1-6).

Varied assignments of news and feature picture coverage, stressing use of the press camera. Lecture and laboratory course covering picture processing, and practice and study in picture editing.

3318. Radio-Television News Writing. Cr. 3.

Prerequisite: Junior standing and (for majors and minors) completion of 231 and 232. Training in news writing for radio and television presentation; preparation of copy for both wire and local news reports; interviews and news dramatizations. Speech 335 recommended. May be taken for Speech credit.

3319. Radio-Television Advertising Continuity Writing. Cr. 3.

A study of network and station organization and application of techniques of advertising continuity writing to radio and television presentation. Preparation and presentation of copy for radio and television. Speech 335 recommended. May be taken for Speech credit.

431. Reviewing and Reporting the Fine Arts. Cr. 3.

Former title: "Critical Writing." Lectures and class discussions on critical standards as they relate to writing about books, music, painting, plays, motion pictures and other art forms, for periodical publications. For students seeking general culture as well as for those preparing for newspaper departmental work.

For Undergraduates and Graduates

332. Magazine Article Writing. Cr. 3.

Techniques and procedure in writing for current magazines; study of markets; what to write about, where and how to get facts and how to arrange them; preparation and marketing of the article.

333. Problems of the Community Newspaper. Cr. 3.

Weekly and small daily newspaper property values, organization, sources of income, operating expense, news-editorial policies, production, records, promotion, and commercial printing. Individual study and research.

430. Principles of Journalism. Cr. 3.

Freedom of the press, laws affecting publications, ethics of publishing, the relation of press to society

432. High School Publications. Cr. 3.

For prospective high school teachers who may sponsor publications. 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.

Theory and practice of writing editorials; a study of contemporary editorial pages and editorials, with analysis of style, content, and purpose; technique and much practice.

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

Advertising and a free press; selling and servicing newspaper advertising; newspaper advertising make-up; procedure in newspaper advertising departments.

Department of Mathematics

PROFESSORS HAZLEWOOD, FULLER, HEINEMAN, SPARKS, UNDERWOOD. ASSOCIATE PROFESSOR RIGGS. ASSISTANT PROFESSORS MAY, PARKER, WOODWARD. INSTRUCTORS BRIDGES*, HERRICK*, HOLLAND, LINDSAY**, MADDEN*, McGLOTHLIN, ROBERTS, ROWLAND, SMITH, STRANDTMANN, YOUNG*.

For Undergraduates

032. Introductory Geometry. Cr. 3.

A course in elementary geometry open to students who cannot satisfy the plane geometry prerequisite for Math. 131. Credit for this course may not be used to satisfy normal degree requirements, and will not be allowed to students who use high school geometry for college entrance.

051. Introductory Algebra. Cr. 5.

A comprehensive review of high school algebra plus the topics covered in Math. 121 or Math. 130. Only 2 (or 3) of the 5 credit hours may be applied to normal degree requirements.

121-2. Algebra. Cr. 2 each.

Primarily for engineering and science students. Prerequisites: For Math. 121: Two units of high school algebra; for Math 122: Math. 121 and Math. 131 or concurrent registration in Math. 131. Review of high school algebra; quadratic equations; graphs; inequalities; binomial theorem; progressions; complex numbers; elementary theory of equations; exponential equations; determinants; permutations, combinations, and probability.

130. Algebra. Cr. 3.

Prerequisite: One unit of high school algebra. Review of high school algebra; quadratic equations; graphs; binomial theorem; logarithms and exponential equations; variation; progressions.

131. Trigonometry. Cr. 3.

Prerequisites: One unit of high school algebra, one unit of plane geometry, and Math. 121 or 130, or concurrent registration in Math. 121. Trigonometric functions; radians; logarithms; solutions of triangles; functions of composite angles; identities; trigonometric equations.

132. Analytic Geometry. Cr. 3.

Prerequisites: Math. 121 and 130, and 131. The straight line and conic sections; transformation of coordinates; polar coordinates; parametric equations; introduction to solid analytic geometry.

135. Mathematics in General Education. Cr. 3.

Basic concepts in elementary mathematics, including numbers and operations with numbers. Designed especially as a survey course for such students as pre-service teachers in elementary education. It is not to be taken in lieu of Math. 130.

138. Mathematics of Finance. Cr. 3.

Prerequisite: Math. 130 or 121. Compound interest; discount; annuities; amortization; depreciation; sinking funds; evaluation of bonds; introduction to statistical methods.

151. Algebra and Trigonometry. Cr. 5.

This course combines Math. 121 and 131. The topics of Math. 121 are completed before Math. 131 is started.

152. Algebra and Analytic Geometry. Cr. 5.

This course combines Math. 122 and 132. The topics of Math. 122 are completed before Math. 132 is started.

230. Agricultural Mathematics. Cr. 3.

For students of agriculture. Elementary algebra; percentage; linear equations; elementary trigonometry; mensuration and applications; graphical representation of statistics.

231-2. Differential and Integral Calculus. Cr. 3 each.

Prerequisite: Math. 132 or concurrent registration. Differentiation; rates; maxima and minima; curvature; formal integration; definite integrals; areas; lengths; volumes.

238. Statistics. Cr. 3.

Prerequisite: Math. 130. Collection and tabulation of data; bar charts; graphs; sampling; averages; dispersion; correlation; index numbers; normal curve; probability; applications to various fields.

251. Calculus. Cr. 5.

Primarily for engineers. Prerequisite: Math. 122 and 132. Differentiation; rates; maxima and minima; curvature; formal integration; areas.

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* Part-time.
** On leave.

For Undergraduates and Graduates

331. Applications of Calculus. Cr. 3.
Prerequisite: Math. 251 or 232. Lengths; surfaces; volumes; centroids; moment of inertia; pressure; work; partial differentiation; series; multiple integrals; indeterminate forms; hyperbolic functions.

332. Differential Equations. Cr. 3.
Prerequisite: Math. 251 or 232. Solutions of differential equations, with geometric and physical applications.

333. Advanced Algebra. Cr. 3.
Prerequisite: Math. 130 or 122. Mathematical induction; the number system; matrices and determinants; systems of linear equations; linear transformations.

337. College 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.

339. Statistical Methods. Cr. 3.
Prerequisite: Math. 238. Multiple and partial correlation; probability and the normal curve of error; derivation of statistical formulas; nonlinear trends; curve fitting by the method of least squares; use of moments; sampling theory.

430. Synthetic Projective Geometry. Cr. 3.
Prerequisite: Math. 337 or consent of the instructor. Fundamental theorems of projective geometry treated synthetically.

431. Teaching of Secondary Mathematics. Cr. 3.
Prerequisite: 12 semester hours of college mathematics.

432. Advanced Differential Equations. Cr. 3.
Prerequisite: Math. 332. Total differential equations; systems of differential equations; partial differential equations.

433. Theory of Equations. Cr. 3.
Prerequisite: Math. 232 or 251. Complex numbers; rational integral equations; symmetric functions; determinants and matrices; systems of equations.

434,5.* Advanced Calculus. Cr. 3 each.
Prerequisite: Math. 232 or 251. Continuity; indeterminate forms; partial differentiation; multiple integration; line, surface, and space integrals; series; Fourier series; partial differential equations; elliptic integrals and functions.

436. Introduction to Finite Groups. Cr. 3.
Prerequisite: Math. 232 and consent of the instructor. Lagrange theorem; Cayley theorem; gamma groups; conjugate classes; normalizer; Sylow theory.

437. Theory of Numbers. Cr. 3.
Prerequisite: Math 232 or 251. Prime numbers; congruences; theorems of Format, Euler, and Wilson; residues; reciprocity law; Diophantine equations.

438. Solid Analytic Geometry. Cr. 3.
Prerequisite: Math. 132. Direction angles and cosines; equations of space curves, lines, and surfaces; canonical forms.

439. Vector Analysis. Cr. 3.
Prerequisite: Math. 232 or 251. Scalar and vector products; gradient; divergence; curl; applications.

4311. Extended Analytic Geometry. Cr. 3.
Prerequisite: Math. 232 or 251. Essential features of a coordinate system for **n** variables on a plane and in space of three dimensions. Applications to algebra, number theory, and calculus.

For Graduates

533. Advanced Topics in Analysis. Cr. 3.
Prerequisite: Math. 332. Partial differential equations; boundary value problems; related topics.

535. Analytic Projective Geometry. Cr. 3.
Prerequisite: Math. 438. Analytic treatment of the projective properties of systems of lines and the conic sections.

536,7* Modern Algebra. Cr. 3 each.
Prerequisite: Math. 433. Numbers, sets; groups; rings; fields; polynomials; Galois theory.

5312,13.* Functions of a Complex Variable. Cr. 3 each.
Prerequisite: Math. 435. The algebra of complex numbers and their geometric representations; conformal mapping; power series; properties of analytic functions; differentiation and integration; special definite integrals.

5314,15.* Functions of a Real Variable. Cr. 3. each.
Prerequisite: Math. 435. The real number system; set theory; Borel-Lebesgue measure; Riemann, Lebesgue, and Stieltjes integrals.

631-2. Thesis.

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

ASTRONOMY

For Undergraduates

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 Astronomy 231-2.

231,2.* General Astronomy. Cr. 3 each.
Prerequisite: Math. 130 or 121, and 131, with a grade of C or better. The solar, stellar, and galactic systems, studied with attention to technical details.

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

Department of Music

PROFESSORS HEMMLE, WILEY. ASSOCIATE PROFESSOR ELLIOTT.
INSTRUCTORS COLVIN, ELSON, McCARTY, TAYLOR,
VAN APPLEDORN. PART-TIME INSTRUCTORS
McCARTY, SHORT, TAYLOR.

The Department of Music is equipped to serve the student desiring a major in music education (vocal or instrumental), piano or voice; the student with a strong avocational interest in music; and the general student.

Non-music majors may elect class or private instruction in voice or in any instrument. Each student enrolled in applied music is carried at his maximum level of achievement, and the non-music major is not examined in competition with the music major. Courses designed to serve all students enrolled in the College are: Applied Music (vocal or instrumental, class or private instruction, Applied Music 025 and 026 may be repeated for credit); Music Literature 131, 132, 431, 432; Music Ensemble 010-1 (Tech Choir), 010-2 (Festival Chorus), 011-1 (Orchestra), 013-A (Tech Concert Band), 013-B (Tech "B" Band).

THE DEGREE OF BACHELOR OF MUSIC

The Department of Music offers the Bachelor of Music degree with a major in Music Education (Instrumental or Vocal), Piano, or Voice. This degree is for the student who expects to teach or direct vocal or instrumental music in the public schools, or for the student who desires concentration in performances and studio teaching.

All entering freshmen will follow the freshman program designed for music education (instrumental or vocal) majors. Entering freshman music majors should have studied previously and should have attained technical proficiency in applied music sufficient to qualify for a course numbered 125 or above. Classification as to course will be made during orientation week. Students who qualify for courses below 125 must register for 025 until deficiency is removed. Students following a plan for a major in music education will study the principal instrument for six semesters. Satisfying all requirements for the professional degree in music education may require more than eight semesters. Students following a plan for a major in voice or piano will study the principal instrument for eight semesters. The applied music major is required to attain a higher performance proficiency

than is required of the music education major concentrating in the same field. The Department of Music will supply specific requirements for entrance into Applied Music 125 upon request. Additional credit for applied music may apply toward the Bachelor of Music degree only when carried as secondary instruments.

In accordance with recommendations of the sub-committee appointed by the Council of Deans, it is possible for students to receive credit for college level work accomplished prior to entrance into this College. This may be done through Advanced Standing Examinations administered by the faculty of the Department of Music after obtaining permission of the Dean of Arts and Sciences. Advanced Standing Examinations will be administered only in the fields of applied music (secondary instruments) and music theory. In order to receive credit by an Advanced Standing Examination, the student must achieve a grade of not less than B on such examinations. The credit received through advanced standing may be recorded, but not for credit toward the total number of semester hours required for graduation.

At the completion of the freshman year, the faculty will review qualifications of all freshmen and advise these students concerning specific major fields. Students desiring to major in piano or voice, yet failing to meet standards established for such a major, may continue to pursue the Bachelor of Music with a major in music education (vocal or instrumental).

At the end of the sophomore year, the faculty will review the work of all piano and voice majors who wish to enter advanced classes. Piano and voice majors will be required to present a joint recital during the junior year and a full recital during the senior year.

Attendance at 75 per cent of the student recitals, faculty recitals, and Tech Artists Course series is required of all music majors. Practical experience in accompanying not to exceed one clock hour per week is required of students enrolled with piano as a principal instrument.

Students are encouraged to minor in any area outside the major field. It may require additional time to obtain a teaching minor.

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

1. English 12
2. Government 6
3. Electives 12
4. Education (for music education plan) 18
5. Degree major: applied music, music literature, music education, music theory, and music ensemble (band, chorus, orchestra), but not including freshman and sophomore physical educations, band, or military science, to total from 130 to 138 semester hours, depending upon the major.
6. Band, air or military science, or physical education 4-6

Unless specifically shown to the contrary, all requirements pertaining to the Bachelor of Arts degree apply to the Bachelor of Music.

BACHELOR OF MUSIC
MUSIC EDUCATION MAJOR (VOCAL*)

Freshman Year

First Semester	Credit
Ap. Mus. 125—Prin. Inst.*	2
Ap. Mus. 115—Violin	1
Ap. Mus. 113—Percussion	1
Ap. Mus. 1113—Class Voice or	
Ap. Mus. 1123—Class Piano	1
Ap. Mus. 112—Diction	1
Mus. Lit. 131—Intro. to Mus. Lit.	3
Mus. Th. 147—Elementary Theory	4
Eng. 131—English Composition	3
Ensemble	1
Band, P.E., or ROTC	1-2
	17-18

Second Semester	Credit
Ap. Mus. 126—Prin. Inst.	2
Ap. Mus. 116—Violin	1
Ap. Mus. 114—Percussion	1
Ap. Mus 1114—Class Voice or	
Ap. Mus. 1124—Class Piano	1
Italian 113—Diction	1
Mus. Lit. 132—Intro. to Mus. Lit.	3
Mus. Th. 148—Elem. Theory	4
Eng. 132—English Composition	3
Ensemble	1
Band, P.E., or ROTC	1-2
	17-18

Sophomore Year

First Semester	Credit
Ap. Mus. 225—Prin. Inst.	2
Ap Mus. 115—Trumpet	1
Ap. Mus. 213—Strings	1
Ap. Mus. 2113—Class Voice or	
Ap. Mus. 2123—Class Piano	1
Mus. Th. 247—Intermed. Theory	4
German 113—Diction	1
Eng. 231—Masterpieces of Literature	3
Ed. 230—Educational Psychology	3
Ensemble	1
Band, P.E., or ROTC	1
	17

Second Semester	Credit
Ap. Mus. 226—Prin. Inst.	2
Ap. Mus 116—Trumpet	1
Ap. Mus. 214—Strings	1
Ap. Mus. 2114—Class Voice or	
Ap. Mus. 2124—Class Piano	1
Mus. Th. 248—Intermediate Theory	4
French 113—Diction	1
Eng. 232—Masterpieces of Literature	3
Ed. 231—Educational Sociology	3
Ensemble	1
Band, P.E., or ROTC	1
	17

Junior Year

First Semester	Credit
Ap. Mus. 325—Prin. Inst.	2
Ap. Mus. 115—Clarinet	1
Ap. Mus. 313—Brass	1
Mus. Ed. 327—Choral Conducting	2
Mus. Ed. 338—Secondary Methods	3
Mus. Th. 322—Form and Composition	2
Govt. 233—Amer. Govt., Org.	3
Psy. 331—Child Psychology, or	
Psy. 335—Adolescent Psychology	3
Ensemble	1
	18

Second Semester	Credit
Ap. Mus. 326—Prin. Inst.	2
Ap. Mus. 116—Clarinet	1
Ap. Mus. 314—Brass	1
Mus. Ed. 328—Instrumental Conducting	2
Mus. Ed. 337—Elementary Methods or	
Mus. Ed. 336—Sec. Insts. and Mat.	3
Mus. Th. 323—Form and Composition	2
Govt. 234—Amer. Govt., Funct.	3
Ed. 333—Curr. Dev. in Elem. Ed., or	
Ed. 334—Curr. Dev. in Sec. Ed.	3
Ensemble	1
	18

Senior Year

First Semester	Credit
Ap. Mus. 413—Woodwinds	1
Mus. Lit. 431—History of Music	3
Mus. Th. 427—Instrumentation	2
Ed. 431—Student Teaching (Elem.) or	
Ed. 432—Student Teaching (Sec.)	3
Academic Electives **	6
Ensemble	1
	16

Second Semester	Credit
Ap. Mus. 414—Woodwinds	1
Mus. Lit. 432—Hist. of Music	3
Mus. Th. 428—Instrumentation	2
Ed. 433—Practicum in Elem. Ed. or	
Ed. 434—Practicum in Sec. Ed.	3
Academic Electives **	6
Ensemble	1
	16

* If the principal instrument is voice, the student will include Applied Music 1123, 1124, 2123, 2124. If the principal instrument is piano the student will include 1113, 1114, 2113, 2114. Students submitting band for physical education will include Ensemble 010 or 011.

** Students desiring to teach exclusively in the elementary schools should consult with the Department of Music regarding certification requirements.

Junior Year

First Semester	Credit
Ap. Mus. 345—Piano or Voice	4
Mus. Lit. 330—Vocal Repertoire or	
Mus. Lit. 332—Piano Repertoire	3
Mus. Ed. 327—Choral Conducting	2
Mus. Th. 322—Form and Composition	2
Ensemble	1
Academic Electives	3
	15

Second Semester	Credit
Ap. Mus. 346—Piano or Voice	4
Elective	3
Mus. Ed. 328—Instrumental Conducting	2
Mus. Th. 323—Form and Composition	2
Ensemble	1
Academic Electives	3
	15

Senior Year

First Semester	Credit
Ap. Mus. 445—Piano or Voice	4
Mus Lit. 431—History of Music	3
Mus. Ed. 433—Voice Pedagogy or	
Mus. Ed. 437—Piano Pedagogy	3
Mus. Th. 427—Instrumentation	2
Ensemble	3
Academic Electives	3
	16

Second Semester	Credit
Ap. Mus. 446—Piano or Voice	4
Mus. Lit. 432—History of Music	3
Elective	3
Mus. Th. 428—Instrumentation	2
Ensemble	1
Academic Electives	3
	16

BACHELOR OF MUSIC

MUSIC EDUCATION MAJOR (INSTRUMENTAL**)

Freshman Year

First Semester	Credit
Ap. Mus. 125—Prin. Inst.	2
Ap. Mus. 115—Violin ***	1
Ap. Mus. 113—Percussion	1
Ap. Mus. 1113—Class Voice	1
Ap. Mus. 1123—Class Piano	1
Mus. Lit. 131—Intro. to Mus. Lit.	3
Mus. Th. 147—Elem. Theory	4
Eng. 131—English Composition	3
Ensemble	1
Band, P.E., or ROTC	1-2
	18-19

Second Semester	Credit
Ap. Mus. 126—Prin. Inst.	2
Ap. Mus. 116—Violin	1
Ap. Mus. 114—Percussion	1
Ap. Mus. 1114—Class Voice	1
Ap. Mus. 1124—Class Piano	1
Mus. Lit. 132—Intro. to Mus. Lit.	3
Mus. Th. 148—Elementary Theory	4
Eng. 132—English Composition	3
Ensemble	1
Band, P.E., or ROTC	1-2
	18-19

Sophomore Year

First Semester	Credit
Ap. Mus. 225—Prin. Inst.	2
Ap. Mus. 115—Trumpet	1
Ap. Mus. 213—Strings	1
Ap. Mus. 2113—Class Voice	1
Ap. Mus. 2123—Class Piano	1
Mus. Th. 247—Intermed. Theory	4
Eng. 231—Masterpieces of Literature	3
Ed. 230—Educational Psychology	3
Ensemble	1
Band, P.E., or ROTC	1
	18

Second Semester	Credit
Ap. Mus. 226—Prin. Inst.	2
Ap. Mus. 116—Trumpet	1
Ap. Mus. 214—Strings	1
Ap. Mus. 2114—Class Voice	1
Ap. Mus. 2124—Class Piano	1
Mus. Th. 248—Intermediate Theory	4
Eng. 232—Masterpieces of Literature	3
Ed. 231—Educational Sociology	3
Ensemble	1
Band, P.E., or ROTC	1
	18

* Students majoring in Piano will not be required to include Music Literature 330, 331, Music Education 437, 438.

Students majoring in Voice will not be required to include Music Literature 332, Music Education 433.

For Prescribed Senior Year See "Bachelor of Music, Music Education Major (Vocal)."

** Students substituting band for physical education will include Ensemble 010 or 011.

*** Ap. Mus. 115, 116 is not required in area of principal instrument.

Junior Year

First Semester	Credit
Ap. Mus. 325—Prin. Inst.	2
Ap. Mus. 115—Clarinet	1
Ap. Mus. 313—Brass	1
Mus. Ed. 327—Choral Conducting	2
Mus. Ed. 338—Secondary Methods	3
Mus. Ed. 336—Sec. Insts. & Materials	3
Mus. Th. 322—Form and Composition	2
Govt. 233—Amer. Govt., Org.	3
Psy. 331—Child Psychology or	
Psy. 335—Adolescent Psychology	3
Ensemble	1
	18

Second Semester	Credit
Ap. Mus. 326—Prin. Inst.	2
Ap. Mus. 116—Clarinet	1
Ap. Mus. 314—Brass	1
Mus. Ed. 328—Instructional Conducting	2
Mus. Ed. 336—Sec. Insts. & Materials	3
Mus. Ed. 339—Sec. Insts. & Methods	3
Mus. Th. 323—Form and Composition	2
Govt. 234—Amer. Govt., Funct.	3
Ed. 333—Curr. Dev. in Elem. Ed. or	
Ed. 334—Curr. Dev. in Sec. Ed.	3
Ensemble	1
	18

BACHELOR OF MUSIC

PIANO OR VOICE MAJORS

For Prescribed Freshman Year See "Bachelor of Music, Music Education Major (Vocal)."

Sophomore Year

First Semester	Credit
Ap. Mus. 235—Piano or Voice	3
Ap. Mus. 217-1—Class Voice or	
Ap. Mus. 217-2—Class Piano	1
Mus. Th. 247—Intermediate Theory	4
Eng. 237—Masterpieces of Literature	3
Govt. 233—Amer. Govt., Org.	3
Ensemble	1
Band, P.E., or ROTC	1-2
	17-18

Second Semester	Credit
Ap. Mus. 236—Piano or Voice	3
Ap. Mus. 218-1—Class Voice or	
Ap. Mus. 218-2—Class Piano	1
Mus. Th. 248—Intermediate Theory	4
Eng. 238—Masterpieces of Literature	3
Govt. 234—Amer. Govt., Funct.,	3
Ensemble	1
Band, P.E., or ROTC	1-2
	17-18

APPLIED MUSIC

Additional fees for Applied Music are shown under **Expenses.** (See Index.)

For Undergraduates

113, 114. Percussion. Cr. 1.
Fundamental knowledge of snare drum. Ability to tune and play timpani. Performance on all instruments of the battery. Laboratory ensemble experience. Formerly Band 115, 116.

1113, 1114. Voice. Cr. 1.
Class instruction. Correct posture and studies for breath control; development of resonance; study of vowel formation; vocalization. Simple songs.

1123, 1124. Piano. Cr. 1.
Class instruction. Sight reading and repertoire of simple piano materials. Harmonization and transposition of easy compositions.

213, 214. Strings. Cr. 1.
Ability to play scales on violin, viola, cello and bass. Laboratory ensemble experience. Formerly Band 215, 216.

2113, 2114. Voice. Cr. 1.
Class instruction. A continuation of Applied Music 1113, 1114.

2123, 2124. Piano. Cr. 1.
Class instruction. A continuation of Applied Music 1123, 1124.

313, 314. Brass Instruments. Cr. 1.
Prerequisite: Applied Music 115. Ability to play scales on trumpet, French horn, trombone, and tuba. Laboratory ensemble experience. Formerly Band 315, 316.

413, 414. Woodwinds. Cr. 1.
Prerequisite: Applied Music 115. Ability to play scales on flute, oboe, clarinet, and bassoon. Laboratory ensemble experience.

PIANO

025, 026, 115, 116, 215, 216, 315, 316. Piano. Cr. 1.
The technical work and repertoire recommended by the State Department of Education in Bulletin 449, pages 64 to 72.

125, 126. Piano. Cr. 2.
Major and minor scales, arpeggios, broken chords, Bach, Two-Part Inventions; sonatas: Haydn, Mozart, and Beethoven; romantic and modern compositions.

225, 226, 235, 236. Piano. Cr. 2 or 3.
Major and minor scales, arpeggios, broken chords, 16th notes at MM 100 to 120. Bach, Two and Three-Part Inventions, Well-Tempered Clavichord; Sonatas: Mozart, Beethoven, Op. 10; romantic and modern compositions.

325, 326, 345, 346. Piano. Cr. 2 or 4.
Prerequisite: Faculty approval of performance proficiency. Bach, Well-Tempered Clavichord, Czerny, Op. 740, or studies of similar difficulty; Sonatas: Scarlatti, Haydn, Mozart, Beethoven, Concerto No. 1 or 2; romantic and modern compositions.

For Undergraduates and Graduates

425, 426, 435, 436, 445, 446. Piano. Cr. 2 or 4.
Bach, Well-Tempered Clavichord; Beethoven, Sonatas equivalent in difficulty to Op. 31; Chopin; Ballads, Etudes, Scherzi; romantic and modern compositions.

VOICE

025, 026, 115, 116, 215, 216, 315, 316. Voice. Cr. 1.
For course description, see Applied Music 1113, 1114.

125, 126. Voice. Cr. 2.
Studies in diatonic and chromatic scales; staccato and legato tones; emphasis on the latter. Simpler early Italian and English classics and repertoire for general use.

225, 226, 235, 236. Voice. Cr. 2 or 3.
More advanced technique; songs by Handel, Mozart, Schubert, Schumann, and other composers of the Classic and Romantic Periods. Repertoire for general use.

325, 326, 345, 346. Voice. Cr. 2 or 4.
Advanced vocal technique; studies in style appropriate to various periods. Selections from operas and oratorios of Bach, Handel, Mozart, Gluck, and Haydn. Romantic and modern songs.

For Undergraduates and Graduates

425, 426, 435, 436, 445, 446. Voice. Cr. 2 or 4.
Summary of previous technical exercises; more difficult songs of classic, romantic, and modern composers. Performance in German, French, and Italian languages.

ORGAN

For Undergraduates

025, 026, 115, 116, 215, 216, 315, 316. Organ. Cr. 1.
For non-music majors or music majors failing to qualify for Organ 125 or 126.

125, 126. Organ. Cr. 2.
Prerequisite: Piano 125, 126, or equivalent. Gleason: Method of Organ Playing; Bach-Riemenschneider, The Liturgical Year; movements from easy sonatas; hymn and anthem accompaniments.

225, 226. Organ. Cr. 2.
Bach, Prelude and Fugue in E minor (The Cathedral), Fugue in G minor, Choral Preludes; Guilmant. Third Sonata; Mendelssohn, Second Sonata; church service playing.

325, 326. Organ. Cr. 2.
Bach: Toccata and Fugue in D minor, Dorian Toccata: Mendelssohn: Sonatas V and VI; Franck: Piece Heroique, Cantabile; works by American contemporary composers; registration and transcribing.

VIOLIN

025, 026, 115, 116. Violin. Cr. 1.
The technical work and literature outlined in Bulletin 449 of the State Department of Education, or work of equal difficulty.

125, 126. Violin. Cr. 2.
Scales and arpeggios. Studies of Wohlfort, Op. 74 or Op. 45. Sevcik, Preparatory Double Stops; Kayser, Book 1, Op. 20. Representative solos.

225, 226. Violin. Cr. 2.
Kayser. Book II; continued Sevcik, Op. 9; Dancla, School of the Five positions; scales (16th slurred). Studies; Sevcik, Op. 36. Representative solos.

325, 326. Violin. Cr. 2.
Scales and arpeggios, studies as needed. Concertos and sonatas selected for technical and musical advancement. Compositions of varying type and difficulty.

For Undergraduates and Graduates

425, 426. Violin. Cr. 2.
Scales and arpeggios; studies as needed. Concertos and sonatas by Bach, Mendelssohn, Bruch, Franck, Beethoven, Lalo, and others. Solo repertoire.

FLUTE

For Undergraduates

115, 116. Flute. Cr. 1.
Development of embouchure, breath control, tone and articulation. Major, minor, chromatic scales in simple articulations; simple melodies; broken arpeggios. Representative solos.

125, 126. Flute. Cr. 2.
Continuation of scales, arpeggios, simple melodies; Popp-Soussmann, Complete Method for Flute, Book I; Studies by Kohler, Book II; Soussmann Part II. Representative solos, including at least one pre-classical sonata.

225, 226. Flute. Cr. 2.
Popp-Soussmann, Duets, Part II; Studies by DeLorenzo; Endresen, Supplementary Studies for flute; Boehm, Studies. Representative solos including at least one Bach sonata and one Handel sonata.

325, 326. Flute. Cr. 2.
Studies by Boehm continued; Popp-Soussmann, Part III; Roodenburg, Scale, Interval, and Arpeggio Studies for Flute; Studies by Briccialdi. Representative solos, including at least one Mozart concerto and one contemporary sonata.

For Undergraduates and Graduates

425, 426. Flute. Cr. 2.
Studies by Soussmann and Briccialdi continued. Representative solos including Bach, B Minor Suite and at least one contemporary sonata or concerto.

OBOE

For Undergraduates

115, 116. Oboe. Cr. 1.
Development of embouchure, tone, breath control, articulation. Gekeler Method for Oboe. Barrett's Standard Oboe Tutor. Studies for development of control in scale, arpeggio, and interval progressions. Representative solos.

125, 126. Oboe. Cr. 2.
All major and minor scales and arpeggios in fluent legato and staccato. Pares, Daily Technical Studies for Oboe; Barrett, Exercises in Articulation and Progressive Methods. Representative solos including Handel, B flat Concerto.

225, 226. Oboe. Cr. 2.
Barrett Studies continued; Sellner, Etudes of Oboe, Part II. Studies for intervals, broken chords, and alternate fingerings. Representative solos including at least two pre-classical sonatas. Beginning reed making.

325, 326. Oboe. Cr. 2.
Studies by Barrett and Sellner continued. Representative solos including the Hindemith. Sonata.

For Undergraduates and Graduates

425, 426. Oboe. Cr. 2.
Studies by Barrett, Sellner and Andraud. Bassi, Twenty-seven Virtuoso Studies for Oboe. Representative solos including the Goossens Concerto.

CLARINET

For Undergraduates

115, 116. Clarinet. Cr. 1.
Development of embouchure, breath control, tone production and fingering. Klose, Method, Part I; Lazarus, Method, Part III. Representative solos.

125, 126. Clarinet. Cr. 2.
Larzarus, Method, Part II; Baermann, Book II; Klose, Characteristic Studies. Representative solos.

225, 226. Clarinet. Cr. 2.
Baermann, Book III; Rose, Forty Studies; Langenus, Scale Studies. Representative solos.

325, 326. Clarinet. Cr. 2.
Labanchi Method. Book II; Saint-Saens, Sonata Op. 167; representative solos, including one sonata or concerto.

For Undergraduates and Graduates

425, 426. Clarinet. Cr. 2.
Langenus, Virtuoso Studies and Duets; Jeanjean, Twenty-five Technical and Melodic Studies. Representative solos, including concertos, sonatas, and shorter solos.

BASSOON

For Undergraduates

115, 116. Bassoon. Cr. 1.
Development of embouchure, breath control, attack and production of tone. Representative solos.

125, 126. Bassoon. Cr. 2.
Weissenborn Studies, Book I, Op. 8. Begin Milde, Studies. Alternate fingerings; reed making, exercises in tenor clef. Jancourt, Progressive Sonatas, Book II; representative solos.

325, 326. Bassoon. Cr. 2.
F. Oubradous, Daily Scales and Exercises, Books I, II; Weissenborn Studies, Book II. Representative solos.

325, 326. Bassoon. Cr. 2.
Weissenborn Studies, Book II continued; Milde, Concert Studies; A. Giampieri, Sixteen Daily Studies. Representative solos.

For Undergraduates and Graduates

425, 426. Bassoon. Cr. 2.
Weissenborn, Milde, and A. Giampieri Studies continued. Almenrader, Book II. Clef studies, Representative solos.

SAXOPHONE

For Undergraduates

115, 116. Saxophone. Cr. 1.
Development of embouchure, breath control, tone, and articulation. Caillet, Method, Books I and II. Representative solos.

125, 126. Saxophone. Cr. 2.
All major and minor scales and arpeggios in fluent legato and staccato articulations. Vivian Scale Exercises; Brooke Method. Representative solos.

225, 226. Saxophone. Cr. 2.
Brooke Method continued; Eby Method: Bassi-Iasilli, Twenty-seven Virtuoso Studies. Representative solos.

325, 326. Saxophone. Cr. 2.
Brooke and Eby Methods continued. Special studies for intervals, broken chords, alternate fingerings, and high note register; studies by Sigurd Rascher, Virtuoso Studies by Traxler. Representative solos.

For Undergraduates and Graduates

425, 426. Saxophone. Cr. 2.
Six Virtuoso Caprices by Pantaleo-Iasilli and Technical Exercises by Calicchio. Representative solos.

CORNET OR TRUMPET

For Undergraduates

115, 116. Cornet or Trumpet. Cr. 1.
Development embouchure; breathing; attack; scale studies; representative solos.

125, 126. Cornet or Trumpet. Cr. 2.
Arban, Method; Williams, Book II; Pares, Daily Technical Studies; Rubank (Advanced); Kopprasch, Etudes; Clarke; Belistedt; Gatti, World's Method for Cornet, Part II. Emphasis on breath control, attack, and articulation. Solos selected from Class II, Interscholastic League Solo List.

225, 226. Cornet or Trumpet. Cr. 2.
Williams (Book II), Arban, Gatti Studies. Clarke, Technical Studies for Cornet; Scholossbert Drills. Studies in double and triple tonguing. Clef reading (Sachse, Vol. I). Representative solos.

325, 326. Cornet or Trumpet. Cr. 2.
Williams, Book III, Guilbaut, Conservatory Studies; Clark, Characteristic Studies; Etudes by Laurent and St. Jacome. Clef reading. Representative solos, including one sonata or concerto, arias, lieder, and other solos.

For Undergraduates and Graduates

425, 426. Cornet or Trumpet. Cr. 2.
Smith, Top Tones for Trumpet; Williams and St. Jacome Studies; Paudert, Twenty-four Modern Virtuoso Studies; Etudes by Petit and Balay. Representative solos, including concertos, sonatas, and shorter solos.

FRENCH HORN

For Undergraduates

115, 116. French Horn. Cr. 1.
Development of embouchure, breath control, articulation and tone. Pottag-Hovy, Book II, or studies of similar difficulty. Solos from Interscholastic Solo List, Class 1.

125, 126. French Horn. Cr. 2.
Continuation of Kopprasch, Book I. Begin Book II, Studies for transposition, clef reading extension of range of all major and minor scales and arpeggios. Representative solos, including arias, sonatas, and selections from Interscholastic League Solo List, Class II.

225, 226. French Horn. Cr. 2.
Continuation of Kopprasch, Book II. Franz Studies; Pottag French Horn Passages. Representative solos.

325, 326. French Horn. Cr. 2.
Continuation of Kopprasch; Franz Studies. Alphonse Etudes, Book III; Gallay, Thirty Etudes, Op. 13. Representative solos, including one sonata or concerto, arias, lieder, other solos.

For Undergraduates and Graduates

425, 426. French Horn. Cr. 2.
Continuation of Kopprasch; Franz studies. Alphonse Etudes, Book IV; Michiels Twenty-four Etudes. Continued study of transposition, clef reading; representative solos including concertos, and shorter solos.

TROMBONE

For Undergraduates

115, 116. Trombone. Cr. 1.
Development of embouchure, breath control, articulation. Buchel, Book II; Muller. Method for Trombone; Cimera, One Hundred Seventy Studies. Solos from Interscholastic League Solo List, Class I.

125, 126. Trombone. Cr. 2.
Buchtel, Cimera, Muller Studies; Arban, Celebrated Method for Trombone. Part I; representative solos, including two arias, one sonata, and solos from Interscholastic League Solo List, Class II.

225, 226. Trombone. Cr. 2.
Studies for legato articulation, added range, clef reading, flexibility, breath control, surety of attack. Continuation of Cimera, Muller studies; completion of Arban Book I; Book II; Kopprasch, Book I. Representative solos.

325, 326. Trombone. Cr. 2.
Studies in clef reading transposition. Continuation of Kopprasch, Arban, Muller studies; Rochut, Book I; Blazevich, Method; representative solos, including one concerto or sonata, arias, and lieder.

For Undergraduates and Graduates

425, 426. Trombone. Cr. 2.
Studies by Tyrrell; Mantia, Trombone Virtuoso; Lea Studies for Cello. Study of F trombone. Advanced clef studies. Representative solos, including concertos, sonatas, and shorter solos.

BARITONE

For Undergraduates

115, 116. Baritone. Cr. 1.
Development of the embouchure, breathing, attack. All major scales, articulation, arpeggio exercises. Solos from Interscholastic League Solo List, Class I.

125, 126. Baritone. Cr. 2.
Continuation of studies for development of embouchure, breath control, attack. All major and minor scales, double and triple tonguing, arpeggio exercises. Studies in treble and bass clefs. Rubank, Arban, Tyrrell. Solos from Interscholastic League Solo List, Class II.

225, 226. Baritone. Cr. 2.
Studies in arpeggios continued, original scale forms, transposition. Representative Solos.

325, 326. Baritone. Cr. 2.
Continuation of technical studies, Clarke, Characteristic Studies; double and triple tonguing, clef reading, Arban, Tyrrell, St. Jacome, and Smith. Top Tones. Representative solos, including one sonata or concerto, arias, and lieder.

For Undergraduates and Graduates

425, 426. Baritone. Cr. 2.
Continuation of all technical studies, clef reading, representative solos, including concertos, sonatas, and shorter solos.

BAND

For Undergraduates

425-6. Senior. Cr. 2.
Required courses for a band major on the degree, Bachelor of Science in Education. (Not open to entering freshmen, tranferring sophomores, or juniors.)

MUSIC LITERATURE

For Undergraduates

131, 132. Introduction to Music Literature. Cr. 3.
Through directed listening, music of various forms and styles is considered. Introduction to music history presented showing relationship of music studied to that preceding and following it.

For Undergraduates and Graduates

330. Voice Repertoire. Cr. 3.
Prerequisite: Applied Music 226 or 236 (Voice). Survey of song repertoire for all voices. Class performance and listening.

332. Piano Repertoire. Cr. 3.
Prerequisite: Applied Music 226 or 236 (Piano). A survey of literature for piano. Class performance and listening.

431, 432. History of Music. Cr. 3.
Prerequisite: Junior standing. Through directed listening, study of development of style, form, technique, and performance practice is exemplified through **L'Anthologie Sonore** recordings and other standard recorded works. Formerly Music 335, 336.

4351. Music in the General Culture. Cr. 3.
Through directed listening and other channels, the course aims to increase understanding and enjoyment of great musical works in all styles. Major broadcasts and local concerts paralleled when feasible.

MUSIC EDUCATION

For Undergraduates

231. Music for Classroom Teachers. Cr. 3.
Prerequisite: Sophomore standing. For primary or elementary education majors. Not open to music majors. Rudiments of music, elementary music reading, ear training based upon elementary school music material.

327. Choral Methods and Techniques. Cr. 2.
Prerequisite: Four semester hours of voice or equivalent. Conducting technique; procedures in development of choral organizations. Rehearsal techniques for preparation of choral works for public performance. Formerly Music 327.

328. Instrumental Conducting. Cr. 3.
Prerequisite: Theory 247 or equivalent. A detailed study of baton technique, score reading, tone production, interpretation. Conducting laboratory ensemble required. Formerly Music 328.

336. Secondary Instruments and Methods. Cr. 3.
Prerequisite: Junior standing and Applied Music 226. Study of instruments other than student's principal instrument. Study of repertoire for and the organization and administration of public school instrumental groups.

337. Elementary School Teaching and Supervision of Music.
Prerequisite: Junior standing. For music majors and minors. Study of procedures in teaching music in first six grades; selection and presentation of materials; the child voice in singing, its care and development; introduction and development of music reading; rhythmic development; creative music; the listening lesson. Not open to students having completed Music Education 232.

338. Secondary School Teaching and Supervision of Music. Cr. 3.
Prerequisite: Junior standing or permission of the instructor. For music majors. Study of procedures in teaching music in upper level grades and in high school. General treatment of choral and instrumental music; instruction in theory and general music. Formerly Music 438.

For Undergraduates and Graduates

433. Piano Pedagogy. Cr. 3.
Prerequisite: Applied Music 326 or 346 (Piano). For prospective piano teachers. Teaching methods for beginners and succeeding levels. Correct presentation of rudiments of music, principles of technique, and teaching materials.

437. Voice Pedagogy. Cr. 3.
Prerequisite: Applied Music 326 or 346 (Voice). Comparison of known systems of voice teaching; evaluation of the individual voice, various vocal exercises, singing styles; student teaching.

4317. Choral Conducting. Cr. 3.
Prerequisite: Senior classification in music education. Study and performance of representative choral works of all periods. Participation in a major choral organization required. Formerly Music Education 522.

4318. Instrumental Conducting. Cr. 3.
Prerequisite: Senior classification in music education. Study and performance of instrumental works of all periods. Participation in a major instrumental group required. Formerly Music Education 521.

For Graduates

4335. Music for Children. Cr. 3.
Prerequisite: Six semester hours in music education or two years experience in elementary teaching. Emphasis upon development of musical expressions of children through rhythmic activities, song repertoire, dramatic interpretation, creative expression, and appreciative listening to music. A study of material adapted to normal social and musical interests of children. Enrollment limited to graduate students majoring in Elementary Education.

530, 531. Seminar in Music Education. Cr. 3.
Prerequisite: Open to any interested graduate student upon approval of the music department. Review of current educational philosophy in America. Special reference to the place of music in the curriculum. Review and criticism of music curricula. Evaluation of music education principles, practices, and materials. General aspect of course is adaptable to interests of all music teachers and educators interested in music. Special studies allow concentration in the field of the student's major activity.

532. Choral Music Workshop. Cr. 3.
Prerequisite: 18 semester hours of music, 6 of which are advanced hours including Music Education 327 or equivalent. Emphasis in the organization and development of choral organization in the public schools including tone production, rhythmic precision, balance, blend, enunciation. Individual and group project required.

533. Instrumental Music Workshop. Cr. 3.
Prerequisite: 18 semester hours of music, 6 of which are advanced hours including Music Education 328 or equivalent. Emphasis in the organization and development of instrumental groups in the public schools including tone production.

THEORY

For Undergraduates

147-8. Elementary Theory. Cr. 4.
Properties of sound; the keyboard; voices, their qualities and range; time and rhythm; triad study; key feeling and tonality, sight singing; non-harmonic devices; simple modulation; harmonic and melodic dictation; beginning part writing; keyboard practice. Formerly Music 121-2, 123-4.

247-8. Intermediate Theory. Cr. 4.
Prerequisite: Theory 147, 148. Continuation of melodic and harmonic dictation and part writing; harmonic analysis and simple forms; seventh chords; altered chords; keyboard practices. Formerly Music 221-2, 223-4.

For Undergraduates and Graduates

322. Form and Composition. Cr. 2.
Prerequisite: Theory 248 or equivalent. Study of homophonic forms of musical composition. Analysis of basic principles of phrase construction, two and three part forms, with application of these principles in original compositions in classical style.

323. Form and Composition. Cr. 2.
Prerequisite: Theory 248 or equivalent. Study of larger forms of musical composition. Analysis of basic principles of variation, rondo, sonatina, and sonata-allegro forms with application of these principles in original compositions in classical style.

427. Instrumentation. Cr. 2.
Prerequisite: Theory 323 or equivalent. Study of properties of wind instruments. Emphasis on devices, techniques, mechanics of band scoring.

428. Instrumentation. Cr. 2.
Prerequisite: Theory 323 or equivalent. Study of properties of orchestral instruments. Emphasis on devices, techniques, mechanics of orchestral scoring.

4312. Pedagogy of Theory. Cr. 2.
Prerequisite: Theory 248 or equivalent. Methods in presentation of music theory. Emphasis on problems to be met by public school and private music teachers. Theories of scales, intervals, all types of chords and the inversions, keys, cadences, modulation techniques, harmonization of melodies at sight at keyboard, comprehension of rhythmic, melodic, and harmonic construction of Classical Period examples. Formerly Music Theory 424.

ENSEMBLE

Each ensemble may be taken for four successive years, since the literature studied will cover a cycle of that period of time.

For Undergraduates

010. Sec. I. Tech Choir. Cr. 1.
Prerequisite: Audition.

010. Sec. 2. Festival Chorus.
Open to any interested student enrolled in the College.

011. Symphony Orchestra. Cr. 1.
Prerequisite: Audition.

013. Sec. A. Tech Band. Cr. 1.
Prerequisite: Audition. Four semester hours may be substituted for required physical education.

013. Sec. B. Band. Cr. 1.
Four semester hours may be substituted for required physical education.

MILITARY BAND

Part of ROTC. For particulars, inquire of the officer in command.

MUSIC FEES FOR APPLIED MUSIC (PRIVATE)

(See Expenses)

Department of Physics

PROFESSOR SCHMIDT. ASSOCIATE PROFESSORS MERRYMON, BESDIN. ASSISTANT PROFESSORS DAY, GOTT, RESLER. INSTRUCTOR KILPATRICK.

The course offering of the Physics Department is designed to provide a rigorous course of study leading to the Bachelor's and Master's degrees with a major in physics, as well as to meet the needs of those majoring in other fields. There is at the present time a nationwide shortage of persons well trained in the natural sciences. Although the demand in many areas is greatest for those with advanced training, many opportunities exist for inquisitive young people with a good grounding in basic or applied science. Serious-minded students sincerely interested in science are invited to consult with this department about their proposed program of study.

Students majoring in physics for the Bachelor of Arts Degree should take Physics 141-2, 235-6, and at least 18 hours of courses in physics of junior and senior rank. Majors for the Bachelor of Science Degree should see that section of this catalog.

For Undergraduates

141-2. General Physics. Cr. 4. (3-3).
A general course in beginning physics covering mechanics, heat, sound, electricity and magnetism, light, and modern physics. Special sections for premedical students.

215-6. Physical Measurements. Cr. 1. (0-3).
Must be taken parallel with Phys. 235-6.

235-6. Engineering Physics. Cr. 3.
Prerequisite: One year of high school or college physics; parallel enrollment in calculus. See Physics 215-6.

237. Techniques of Photography. Cr. 3. (2-3).
Prerequisite: Sophomore standing and approval of instructor. A course in fundamental processes and techniques of photography for those who will later need photography as a scientific working tool. Two hours per week of lecture; one three-hour supervised lab. Additional time needed for darkroom processing to be arranged. A student deposit for materials is required.

For Undergraduates and Graduates

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).
Prerequisite: One year of physics and junior standing.

332. Heat and Thermodynamics. Cr. 3.
Prerequisite: One year of physics and calculus.

336. Electricity and Magnetism. Cr. 3.
Prerequisite: One year of physics and calculus. Not given in 1954-55.

337. Introduction to Modern Physics. Cr. 3.
Prerequisite: One year of physics and calculus.

338. Introduction to Modern Physics. Cr. 3.
Prerequisite: One year of physics and calculus.

341. Electron Tubes and Applications to Physical Science. Cr. 4. (3-3).
Prerequisite: Physics 336. A general course in electronics stressing the fundamentals of electron tubes and the application of these tubes in instruments and apparatus that are of primary importance in the physical sciences. Not given in 1954-55.

411-2. Physical Seminar. Cr. 1.
Prerequisite: 12 hours of physics and calculus.

415-6. Special Projects. Cr. 1. (0-3).
Prerequisite: Approval of Head of Department. 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).
Prerequisite: 12 hours of physics and calculus. Not given in 1954-55.
431. High School Physics Teaching. Cr. 3.
Prerequisite: 12 hours of physics and calculus.
435. Mechanics. Cr. 3.
Prerequisite: 12 hours of physics and calculus.
436-7. Individual Study in Specified Fields. Cr. 3. (3-0 or 0-9).
Prerequisite: Calculus and 18 hours of physics and approval of department. Individual student study of theoretical or experimental projects under the guidance of a member of the staff. Similar to 415-6 with more credit. For students with pronounced ability

For Graduates

531-2. Theoretical Physics. Cr. 3.
533-4. Quantum Mechanics. Cr. 3.
Prerequisite: Differential Equations.
535. Nuclear Physics. Cr. 3.
537. Electromagnetic Theory. Cr. 3.
538-9. Geometrical and Physical Optics. Cr. 3.
Prerequisite: Calculus and Physics 331.
631-2. Thesis.

Department of Psychology

PROFESSORS KAPLAN,* BARNETT, O'LOUGHLIN. ASSOCIATE PROFESSORS KUNTZ, TRUE. ASSISTANT PROFESSOR FREESE.

The Department of Psychology is designed to meet the interests of three classes of students: (1) those who desire a basic orientation of human behavior as a supplement to their major course, (2) those who want thorough undergraduate training in the area of psychology as a major, or in preparation for further professional study, and (3) those who wish specialized training in psychology at the graduate level. The graduate student may emphasize one of the following areas: General theoretical psychology, physiological and comparative psychology, industrial psychology, child and adolescent psychology, clinical psychology or counseling and guidance.

Major students are expected to offer 30 semester hours in psychology; these must include Psy. 230, 333, and 437 and 438. Students majoring in psychology are urged to seek a broad foundation in other disciplines, including cultural and scientific courses to the extent possible within the limits of the requirements of the Bachelor of Arts Degree. Students planning to pursue graduate study should consult with a departmental adviser at the earliest possible date.

The general requirements for the Master of Arts Degree will be found in this catalog under the Graduate School. Candidates for this degree will be expected to have taken at least 12 advanced semester hours at the undergraduate level in psychology. Graduate students who have not previously had a laboratory course in experimental psychology will be required to take Psy. 437 or 438. Psy. 538, 4316, and 5316 are required of all candidates for the Master of Arts in psychology. In cooperation with the Department of Education, work is offered leading to the Doctor's Degree in counseling and guidance.

* Effective June 1, 1954.

For Undergraduates

230. Introduction to Psychology. Cr. 3.

Prerequisite: Sophomore classification. Introduction to the scientific study of the fundamental problems of human behavior.

231. Applications of Psychology. Cr. 3.

Prerequisite: Psy. 230 or equivalent. A study of the practical application of the principles of psychology to life situations and human affairs. The use of psychology in law, medicine, the arts, vocational guidance, and athletics.

330. Psychology in Business and Industry. Cr. 3.

Prerequisite: Psy. 230. Psychological principles and methods applied to representative problems in business and industry.

For Undergraduates and Graduates

331. Child Psychology. Cr. 3.

Prerequisite: Psy. 230 or Ed. 230 and upper division classification. Social behavior and development in living and learning as related to physical, mental and emotional maturation and readiness levels from early childhood to adolescence.

332. Mental Health. Cr. 3.

Prerequisite: Psy. 230 or equivalent. The genesis of adequate personality; understanding the origin of common behavioral difficulties and techniques for re-education.

333. Statistical Methods. Cr. 3.

Prerequisite: 6 semester hours of psychology. Application of statistical methods to educational and psychological problems. Description of data in terms of averages, measures of variability, and measures of relationships. Problems of prediction, frequency distributions, and elementary sampling theory.

334. Introduction to Military Psychology. Cr. 3.

Prerequisite: Psy. 230 and upper division classification. Psychological warfare, leadership, morale, propaganda and intelligence, combat fatigue, selection and classification, military research problems.

335. Adolescent Psychology. Cr. 3.

Prerequisite: Psy. 230 or Ed. 230 and upper division classification. Social behavior and development in living and learning as related to physical, mental, and emotional growth and adjustment from early adolescence to maturity. Guidance emphasis.

336. Physiological Psychology. Cr. 3.

Prerequisite: 6 semester hours in psychology or Psy. 230 and 6 semester hours in the biological sciences. The relation between psychological processes and physiological activity. The neurophysiological mechanisms involved in behavior. Designed to acquaint the pre-medical student with medical-psychological problems in therapeusis. Discussion of electro-insulin-metrozol shock, frontal lobotomy.

338. Comparative Psychology. Cr. 3.

Prerequisite: Psy. 230 and upper division classification. The value of animal behavior study to the understanding of human behavior. Techniques of study, use of various species. Consideration of problem solving, learning, discrimination, maturation, and instinctive behavior.

431. Tests and Measurements. Cr. 3. (2-3).

Prerequisite: Psy. 333 or equivalent. Instruction and supervised practice in the administration and scoring of individual and group intelligence tests and various tests of achievement, aptitudes and personality. Fee: $2.00.

432. Personnel Testing. Cr. 3. (2-3).

Prerequisite: Psy. 230 or equivalent and Psy. 333 or equivalent. The principles and methods of test construction and test administration. Survey of the practical fields of personnel measurement including specific aptitudes and achievement, interest, personality dimensions; and inquiry into the needs of industry for such methods. Fee: $2.00.

434. Introduction to Social Psychology. Cr. 3.

Prerequisite: Psy. 230 or equivalent and upper division classification. Principles of psychology applied to group behavior. Survey of experimental work and reports on current problems.

435. Abnormal Psychology. Cr. 3.

Prerequisite: 6 semester hours in psychology. Personality deviations and maladjustments, with emphasis upon clinical descriptions of abnormal behavior, etiological factors, manifestations, interpretations, and treatment.

436. Personality Development. Cr. 3.

Prerequisite: 6 semester hours in psychology. Principles of normal personality development. Designed to meet the practical needs of teachers, personnel workers, counselors, clinical psychologists, and others who are interested in the proper guidance of growing personalities.

437. Experimental Psychology. Cr. 3. (2-3).

Prerequisite: 6 semester hours in psychology and Psy. 333 or equivalent. A laboratory course dealing with emotion, thinking, motivation, and learning. Fee: $2.00.

438. Experimental Psychology. Cr. 3. (2-3).

Prerequisite: Psy. 437. A laboratory course dealing with experimental procedures and results. Emphasis on perception, sensation, and simple motor phenomena. Fee: $2.00.

439. Industrial Psychology. Cr. 3.
Prerequisite: Psy. 330; Mgt. 334 or I.E. 321; Psy. 333 or equivalent. The principles of psychology applied to industrial problems; individual differences, motivation, attitudes, fatigue, morale, job satisfaction, testing, counseling, promotion, and supervision.

4311. Psychology of Social Change. Cr. 3.
Prerequisite: 6 semester hours in psychology. The psychological aspects of social movements. The role of movements in social change. The role of education in social movements. Social change and cultural patterns.

4312. Methods in Clinical Psychology. Cr. 3.
Prerequisite: Psy. 431 or equivalent and Psy. 435. A study of the use and interpretation of psychological tests; case studies, and related methods as applied in a clinical setting.

4313. Counseling and Guidance. Cr. 3.
Prerequisite : 6 semester hours of psychology. A survey of the basic principles, techniques, and procedures as applied to educational, vocational, and personal counseling.

4314. The Human Element in Engineering. Cr. 3.
Prerequisite: Psy. 330 and Psy. 333 or its equivalent. Application of psychological principles and experimental methodology to the design and operation of machines, including visual displays, signaling systems, problems of visibility, selection and distinguishability of controls; effects of color, light, noise and motion.

4315. Advanced Statistical Methods. Cr. 3.
Prerequisite: Psy. 333 or equivalent. The study of statistical inference, including the chi-square and other tests of statistical hypotheses, small sample error theory, special sampling techniques and introduction to the analysis of variance.

4316. History of Psychology. Cr. 3.
Prerequisite: 6 semester hours in psychology. The origin and development of modern-day psychology including the influences of physics, philosophy and physiology upon the field of psychology. Consideration of the influences of nativism, empiricism and positivism upon psychology. The development of psychological systems.

4317. The Psychology of Learning. Cr. 3.
Prerequisite: 6 semester hours of psychology. Principles of learning; discussions of reinforcement, retroactive inhibition; implications of field theory and stimulus-response theory.

4318. Industrial Training. Cr. 3.
Prerequisite: Psy. 330. The training of industrial personnel; principles of teaching and selection of persons who will be teaching in business and industry; effective techniques for training supervisors, inspectors, and others; setting up training programs.

For Graduates

531. Introduction to Projective Techniques. Cr. 3.
Prerequisite: Psy. 431. Review of the development of projective techniques. Intensive study and the administration of specific projective tests.

532. Problems in Psychology. Cr. 3.
Prerequisite: 12 advanced semester hours in psychology. Readings and papers in selected fields of psychology. Independent work under the individual guidance of a staff member.

533. Experimental Child Psychology. Cr. 3.
Prerequisite: Consent of the instructor. Advanced work in the psychology of the child with emphasis upon research techniques. Opportunities will be provided to observe children in the Nursery School.

534. Practicum in Intelligence Testing. Cr. 3.
Prerequisite: Psy. 431. Instruction and practice in giving the Stanford-Binet Test and the Wechsler-Bellevue Test.

538. Experimental Design and Advanced Statistical Analysis. Cr. 3.
Prerequisite: Psy. 437 or 438 and Psy. 4315. A study of the logical principles that govern sound experimentation; a detailed description of the designs that have been developed, with accompanying plans and an account of the experimental situations for which each design is most suitable; some of the newer developments in statistical analysis.

539. Occupational Information. Cr. 3.
Prerequisite: Psy. 4313. The sources, techniques of collecting, classifying and using educational, occupational and vocational information necessary in counseling.

5312. Practicum in Occupational Information. Cr. 3.
Prerequisite: Psy. 539. Collecting and using occupational information necessary in counseling; special emphasis upon use of The Dictionary of Occupational Titles.

5316. Pro-seminar: Professional Aspects of Psychology. Cr. 3.
Prerequisite: 12 advanced semester hours in psychology. Consideration of the needs of the graduate student working toward professional status in psychology. Professional problems and responsibilities; relations to other professional fields, legal status, ethical problems; psychological organizations, scientific reporting, problems of publication; current literature analysis.

5317. Techniques of Counseling and Guidance. Cr. 3.
Prerequisite: Psy. 4313 and 431. Methods of vocational, educational and personal counseling approached through case histories, observation, and interviews. Methods of counseling, directive and non-directive.

5318. Practicum in Techniques of Counseling and Guidance. Cr. 3.
Prerequisite: Psy. 5317. Supervised experience in interviewing, counseling and preparing case reports.

5321. Functional Theories of Mind. Cr. 3.
Prerequisite: Psy. 4317. Specific consideration of the present theories including the contributions of Hull, Tolman, Lashley, Spence, Lewin, Hebb and others.

5322. Physiological Principles of Behavior. Cr. 3.
Prerequisite: Psy. 336 and 6 hours in the biological sciences. A consideration of the functions of the central nervous system. Analysis of the experimental literature on frontal lobe function. Contribution of organ systems to the understanding of cognition.

5331. 5332. Internship in Counseling and Guidance. Cr. 3 each.
Prerequisite: Psy. 5317 and 5318. Internship, consisting of counseling and guidance. Supervised work in one or more school systems or other approved agencies engaged in professional psychological services.

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

Department of Speech

PROFESSORS LARSON, PENDLETON. ASSISTANT PROFESSORS HALVORSON, LINDELL, MANNING, SCHULZ, THOMPSON*.

A major function of this department is to service the student body generally in aiding the individual student to attain the highest possible level of oral communicative effectiveness. While many courses contribute to this end, those especially geared to this objective for the non-speech major are Fundamentals of Speech, Voice and Diction, and Business and Professional Speaking. Other courses are available in public speaking, discussion, theater, oral interpretation, radio, television, and speech correction.

Requirements for a major in speech include the following:

1. The general college requirements for the Bachelor of Arts Degree**
2. Fundamentals of Speech (or equivalent) ..... 3 hours
3. Additional 100 and 200 level courses, at least ..... 15 hours
4. Upper division courses, at least ..... 18 hours
5. A minor in one of the following suggested fields: Applied art, architecture, clothing and textiles, economics, English, foreign language, government, history, journalism, management, marketing, physical education, psychology, sociology, or other approved fields.

Speech majors should take Fundamentals of Speech during their first year in college. Transfer students and others electing to major in speech after their freshman year should consult the Head of the Department before enrolling in any speech course. Courses subsequent

*On leave 1952-4.
**Speech majors are urged to take their laboratory science in Biology and Physics.

to Fundamentals of Speech will be selected from the several areas of speech: (1) Public address, discussion and debate, (2) Theater, (3) Oral Interpretation, (4) Speech Correction and (5) Radio and television.

Speech minors are urged to consult with the Head of the Speech Department as early as possible.

For Undergraduates

131. Fundamentals of Speech. Cr. 3.
Training in the basic principles of speech, with emphasis on discussion and original speaking. May not be taken for credit by students having had 338 previously.

231. Introduction to the Theater and Cinema. Cr. 3.
A study of the modern theater and cinema as art forms, with attention to the historical background and traditions of each. Emphasis is placed on a better understanding of the social, cultural, and aesthetic significance of theater and cinema. Attendance, when it can be arranged, at representative plays and motion pictures.

232. Principles of Acting. Cr. 3.
Study and application of the theories and techniques of the art of acting. Character analysis and the use of the body and voice in creating a role. Materials for illustrative exercises chosen from classical and contemporary plays.

233. Voice and Diction. Cr. 3.
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 control and diction for effective speaking.

235. Discussion Methods in a Democracy. Cr. 3.
Study and practice in the basic problem-solving methods necessary to the appropriate functioning of a democratic society.

236. Argumentation and Debate. Cr. 3.
Prerequisite: Speech 235 or by permission of the head of the department. A study of the types of argument, fallacies, and the use of refutation and rebuttal. Briefing debate propositions.

237. Oral Interpretation. Cr. 3.
Major emphasis is placed on the appreciation of good literature and its effective oral interpretation from the printed page.

238. Introduction to Radio and Television Broadcasting. Cr. 3.
The origin and development of radio and television; basic structure of the broadcasting industry and its social, political, economic, and cultural significance.

239. Speech Development for Teacher Competence. Cr. 3.
The development of speech skills necessary for teaching effectiveness are emphasized during the first half of the course. During the second half, methods of using speech materials and methods in the teaching of other subject matter areas are studied.

311. Parliamentary Procedure. Cr. 1.
Principles and procedure governing deliberative groups, with practice in their usage.

312. Radio Speech for Agriculture and Home Economics. Cr. 1.
Prerequisite: Speech 131 or 338 or by permission of Head of Department. Includes radio speaking technique, organization of the radio speech directed toward a specific audience; program planning directed toward farm, garden, 4-H, women's clubs, etc. Planning and conducting interviews and discussions.

318. Forensic Activities. Cr. 1.
Opportunity is offered the student who wishes to participate extensively in forensic activities to secure credit for this laboratory work. Limit: 4 semester hours for speech majors and minors, 2 semester hours for others.

319. Theater Activities. Cr. 1.
Opportunity is offered the student who wishes to participate extensively in forensic activities to secure credit for this laboratory work. Limit: 4 semester hours for speech majors and minors, 2 semester hours for others.

331. The Speech Mechanism and Phonetics. Cr. 3.
Study of the functioning of the speech mechanism and the principles of phonetics basic to major study in speech. Primarily for speech majors but equally valuable for prospective elementary school teachers.

333. Stagecraft. Cr. 3.
Prerequisite: Speech 231 or equivalent. Study of technical problems of play production. Design, construction and painting of scenery and properties; special effects; and stage make-up.

334. Stagecraft. Cr. 3.
Prerequisite: Speech 231 or equivalent. Continuation of study of technical problems of play production. Stage lighting and costume design and construction.

335. Fundamentals of Radio and Television Broadcasting. Cr. 3.

The basic principles and techniques for performance on radio and television. Practical experience under broadcast conditions.

336. Radio Program Production. Cr. 3.

Prerequisite: Approval of Head of Department. A concentrated and practical course covering the multiple problems faced by the radio director and producer. Opportunity to acquire professional facility and technique in direction and production of radio programs on the campus station, KTTC. Development of creative ingenuity and critical standards is emphasized.

337. Television Program Production. Cr. 3.

Prerequisite: Approval of the Head of Department. A concentrated and practical course on the theory and application of the principles of television production; development of creative ingenuity and critical standards is emphasized.

338. Business and Professional Speech. Cr. 3.

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 participation in group conferences, discussion, and interviews. For majors in other fields than speech.

For Undergraduates and Graduates

430. Advanced Public Speaking. Cr. 3.

Prerequisite: 9 hours of speech including 3 primarily in public speaking. Intensive study and practice in different kinds of public speaking. Audience analysis and adaptation are given special emphasis.

431. Creative Dramatics. Cr. 3.

Studies in the principles and methods of developing original dramatizations with children. (May also be taken for Education credit.)

433. Introduction to Hearing Problems. Cr. 3.

Anatomy of the ear. Definition and description of types of hearing loss and deafness. Principles and methods of clinical and classroom retraining of the hard-of-hearing through lip reading and speech correction.

434. Principles of Audiometry. Cr. 3.

Principles of testing hearing loss through use of the audiometer and psychometer. Use and interpretation of audiograms. The physics of sound as related to hearing. Psychological problems of hearing. Clinical observation and practice.

435. Interpretative Reading. Cr. 3.

Prerequisite: Junior classification and 12 hours of English. Students are advised to complete Speech 233 and/or 237 before taking this course. Consideration of the problems of transferring meaning from the printed page to the listener. Study of types of literature for oral interpretation. Practice in interpretation of prose and poetry.

436. Radio and Television Program Planning and Management. Cr. 3.

Prerequisite: Approval of Head of Department. Objectives and methods in planning commercial and educational programs for radio and television. Staff organization and administration. Case studies and individual projects.

437. Persuasion. Cr. 3.

Prerequisite: 6 hours of public speaking and a course in psychology or permission of Head of Department. A study of the psychological and rhetorical principles of motivation, suggestion, and other aspects of audience psychology as used in business, radio, and public affairs.

438. Advanced Discussion and Conference Methods. Cr. 3.

Prerequiite: Speech 235 or 338. A study of the history and philosophy of discussion, and its application to specialized forms, with special emphasis on newer techniques in the business and educational conference, including consideration of group dynamics.

439. Methods in Teaching Speech. Cr. 3.

Prerequisite: 18 hours of speech and 9 hours of Education. Review of the areas of speech. A survey of texts and their critical analysis. Preparation of syllabi. (May be taken for Education credit.)

4311. Stage Directing Methods. Cr. 3.

Prerequisite: Junior classification, 18 hours of Speech, including 231 and 232 or equivalent. Analysis of the function of the director as related to the principles of play production. Study and practice of fundamental techniques of directing, with attention to composition, picturization, movement, and stage business. Rehearsal procedure organization. Student direction of representative plays. (May be taken for Education credit.)

4318. Introduction to Speech Correction. Cr. 3.

Prerequisite: Junior classification and permission of Head of Department. A survey of the speech correction field, with emphasis on classification of speech disorders, etiology, and resulting problems of the field. Observation in Speech Clinic required. (May be taken for Education credit.)

4319. Speech Correction Methods for Elementary Teachers. Cr. 3.

Prerequisite: Junior classification and permission of Head of Department. Treatment of classification of speech disorders, with emphasis on speech re-training methods in speech therapy. Observation of speech training and audiometric testing in clinic. A limited amount of supervised work in the Speech Clinic if it is the student's second course in speech correction. (May be taken for Education credit.)

4321-22. Supervised Clinical Practice in Speech Correction. Cr. 3 each.
35 laboratory hours per credit hour. Prerequisite: Speech 4318, concurrent registration in Speech 4319, or permission of Head of Department. Required of teachers desiring Certificate of Approval for Speech Therapy. (May be taken as 4221, 4222, and 4223 for 2 credit hours each.) (May be taken for Education credit.)

4325. Directing School Speech Activities. Cr. 3.
Prerequisite: 12 hours of Speech or Education, and/or teaching experience. Methods and principles involved in extra-curricular speech activities such as discussion, debate, dramatics, public speaking, and radio. Students will have an opportunity to work with individuals and projects in different activities. (May be taken for Education credit.)

4351. History of Speech and Theater. Cr. 3.
A study of the origin, history and development of speech and theater as social functions and forces.

For Graduates

4335. Basic Speech for Elementary Teachers. Cr. 3.
A study of the basic characteristics of speech skills and abilities necessary for effective speech, and the use of speech in classroom activities.

531. Studies and Problems in Speech. Cr. 3.
May be repeated for credit.

535. Pathology of the Hard-of-Hearing. Cr. 3.
Advanced study in the etiology, therapy, and problems of the hard-of-hearing.

536. Speech Pathology. Cr. 3.
(Formerly 4314.) Advanced study in the etiology, therapy, and problems of speech disorders, with emphasis on diagnosis. Investigation of current theories and recent experimental work. (May be taken for Education credit.)

631-2. Thesis.

Courses in Biblical Literature

C. TRUETT SMITH, BAPTIST GENERAL CONVENTION OF TEXAS
CECIL RAYMOND MATTHEWS, THE METHODIST CHURCH
WILLIAM F. ROGAN, THE PRESBYTERIAN CHURCH
PAUL F. HEBBERGER, THE EPISCOPAL CHURCH
WAYNE SELSOR, THE DISCIPLES OF CHRIST
S. M. WHITSON, THE CHURCHES OF CHRIST

The purpose of this area is to introduce students to that world of literature, the Bible, which has so broadly affected Western culture. Without regard to sect or creed, guidance is given in the study of its moral and religious teachings and their relevance to life today. Though recognized for credit by the College, all courses are taught off-campus in centers provided by the churches at no expense to the College.

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.

133-4. New Testament Greek for Beginners. Cr. 3.
An introduction to the essentials of New Testament Greek, with selected translation exercises.

211. The Bible, Its Origin and Growth. Cr. 1.
A study of the origin and growth of the Bible from earliest known manuscripts to the present.

212. The Psalms. Cr. 1.
A study of the origin, significance, and message of the Psalms.

213. The Book of James. Cr. 1.
A study of the background, authorship, and occasion for writing the book of James with emphasis on its message of practical Christian living.

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 interpretations of the Book of Revelation.

223. Book of Romans. Cr. 2.
An intensive study of the contents of the Epistle to the Romans, with emphasis on the spiritual and ethical teaching.

224. Book of Hebrews. Cr. 2.
A study of the background, content, and practical value of the Epistle to the Hebrews. Prerequisite: Bible 132 or instructor's approval.

231. Church History. 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.

234. Selected Studies in The New Testament. Cr. 3.
An intensive study of the major spiritual and ethical themes of the New Testament.

235. The Prophets. Cr. 3.
A careful study of the Hebrew prophets, their place in history, and their message.

236. The Life and Teachings of Jesus. Cr. 3.
A study of the life, teaching, and significance of Jesus as revealed in the gospels.

237. The Spread of Christianity. Cr. 3.
The book of Acts is studied in its harmonic connection with the Epistles. The missionary program and message are traced through the historical records of the New Testament.

434. Comparative Religion. Cr. 3.
Prerequisite: Junior classification. A study of the origin and fruits of the chief world religions, other than Christianity.

DIVISION OF BUSINESS ADMINISTRATION

GEORGE HEATHER, *Dean*

The Division of Business Administration of Texas Technological College was established officially in 1942, although offerings in business and economic subjects had been available to students since 1925 under the administration of the Division of Arts and Sciences.

Lubbock, the home of Texas Technological College, which is located in the center of the South Plains area, is large enough to provide the student with opportunities to observe all types of business and to provide him with opportunities for practical experience in his chosen field of preparation through part-time employment in some of its 250 or more different types of business.

The Division of Business Administration has four primary objectives:

1. Liberal education for all degree students with the aim that they may live fuller personal lives and better assume the responsibilities of American citizenship. To help achieve this aim, the division requires that a minimum of 40 per cent of each student's total program consists of liberal arts and non-professional courses. The Division of Arts and Sciences cooperates by providing the instruction for most of such courses. With the same objective, the Division of Business Administration makes its courses available to majors in other divisions of the College.

2. Professional education to prepare the student for employment in business and industry. All students are required to study certain business and economic subjects which are considered basic to the preparation for entrance into business employment. In addition, each student is expected to complete a program of major and allied subjects which will result in his being especially employable in some particular field.

3. Adult or continuing educational programs for employed persons who cannot enroll in the regular day schedule of classes. The division offers a number of its courses in evening residence classes and to the limit of its facilities will provide instruction in its business subjects to any group sufficiently large in West Texas.

4. Research to further the development of business and industry in West Texas, the Southwest, and the United States. The division has specific courses which emphasize training for research and all students are trained to approach problems scientifically, with the case method of instruction being used to some extent in most classes. The division welcomes from any group requests for study and recommendation on any problem by its faculty.

Admission

The admission regulations stated in the catalog section "General Information" apply to students making application for the freshman year in the Division of Business Administration. The student will find it a considerable advantage to have taken in high school those subjects which will prepare him to be especially proficient in English, speech, and basic mathematical computations. It is also desirable for him to have gained some proficiency in the use of the typewriter.

Load

The normal study load for regular students in the Division is 15 or 16 semester hours each semester. A student is not permitted to enroll for a program of less than 12 semester hours or more than 17 semester hours without special approval from the dean; the student desiring approval of an irregular load should address a written petition to the dean incorporating all pertinent information prior to the registration period.

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, Master of Arts.

Bachelor of Business Administration. This degree will be awarded to all students who elect the degree and who have completed the minimum requirements as follows:

1. The specific course requirements set forth on the following pages for majors in accounting, advertising, business teaching, economics, finance, international trade, management, marketing, office management, pre-law, public administration, retailing, or secretarial administration.
2. Additional courses approved by the major advisor to complete the degree program.
3. A minimum grade-point average of 1.00 in all business administration subjects.
4. A total of 127 semester hours with a minimum grade-point average of 1.00. A maximum of 4 hours of freshman and sophomore subjects in the combined areas of physical education, air or military science, and band may apply toward the degree. Some of the curricula require a greater total number of hours.
5. No grade lower than a C in junior and senior courses in the major subjects may apply toward the major.

Bachelor of Science. This degree will be awarded to all students who elect the degree and who have completed the minimum requirements as follows:

1. The specific course requirements set forth on the following pages for majors in economics, international trade, or public administration.

2, 3, 4, and 5. Same as for the degree, Bachelor of Business Administration.

Master of Business Administration and Master of Arts. These degrees are awarded upon the completion of the various prescribed programs administered under the regulations of the Graduate School. The student should consult the catalog section for the Graduate School.

Selection of a Major

It is recommended that the student not attempt to make final selection of his major until he has completed some college work and has had an opportunity to investigate the study programs which are available to him. The required freshman course, "Professional Careers in Business," should prove to be of considerable help to the student in making his decision. The student should counsel with the advisors in those fields which he believes to be of possible interest to him. Aptitude tests are available in giving students additional help in deciding upon their majors.

At the beginning of the sophomore year, each student should have selected a major field of study from one of the following curricula with the approval of a major advisor from that particular field. The student should notify the dean's office of his choice. Of course, a student may decide to change to another major at a later time. However, since some courses are offered only in alternate years, there is no reasonable assurance that a student will be able to schedule all of his required courses before an expected graduation date unless he makes his final major selection and plans his program of courses a full two years in advance.

Freshman Schedules

Even in the freshman year the student is given considerable choice in the courses for which he registers. Each freshman student prepares his study program in conference with the Business Administration Freshman Advisor, and therefore should not concern himself particularly about his schedule until the time of his conference with the advisor. The following illustrates a typical selection of courses:

First Semester	Second Semester
English 131, English Composition	English 132, English Composition
Mathematics 130, Algebra	Mathematics 138, Mathematics of Finance
Science (student's choice)	Science (student's choice)
Economics 233, Economic Development of Europe	Economics 234, Economic Development of the United States
Physical Education, Band, or ROTC	Physical Education, Band, or ROTC
Elective, 2 or 3 semester hours	Elective, 2 or 3 semester hours
Management 110, Professional Careers in Business	

CURRICULA IN THE DIVISION OF BUSINESS ADMINISTRATION

DEGREES:

BACHELOR OF BUSINESS ADMINISTRATION

AND BACHELOR OF SCIENCE

Course requirements for the degrees are set forth in the following groups of subjects.

I. Non-professional courses (53 semester hours):
   - Economics 231-2—Principles of Economics
   - Economics 233-4—Economic Development of Europe and the United States
   - English 131-2—English Composition
   - Government 230—American Government, Organization
   - Management 110—Professional Careers in Business
   - Mathematics 130—College Algebra
   - Mathematics 138—Mathematics of Finance

Physical Education, Band, or ROTC—4 semester hours*
Science—6 semester hours
Speech 338—Business and Professional Speech
Approved by the major advisor:
English—3 semester hours
One course from each of three fields—9 semester hours:
Anthropology
English
Foreign Language
Government
History
Philosophy
Psychology
Sociology

II. Basic professional courses (30 semester hours):
Accounting 244-5—Elementary Accounting
Business Law 338-9—Business Law**
Finance 331—Corporation Finance
Management 331—Industrial Management
Marketing 332—Principles of Marketing
Marketing 346—Introduction to Business Statistics
Sec. Admin. 333—Business Correspondence
III. Major professional courses as listed on the following pages
IV. Electives

BACHELOR OF BUSINESS ADMINISTRATION
ACCOUNTING MAJOR

III. Major professional courses (28 semester hours):
Accounting 334-5—Intermediate Accounting
Accounting 336—Principles of Cost Accounting
Accounting 434-5—Advanced Accounting
Accounting 437—Principles of Auditing
Accounting electives—6 semester hours
Economics 326—Research in Economics and Business
Sec. Admin. 327—Report Writing
IV. Electives to complete a total of 127 semester hours.

BACHELOR OF BUSINESS ADMINISTRATION
ADVERTISING MAJOR

III. Major professional courses (38 semester hours):
Applied Arts 131—Design
Journalism 330—Typography
Marketing 321—Public Relations
Marketing 334—Principles of Advertising
Marketing 335—Principles of Retailing
Marketing 339—Principles of Salesmanship
Marketing 433—Marketing Problems
Marketing 438—Display
Marketing 4314—Advertising Copy
Marketing 4317—Advertising Layout
Marketing 4318—Mechanical Production of Advertising
Marketing 4319—Advertising Internship
Psychology 230—Introduction to Psychology
IV. Electives to complete a total of 127 semester hours

BACHELOR OF BUSINESS ADMINISTRATION
BUSINESS EDUCATION MAJOR

III. Major professional courses (47 semester hours):
Bus. Education 422—Improvement of Instruction in Bookkeeping and the Social Business Subjects
Bus. Education 423—Improvement of Instruction in Typewriting and Shorthand
Economics 326—Research in Economics and Business
Education 230—Educational Psychology
Education 330—Principles of Modern Education
Education 336—Secondary Education Methods
Education 3315—Audio-Visual Education
Education 432—Student Observation and Teaching in the Secondary School
Economics 4314—Consumer Economics
Sec. Admin. 121—Typewriting for Business
Sec. Admin. 122—Typewriting for Business
Sec. Admin. 131—Elementary Shorthand
Sec. Admin. 132—Intermediate Shorthand
Sec. Admin. 235—Advanced Shorthand
Sec. Admin. 310—Business Comportment

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* A maximum of 4 hours credit in freshman and sophomore courses in these combined areas may apply toward the degree.
** Not to be taken by pre-law majors.

Sec. Admin. 321—Calculating Machines
Sec. Admin. 327—Report Writing
Sec. Admin. 338—Filing Systems, Procedures and Practice
Sec. Admin. 421—Voice-writing and Duplicating Machines
IV. Electives to complete a total of 127 semester hours.

BACHELOR OF BUSINESS ADMINISTRATION
OR
BACHELOR OF SCIENCE
ECONOMICS MAJOR

III. Major professional courses (40 semester hours):
Economics 326—Research in Economics and Business
Economics 331—Economics of Business Enterprise
Economics 334—Taxation
Economics 338—Foreign Trade
Economics 436—Development of Economic Doctrines
Sec. Admin. 327—Report Writing
Approved electives—18 semester hours
IV. Electives to complete a total of 127 semester hours.

BACHELOR OF BUSINESS ADMINISTRATION
FINANCE MAJOR

III. Major professional courses (34 semester hours):
Economics 326—Research in Economics and Business
Economics 331—Economics of Business Enterprise
or
Economics 3311—National Income Analysis
Finance 231—Personal Finance
Finance 333—Principles of Money, Banking, and Credit
Finance 334—Credits and Collections
Finance 335—General Insurance
Finance 336—Life Insurance
Finance 337—Property Insurance
Finance 431—The Federal Reserve System
Finance 433—Corporate Financial Problems and Cases
Finance 434—Investments
Sec. Admin. 327—Report Writing
IV. Electives to complete a total of 127 semester hours.

BACHELOR OF BUSINESS ADMINISTRATION
OR
BACHELOR OF SCIENCE
INTERNATIONAL TRADE MAJOR

III. Major professional courses (39 semester hours):
Economics 237—Economic Geography
Economics 335—Transportation Principles and Practices
Economics 337—Economic Systems
Economics 338—Foreign Trade
Economics 339—Latin America and the United States
Economics 432—Foreign Market Surveys
Economics 433—International Economic Relations
Economics 436—Development of Economic Doctrine
Economics 437—Current Economic Problems
Government 336—United States Foreign Policy
Government 435—International Organization
Government 436—International Law
Government 437—Political Geography
IV. Electives to complete a total of 127 semester hours.

BACHELOR OF BUSINESS ADMINISTRATION
MANAGEMENT MAJOR

Industrial Management Option

III. Major professional courses (48 semester hours):
Accounting 331—Managerial Accounting
Economics 326—Research in Economics and Business
Management 333—Labor Problems
Management 334—Personnel Administration
Management 335—Purchasing
Management 339—Office Management
Management 422—Administrative Policies and Practices
Management 433—Labor Legislation
Management 435—Employee Supervision
Management 441—Management of Small Business Enterprise
Management 452—Industrial Management Problems
Sec. Admin. 327—Report Writing
Additional minimum concentration in another approved field—12 semester hours
IV. Electives to complete a total of 134 semester hours.

Personnel Management Option

III. Major professional courses (49 semester hours):
Economics 326—Research in Economics and Business
Management 333—Labor Problems
Management 334—Personnel Administration
Management 339—Office Management
Management 421—Job Evaluation
Management 422—Administrative Policies and Practices
Management 433—Labor Legislation
Management 435—Employee Supervision
Management 451—Advanced Personnel Management
Psychology 230—Introduction to Psychology
Psychology 330—Psychology in Business and Industry
Psychology 432—Trade and Aptitude Testing
Sec. Admin. 327—Report Writing
Additional minimum concentration in another approved field—12 semester hours
IV. Electives to complete a total of 139 semester hours.

Traffic Management Option

III. Major professional courses (34 semester hours):
Economics 326—Research in Economics and Business
Economics 332—Public Utility Economics
Economics 335—Transportation Principles and Practices
Economics 435—Transportation Economics
Management 333—Labor Problems
Management 334—Personnel Administration
Management 335—Purchasing
Management 337—Motor Carrier Management
Management 338—Railroad Transportation
Management 435—Employee Supervision
Management 437—Industrial Traffic Management
Sec. Admin. 327—Report Writing
IV. Electives to complete a total of 127 semester hours.

BACHELOR OF BUSINESS ADMINISTRATION
MARKETING MAJOR

III. Major professional courses (40 semester hours):
Economics 237—Economic Geography
Economics 326—Research in Economics and Business
Finance 334—Credits and Collections
Marketing 334—Principles of Advertising
Marketing 335—Principles of Retailing
Marketing 339—Principles of Salesmanship
Marketing 433—Marketing Problems
Marketing 434—Wholesaling
Marketing 435—Business Cycles and Forecasts
Marketing 439—Sales Management
Psychology 230—Introduction to Psychology
Sec. Admin. 327—Report Writing
Approved electives—6 semester hours
Recommended:
Economics 335—Transportation Principles and Practices
Economics 338—Foreign Trade
IV. Electives to complete a total of 127 semester hours.

BACHELOR OF BUSINESS ADMINISTRATION
OFFICE MANAGEMENT MAJOR

III. Major professional courses (42 semester hours):
Accounting 322—Payroll Accounting
Economics 326—Research in Economics and Business
Finance 334—Credits and Collections
Management 333—Labor Problems
Management 334—Personnel Administration
Management 335—Purchasing
Management 339—Office Management
Management 435—Employee Supervision
Management 436—Problems in Office Management
Sec. Admin. 121—Typewriting for Business
Sec. Admin. 122—Typewriting for Business
Sec. Admin. 310—Business Comportment
Sec. Admin. 321—Calculating Machines
Sec. Admin. 327—Report Writing
Sec. Admin. 338—Filing Systems, Procedure and Practice
Sec. Admin. 421—Voice-writing and Duplicating Machines
Sec. Admin. 431—Internship
Additional minimum in Accounting or Sec. Admin.—6 semester hours
IV. Electives to complete a total of 134 semester hours.

BACHELOR OF BUSINESS ADMINISTRATION
PRE-LAW MAJOR

III. Major professional courses* (13 semester hours):
Economics 326—Economic and Business Research
Sec. Admin. 327—Report Writing
Electives—9 semester hours to be chosen from the following:
Anthropology 231 or 232—The Nature of Man and Cultural Anthropology
History 231-2—Economic and Political History of the U. S.
Psychology 230 or 231—Introduction to Psychology and Applications of Psychology
Sociology 230 or 233—Introduction to Sociology and Current Social Problems
Speech 236—Argumentation and Debate
Advanced Business Administration courses
IV. Electives in Business Administration** to complete a total of 96 semester hours.

BACHELOR OF BUSINESS ADMINISTRATION
OR
BACHELOR OF SCIENCE

PUBLIC ADMINISTRATION MAJOR***

III. Major professional courses (48 semester hours):
Accounting 432—Governmental Accounting
Architecture 436—City Planning
Economics 326—Business and Economic Research
Economics 332—Public Utility Economics
Economics 333—Public Expenditures
Economics 334—Taxation
Economics 335—Transportation Principles and Practices
Government 331—Local Government
Government 338—Public Administration
Government 439—Administrative Law
Management 334—Personnel Administration
Management 335—Purchasing, Stores, and Inventory Control
Management 435—Employee Supervision
Marketing 321—Public Relations
Psychology 230—Introduction to Psychology
Sec. Admin. 327—Report Writing
Sec. Admin. 431—Internship
IV. Electives to complete a total of 134 semester hours.

BACHELOR OF BUSINESS ADMINISTRATION
RETAILING MAJOR

III. Major professional courses (36 semester hours):
Economics 237—Economic Geography
Finance 334—Credits and Collections
Marketing 334—Principles of Advertising
Marketing 335—Principles of Retailing
Marketing 339—Principles of Salesmanship
Marketing 433—Marketing Problems
Marketing 438—Display
Marketing 439—Sales Management
Marketing 4315—Retail Buying
Psychology 230—Introduction to Psychology
Approved electives—6 semester hours
IV. Electives to complete a total of 127 semester hours.

BACHELOR OF BUSINESS ADMINISTRATION
SECRETARIAL ADMINISTRATION MAJOR

III. Major professional courses (38 semester hours):
Accounting 441—Machine Accounting
Economics 326—Research in Economics and Business
Management 339—Office Management
Sec. Admin. 121—Typewriting for Business
Sec. Admin. 122—Typewriting for Business
Sec. Admin. 131—Elementary Shorthand
Sec. Admin. 132—Intermediate Shorthand
Sec. Admin. 235—Advanced Shorthand
Sec. Admin. 310—Business Comportment

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* The completion of all the requirements for the law degree from any school of law recognized by this college will be accepted as completing the requirements for the B.B.A. Degree.

** Students should attempt to elect courses which will provide the most information concerning the areas of business activity in which it is anticipated legal practice will concentrate.

*** Primarily for city managership.

Sec. Admin. 321—Calculating Machines
Sec. Admin. 331—Secretarial Practice
Sec. Admin. 327—Report Writing
Sec. Admin. 338—Filing Systems, Procedure and Practice
Sec. Admin. 421—Voice-writing and Duplicating Machines
Sec. Admin. 431—Internship

IV. Electives to complete a total of 127 semester hours.

STENOGRAPHY CURRICULUM
TWO-YEAR PROGRAM

(No Degree)

First Year

First Semester	Hours	Second Semester	Hours
Eng. 131—English Composition	3	Eng. 132—English Composition	3
Math. 130—Algebra	3	Math. 138—Math. of Finance	3
Eco. 231—Principles of Economics	3	Eco. 232—Principles of Economics	3
Sec. Admin. 121—Typewriting for Bus.	2	Sec. Admin. 122—Typewriting for Bus.	2
Sec. Admin. 131—Elem. Shorthand	3	Sec. Admin. 132—Inter. Shorthand	3
P. E.	1	P. E.	1
	15		15

Second Year

Third Semester	Hours	Fourth Semester	Hours
Govt. 233—American Government, Org.	3	Acct. 245—Elementary Accounting	4
Acct. 244—Elementary Accounting	4	Sec. Admin. 331—Sec. Practice	3
Sec. Admin. 235—Adv. Shorthand	3	Sec. Admin. 421—Voice-writing and Duplicating Machines	2
Sec. Admin. 321—Calc. Machines	2	Sec. Admin. 333—Bus. Correspondence	3
Sec. Admin. 338—Filing	3	Speech 338—Bus. & Prof. Speech	3
Sec. Admin. 310—Comportment	1	P. E.	1
P. E.	1		
	17		16

Students who are exempted from Sec. Admin. 121, 131, or 132 may elect other courses taken by four-year majors during their first two years of college.

Department of Accounting and Finance

PROFESSORS RUSHING, HEATHER, TAYLOR. ASSOCIATE PROFESSORS HOOPER, NORWOOD, ROUSE, WHITTINGTON.* ASSISTANT PROFESSORS EAVES, GIBSON, OGLESBY. PART-TIME INSTRUCTORS BASS, BEHNER, HOWARD, IRVIN, SEGARS, TEAGUE, THOMAS.

ACCOUNTING

The primary purpose of the department is to offer training to students who wish to specialize in the field of accounting with the expectations of practicing as public, private, or governmental accountants. The secondary purpose of the department is to offer course work that will benefit students: (1) who expect to enter business for themselves or to work for others in managerial positions which will require an understanding of accounting for most efficient performance of their functions; (2) who expect to enter other professions, such as law, engineering, pharmacy, and medicine; (3) who are interested primarily in the personal usefulness of the subject or its cultural aspects.

For Undergraduates

231. Industrial Accounting for Engineers. Cr. 3.
Intended for engineers interested in the process 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.

*On leave 1953-54.

244. Elementary Accounting I. Cr. 4. (3-3).

Introduction to principles of accounting. Accounting for proprietorships, negotiable instruments, and the voucher system.

245. Elementary Accounting II. Cr. 4. (3-3).

Second course in elementary accounting. Partnerships, corporations, cost accounting, and interpretation of financial statements.

322. Payroll Accounting. Cr. 2.

Accounting for payrolls. A study of social security legislation and wage and hour laws, withholding taxes, state unemployment compensation and taxes, federal unemployment insurance and taxes, old-age and survivors' benefits and taxes.

331. Managerial Accounting. Cr. 3.

Prerequisite: Accounting 245. A review of elementary accounting, financial statements, current assets, fixed assets, depreciation and depletion.

334. Intermediate Accounting I. Cr. 3.

Prerequisite: Accounting 245. A review of elementary accounting, financial statements, current assets, fixed assets, depreciation and depletion.

335. Intermediate Accounting II. Cr. 3.

Second course in intermediate accounting. Liabilities, net worth, partnerships, comparative statements, application of funds, net profit variations, budgeting, branch accounting, special sales contracts.

336. Principles of Cost Accounting. Cr. 3.

Prerequisite: Accounting 245. The techniques of cost accounting, embracing the methods of accounting for materials, labor, and factory burden in job order and process cost systems.

337. Advanced Cost Accounting. Cr. 3.

Prerequisite: Accounting 336. The techniques of process cost are more fully developed and the scope of applicability broadened. Estimate and standard cost accounting are comprehensively treated with emphasis on cost control.

For Undergraduates and Graduates

430. Income Tax Accounting. Cr. 3.

Prerequisite: Accounting 244-5 and junior classification. The Federal Revenue Acts with reference to taxation of the incomes of individuals. The preparation of tax returns for individuals and partnerships.

431. Advanced Income Tax Accounting. Cr. 3.

Prerequisite: Accounting 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 for corporations and returns involving gift taxes, estate taxes, and inheritance taxes.

432. Governmental Accounting. Cr. 3.

Prerequisite: Accounting 245. 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.

Prerequisite: Accounting 245. Accounting for the production, refining, and distribution of oil with emphasis upon production.

434. Advanced Accounting I. Cr. 3.

Prerequisite: Intermediate accounting. Partnerships, consignments, ventures, installment sales, insurance, corrections, bankruptcies and receiverships.

435. Advanced Accounting II. Cr. 3.

Second course in advanced accounting. Consolidation, foreign exchange, estates and trusts, budgets, governmental, bank, and stock brokerage.

436. Acccounting Systems. Cr. 3.

Prerequisite: Accounting 245. 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.

Prerequisite: Accounting 335. Auditing procedure, classification of audits, and investigations. Methods of verification of financial statements. Problems and principles of auditing.

438. Advanced Auditing. Cr. 3.

Prerequisite: Accounting 437. Review of auditing standards; case studies in auditing procedure. Completion of an audit practice case.

439. Budgeting. Cr. 3.

Prerequisite: Accounting 245. Coordination of various business activities by means of the budget. Procedures in obtaining and enforcing the budget.

441. Machine Accounting. Cr. 4. (3-3).

Prerequisite: Accounting 245. Principles of machine methods; tabulation machine cards, punches, verifiers, sorters, and tabulators; organization of tabulating machine departments. Practice in the operation of the punch, verifier, sorter, plugboard, and tabulator. Machine service fee $4.

442. Machine Accounting. Cr. 4. (3-3).
Prerequisite: Accounting 441. Principles of printing punch, interpreter, collator, reproducer; procedure development; punched card accounting systems for accounts payable and accounts receivable, payroll, inventory, billing, sales; management and supervisor responsibility. Practice in the operation of the interpreter, collator and reproducer. Machine service fee $4.

For Graduates

For graduate courses refer to the Business Administration program of graduate studies.

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 financial departments of business enterprises. Advisors will assist students to plan their courses to fit the individual for his particular activity.

For Undergraduates

231. Personal Finance. Cr. 3.
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.

331. Corporation Finance. Cr. 3.
Prerequisite: 60 semester hours, including Economics 232 and Accounting 245. The fundamental aspects of the modern corporation; promotion; financial planning; sale of securities; dividend policies; expansion, mergers, consolidation; failure and reorganization; public relations; and insurance of business risks.

333. Principles of Money, Banking and Credit. Cr. 3.
Prerequisite: Economics 232. A basic course covering the theory of money, banking in the United States, foreign exchange, commercial banks and other financial institutions. A brief survey of money, credit and prices is included in the course, together with the objectives and techniques of central banking and monetary management.

334. Credits and Collections. Cr. 3.
Prerequisite: Economics 232 and Accounting 245. Types and analysis of financial statements; credit limits; collection procedure; special problems of installment credit; legal remedies of the creditor.

335. General Insurance. Cr. 3.
Prerequisite: Economics 231-232. A survey of the entire field of private insurance and a foundation for more specialized courses. The history of insurance, the theory of risk, physical and moral hazards, loss prevention, types of insurance carriers and the basic features of each of the principal kinds of insurance.

336. Life Insurance. Cr. 3.
Prerequisite: General Insurance or approval of instructor. The nature of life insurance and of various ways of utilizing the protection which it offers. The principal features of life insurance and annuity contracts. Group insurance, industrial insurance, disability protection, insurance company investments, and the taxation of policy proceeds.

337. Property Insurance. Cr. 3.
Prerequisite: General Insurance or approval of instructor. Fire insurance, marine insurance and allied lines. Policy forms, underwriting and selection, rate-making, loss adjustments, the operations of agency and brokerage firms and reinsurance.

For Undergraduates and Graduates

431. The Federal Reserve System. Cr. 3.
Prerequisite: Finance 333. An analysis and interpretation of the functions and services performed by the Federal Reserve System.

432. Real Estate. Cr. 3.
Recommended prerequisite: Finance 3311. 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.

433. Corporate Financial Problems and Cases. Cr. 3.
Prerequisite: Finance 331. Required of all finance majors; recommended for accounting majors.

434. Investments. Cr. 3.
Prerequisite: Finance 331. Analysis of investment securities; sources of information; classes of investors; institutional investors; diversification; taxation, supervision of investment; portfolio.

437. Casualty Insurance. Cr. 3.
Prerequisites: General Insurance and Property Insurance. The various casualty lines of insurance such as public liability, automobile, workmen's compensation, aviation, burglary and robbery, glass, power plant, and accident and health. Contracts and practices in the field of fidelity and surety bonding. Primarily for those desiring to specialize in insurance.

For Graduates

For graduate courses refer to the Business Administration program of graduate studies.

BUSINESS LAW

For Undergraduates

338. Business Law I. Cr. 3.
Prerequisite: 60 semester hours. Nature and source of law, courts and procedure, contracts, agency, labor relations, trade regulations, and partnerships.

339. Business Law II. Cr. 3.
Second course in business law. Organization and operation of corporations. Personal and real property and security transactions. Law of sales, negotiable instruments, insurance, banks and banking, and bankruptcy.

3311. Real Estate Law. Cr. 3.
Rights in land; classification of estates; acquisition and creation of property rights, titles; and common conveyances. Recommended as a prerequisite to Finance 432.

3312. Insurance Law. Cr. 3.
General principles of insurance law; the insurance contract; insurance agents and their powers; rights under fire, life and accident policies; taxation affecting insurance policies; insurance and community property rights. Study of the rules and regulations administered by the Texas Insurance Commission and how they apply to the companies.

3313. Oil and Gas Law. Cr. 3.
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.

For Undergraduates and Graduates

4311. C. P. A. Law Review. Cr. 3.
A review of Business Law with emphasis on subject matter appearing frequently in the C. P. A. law examination.

For Graduates

For graduate courses refer to the Business Administration program of graduate studies.

Department of Business Education and Secretarial Administration

PROFESSOR TATE. ASSISTANT PROFESSOR CAMERON.
INSTRUCTORS HURMENCE, SNOW.
PART-TIME INSTRUCTOR QUICKSALL.

BUSINESS EDUCATION

The objective of this four-year program is to prepare students for certification in business teaching. Broad business and general background, technical business skills, and professional techniques and practices are primary aims.

Those who seek professional advancement may prepare for the Master of Business Administration Degree or the Master of Education Degree with a major in business education.

For Undergraduates and Graduates

422. Improvement of Instruction in Bookkeeping and the Social-Business Subjects. Cr. 2.
Prerequisite: Accounting 245, Business Law 338. A study of modern methodology and materials.

423. Improvement of Instruction in Typewriting and Shorthand. Cr. 2.
Prerequisite: Secretarial Administration 122, 235. Progressive methodology. Emphasis on skill-building psychology.

424. Improvement of Instruction in Basic Business. Cr. 2.
Prerequisite: Business Law 338, Marketing 332. Relationship of business learnings to general education for all. Materials and methodology.

SECRETARIAL ADMINISTRATION

Professional rather than purely vocational training is the purpose of instruction in this area. Those who combine job-entry skills with a broad business and general background enhance their opportunities to succeed in business.

Typewriting and shorthand skills are basic to advanced work in this four-year curriculum and should be acquired early in the college program.

For the Bilingual (Spanish and English) Secretarial Program, see page 85 of this catalog.

A two-year stenographic curriculum is provided for those who are certain that they will not complete the four-year secretarial program. Job-entry skills are stressed.

For Undergraduates

120. Typewriting for Personal Use. Cr. 2. (0-5).
Designed to develop the ability to organize and present personal and student materials effectively through use of the typewriter. No credit granted those with one year of high school typewriting. Typewriter service, $4.

121. Typewriting for Business. Cr. 2. (0-5).
A beginning course to develop vocational proficiency for office work or business teaching. No credit granted those with one year of high school typewriting. Typewriter service, $4.

122. Typewriting for Business. Cr. 2. (0-5).
Prerequisite: Secretarial Administration 121 or equivalent. A continuation of basic skill building leading to acceptable production standards for office work. Speed and accuracy development. Typewriter service, $4.

131. Elementary Shorthand. Cr. 3. (3-2).
Prerequisite: Secretarial Administration 121 or equivalent. For students with no previous instruction in Gregg shorthand or with inadequate preparation for advanced work. No credit granted those with one year of high school shorthand. Typewriter service fee, $2.

132. Intermediate Shorthand. Cr. 3. (3-2).
Prerequisite: Secretarial Administration 131 or equivalent. Development of transcription skills. Minimum goals: Dictation at 100 and accurate transcription at 30 words per minute. Typewriter service fee, $2.

235. Advanced Shorthand. Cr. 3. (3-2).
Prerequisite: Secretarial Administration 122 and 132 or equivalent. Emphasis on proficiency and mailable transcripts. Minimum goals: Dictation at 120 and accurate transcription at 40 words per minute. Typewriter service fee, $2.

310. Business Comportment. Cr. 1.
Direction of personality development for the individual's responsibility in promoting harmonious relationships with the public, employers, and other employees.

338. Filing Systems, Procedure, and Practice. Cr. 3.
A study of alphabetic, triple-automatic, geographic, numeric, visible, and Soundex systems.

321. Calculating Machines. Cr. 2. (2-4).
Prerequisite: Math. 130 or equivalent. Development of basic skills on office computing machines. Machine service, $4.

331. Secretarial Practice. Cr. 3. (3-1).
Prerequisite: Secretarial Administration 235. Integration of skills and knowledges essential to the secretarial worker.

333. Business Correspondence. Cr. 3.
Prerequisite: Secretarial Administration 120 or 121 or proficiency demonstrated by examination. Practice in writing psychologically sound business letters in correct and forceful English.

327. Report Writing. Cr. 3.
Prerequisite: Same as Secretarial Administration 333. Practice in writing business and technical reports.

For Undergraduates and Graduates

421. Voice-writing and Duplicating Machines. Cr. 2. (2-4).
Prerequisite: Secretarial Administration 122 or equivalent. Practice in duplicating and in producing mailable transcripts from voice recordings. Electric typewriter applications. Machine service, $4.

431. Internship. Cr. 3. (1-5).
Prerequisite: Secretarial Administration 235. Supervised work experience in an approved office or store. Minimum of 75 clock hours of work.

Department of Economics

PROFESSORS WIESEN, CLOVER. ASSOCIATE PROFESSORS ANDERSON, ROUSE. ASSISTANT PROFESSOR HARDING. INSTRUCTOR WALKER

The courses in economics have been designed to allow the student to accomplish any one or a combination of three objectives:

1. General preparation for entering the business world in various types of activity excluding the highly specialized fields. Considerable flexibility is provided in the matter of courses that the student may take. A specialized curriculum is available for students interested in international trade.

2. Specialized preparation as a professional economist. Business firms, banks, trust companies, insurance companies and government agencies offer numerous opportunities for qualified economists. In addition, opportunities are afforded in public school and college teaching.

3. Cultural training in the foundations of our economic institutions, ideas, and policies. In this period of world crisis when the very existence of our economic system is being challenged, a thorough grounding in fundamental economic concepts is essential for the person who would either assume positions of responsibility in the business world and in public office, or for one who would wish only to meet his full responsibliity as a citizen.

For Undergraduates

231. Principles of Economics. Cr. 3.
An introduction to modern economic society and theories of production, exchange, and distribution.

232. Principles of Economics. Cr. 3.
Prerequisite: Economics 231. A continuation of Economics 231. The application of economic theory to current economic problems.

233. Economic Development of Europe. Cr. 3.
A study of the evolution of the mapor elements in the economic life of Europe from Medieval times through the period of the Industrial Revolution.

234. Economic Development of the United States. Cr. 3.
A study and an analysis of the major forces of the American economic system and an examination of the chief kinds of business activity from the Colonial period to the present time.

235. Principles of Economics. Cr. 3.
An abridged course for students not majoring in economics or business administration.

237. Economic Geography. Cr. 3.

The characteristics and distribution of man's economic pursuits, his relation to natural conditions and resources, and his significance in the economics of the major regions of the world order.

326. Research in Economics and Business. Cr. 2.

Research methods used in the field. A definite problem will be undertaken for actual experience on the part of the students.

331. Economics of Business Enterprise. Cr. 3.

Prerequisite: Economics 231-2. A study of the determination of prices of products and productive agents under conditions of competition, imperfect competition, and monopoly.

332. Public Utility Economics. Cr. 3.

Prerequisite: Economics 231-2. Principles and problems of public utilities, financing, ownership, and public relations. Problems of valuation, rate of return, and rate structures. Regulation versus government ownership.

333. Public Expenditures. Cr. 3.

Prerequisite: Economics 231-2. Analysis of the economic aspects of government finance; principles, policies, and problems of public expenditures, nation, state, and local. Public borrowing, debt, and financial administration. Special attention to present-day problems.

334. Taxation. Cr. 3.

Prerequisite: Economics 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 Principles and Practices. Cr. 3.

Prerequisite: Economics 231-2. Functions of transportation; description of railroad, highway, pipeline, water and air transportation systems and services; government regulation, rates and billing; coordination.

337. Economic Systems. Cr. 3.

Prerequisite: Economics 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.

Prerequisite: Economics 231-2. Principles of international trade; balance of payments; trade policies and agreements.

339. Latin America and the United States. Cr. 3.

Prerequisite: Economics 231-2. A study of the economics of Latin American countries and their economic relations with the United States.

3311. National Income Analysis. Cr. 3.

Prerequisite: 21 hours in economics. A study of national income concept and an analysis of the requirements for full employment. An examination of uses of income analysis for business decisions and public policy.

3312. Economics of Labor. Cr. 3.

Prerequisite: Economics 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.

3315. Economic Geography of Latin America. Cr. 3.

Analysis of countries of Latin America as to economy in relation to the natural environment and facts and problems of the socio-economic environment. Possibilities for future development of manufacturing and raw material production in Argentina, Brazil, and Chile. The role of production development as it influences the economy of the United States.

For Undergraduates and Graduates

432. Foreign Market Surveys. Cr. 3.

Prerequisite: Economics 231-2. Intensive study of the foreign markets which are of particular significance to the United States.

433. International Economic Relations. Cr. 3.

Prerequisite: 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.

435. Transportation Economics. Cr. 3.

Prerequisite: Economics 231-2. Finance 331. Development of transportation systems, freight rates and location of industry, agencies of control, theory of railroad rates, rate making valuation, financing, present tendencies.

436. Development of Economic Doctrines. Cr. 3.

Prerequisite: Economics 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.

Prerequisite: Economics 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.

4311. Advanced Economic Theory. Cr. 3.
Prerequisite: 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.

4312. Theories of Depressions. Cr. 3.
Prerequisite: 12 hours in economics. A study of the monetary and non-monetary theories of instability, theories on economic stagnation and methods of control.

4313. Distribution Theory. Cr. 3.
Prerequisite: 12 hours in economics. Consideration of significant elements in the theory of profits, wages, capital and interest, and rent.

4314. Consumer Economics. Cr. 3.
Prerequisite: 6 hours in economics. A study of the problems faced by the consumer when he buys goods, services, a home, insurance, or invests his savings. Methods of strengthening the position of the consumer and of helping him to be more efficient are studied.

For Graduates

4335. Human Geography. Cr. 3.
Prerequisite: Graduate classification. A study of the geographic environment of mankind and his adjustments to this environment. Attention is given to the geographic factors influencing the population: its characteristics, density, distribution, and economic and social activities. Especially designed course for elementary teachers.

For other graduate courses refer to the Business Administration program of graduate studies.

Department of Management

PROFESSOR MIZE. ASSISTANT PROFESSORS HARDING, HILL, HUBBARD.

Management has become an important area of specialization in training for modern business and industry. The courses offered in this department provide basic training for those students desiring to enter this field. It is the purpose of the management curriculum to develop professional knowledge of and some practical acquaintance with management fundamentals and their application to production, material, and personnel.

For Undergraduates

110. Professional Careers in Business. Cr. 1. (1-1).
An introduction to formal preparation for business occupations. A survey of employment and promotional opportunities in various business careers, preparation, duties and qualifications of personnel, compensation, employment regulations, and other information pertinent to a student's planning for a life in business.

331. Industrial Management. Cr. 3.
Prerequisite: Economics 231. The course deals with the principles and methods used in developing and operating industrial and business enterprises. It emphasizes the principles of scientific management and their application to problems of organization, plant location, selection of physical properties, methods of control, and manpower utilization.

333. Labor Problems. Cr. 3.
Prerequisite: Economics 231. A study 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.
Prerequisite: Economics 231, 232, Management 331. A study 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.

339. Office Management. Cr. 3.
Prerequisite: Economics 231, 232, Accounting 244, 245. The course is a study of the standards of office practice, office methods, wage payment plans, selection and training of office workers, office planning, techniques, and duties and responsibilities of the office manager.

335. Purchasing, Stores, and Inventory Control. Cr. 3.

Prerequisite: Management 331. The course deals with the organization and function of the purchasing department and study of problems of purchasing policies and procedures, sources of supply, prices, contract negotiation and adjustments, quality control, receiving, and stores control.

337. Motor Carrier Management. Cr. 3.

Prerequisite: Economics 335 or consent of instructor. Description of the motor carrier industry with special attention to the motor truck companies operating in the West Texas area; carrier organization; accounts and records; legal requirements; rate procedure; insurance needs; material handling techniques in terminal operations.

338. Railroad Traffic Management. Cr. 3.

Prerequisite: Economics 335 or consent of instructor. Description of the railroad industry with special attention to railroads operating in the Southwest; carrier organizations; rate procedures; special problems facing the industry; accounts and records; federal and state regulation.

For Undergraduates and Graduates

421. Job Evaluation. Cr. 2.

Prerequisite: Management 334. The course will deal with techniques of job analysis and the various methods of job rating and evaluation for wage determination.

422. Administrative Policies and Procedures. Cr. 2.

Prerequisite: Management 451 or Management 452, or consent of instructor. The course deals with the nature of administrative problems and with the responsibilities and functions of top management.

433. Labor Legislation. Cr. 3.

Prerequisite: Management 333. A study will be made of the problems of labor relations with particular emphasis on labor legislation by the Federal Government; Sherman Act, National Labor Relations Act, Labor Management Relations Act, Fair Labor Standards Act; other federal laws, state laws, and collective bargaining standards and practices.

435. Employee Supervision. Cr. 3.

Prerequisite: Management 344 or consent of instructor. The relation of the supervisor to his subordinates and to higher management will be studied; leadership, planning of group work, and the use of the tools of supervision. Particular attention will be given to introducing and training new employees, rating, discipline, problems of absenteeism, and maintenance of morale.

436. Problems in Office Management. Cr. 3.

Prerequisite: Management 339. 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.

437. Industrial Traffic Management. Cr. 3.

Prerequisite: Senior standing in Management or consent of instructor. Problems in keeping tariff files, obtaining and quoting rates, routine, expediting and tracing shipments, making claims, and auditing freight bills.

441. Management of Small Business Enterprise. Cr. 4.

Prerequisite: Management 331. This is a problem course involving the application of fundamental principles of management to small-scale enterprise situations; location, organization, financing, property control, production control, management of manpower, and coordination of activities.

451. Advanced Personnel Management. Cr. 5.

Prerequisite: Management 333, 334, and Psychology 330. Problems in personnel management will be developed through consideration of cases, experiences, and results of research in various fields of employer-employee relationships. Development of programs of representative business organizations will be used as projects.

452. Industrial Management Problems. Cr. 5.

Prerequisite: Management 331, 335, or consent of instructor. The course will deal with problems of organization and management of an industrial enterprise. The student will be required to make office and plant inspections to observe first-hand industrial organization at work. Industrial films will be used to supplement the work.

Department of Marketing

PROFESSOR HEATHER. ASSOCIATE PROFESSORS GOLDEN, SHAW*.
ASSISTANT PROFESSOR HUBBARD. INSTRUCTOR BLACKWELL*.
PART-TIME INSTRUCTORS BROWN, BUZAN,
BYRD, McKEE, WEBSTER.

The curriculum in Marketing is primarily designed to provide professional training for careers in the realm of marketing goods and/or services and, secondarily, to offer an opportunity for students of other employment and interests to secure training which will aid them in their respective endeavors. To these ends, courses are offered in the general field of marketing and in the more specialized fields such as retailing and advertising.

The courses offered lay a broad foundation with a considerable degree of technical training in specialized fields of marketing. Theoretical and practical aspects are incorporated into the subject matter. The student may be advised to substitute certain courses in marketing or in other departments when it is believed that these courses will better prepare him for his chosen field of activity.

For Undergraduates

321. Public Relations. Cr. 2.
The policies and methods of creating and maintaining public goodwill in business including studies of employee participation and consumer attitude and opinion. A study of the public relations programs of representative business concerns. The course is not intended to train the student to do publicity work.

332. Principles of Marketing. Cr. 3.
Prerequisite: Economics 231-2. Marketing structures and agencies. Types of middle men and marketing institutions. Current marketing practices. Distribution of raw materials and finished products.

334. Principles of Advertising. Cr. 3.
A study of advertising from the point of view of the needs of businessmen. To acquaint students in business with the tools and techniques of advertising and the use of advertising as a selling force. Consideration of the media available, the publicity budget, relation of the publicity department to other departments of the business, and means of testing and measuring benefits of advertising.

335. Principles of Retailing. Cr. 3.
Prerequisite: Marketing 332. A study of store location; layout, fixtures, and organization; interpreting consumer demand; purchasing, receiving, checking, pricing, and merchandising; sales promotion; inventory and merchandise control; credit; and personnel.

338. Essentials of Television Advertising. Cr. 3.
No prerequisite but Marketing 334 recommended before this course. The study of the techniques and principles of advertising on television. The phases of creating, producing, and scheduling. Advertisements for a variety of products and businesses will be covered.

339. Principles of Salesmanship. Cr. 3.
Fundamentals of personal salesmanship applied specifically in the marketing of goods and services and as they may aid any business or professional man.

346. Introduction to Business Statistics. Cr. 4.
Prerequisite: Mathematics 130. A study of sources, presentation, and interpretation of statistical data as applied to business. Use of statistics in the control of business enterprise. Three lectures and two one-hour laboratories.

For Undergraduates and Graduates

426. Index Numbers. Cr. 2.
Prerequisite: Marketing 346. An intensive study of business use of index numbers: construction and interpretation of index numbers; problems of weighting and splicing; adjustment of business data for inflation and deflation. Practical problems in measurement of business status through use of index numbers.

431. Commodity Marketing. Cr. 3.
Prerequisite: Marketing 332. A specialized study of problems involved in marketing commodities. Individual assigments will be made.

*On leave 1953-54.

433. Marketing Problems. Cr. 3.

Prerequisite: Marketing 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.

434. Wholesaling. Cr. 3.

Prerequisite: Marketing 332. A detailed study of the processes and institutions of wholesale marketing from manufacturer or processor to retailer through merchant and functional middlemen. Special emphasis upon modern channels of distribution including agents and agency structures, selling agents, manufacturer's agents, brokers, jobbers, commission firms, service and special wholesalers, other intermediary marketing institutions, and consignments.

435. Business Cycles and Forecasts. Cr. 3.

Prerequisite: Marketing 346. Theories of cycles. The causes and proposed remedies. Examination of forecasting services available and technique employed by by them. Problems in specific commodities and securities.

437. Advanced Business Statistics. Cr. 3.

Prerequisite: Marketing 346. Further training in statistical methods and their uses in business institutions. A more extended study of some phases of business statistics including sampling, averages, dispersion, time series, index numbers, linear and non-linear correlation, multiple and partial correlation, estimates, variance and the use of statistics in business forecasting.

438. Display. Cr. 3.

Prerequisite: Marketing 334 or 335. Technical training of personnel for planning and executing display programs and unit displays, including analysis and evaluation of displays, methods of display appeal through arrangement, color, lighting, themes, units, timing, appropriateness, objectives, and materials.

439. Sales Management. Cr. 3.

Prerequisite: Marketing 332 and 339. A thorough study of problems and methods of organization and administration of sales department including sales research; sales operation, including departmental oganization, selection, training, equipping and remunerating sales personnel; sales control, embodying sales territories, routing, expense accounts, quotas, costs and budgets; sales promotion; and sales policies.

4314. Advertising Copy. Cr. 3.

Prerequisite: Marketing 332 and 334. A study of the writing and uses of advertising copy. Copy will be written for a variety of products and services. Particularly adapted to the needs of the manager of a small business as well as to advertising specialists.

4315. Retail Buying. Cr. 3.

Prerequisite: Marketing 335. Functions of the retail buyer, emphasizing principles and procedures in buying for resale. Organization for buying, analysis of consumer demand, model stock plans, sources of supply, resident buying, cooperative and central buying, terms and discounts, price quotations, trade relations, selection, and training techniques.

4317. Advertising Layout. Cr. 3.

Prerequisite or corequisite: Marketing 4314. The principles and details of visualization and effective layout for selling power, emphasis, and distinction. Student preparation of rough layouts—fitting the different units of an advertisement together to form its most forceful and effective presentation.

4318. Mechanical Production of Advertising. Cr. 3.

Prerequisite: Marketing 4317. Training in methods of illustration; in printing and photo-engraving; to understand paper; to recognize and specify type; to plan rough layouts.

4319. Advertising Internship. Cr. 3.

Prerequisite or corequisite: Marketing 4318. The student will follow a schedule of observation and work in an advertising capacity in various local firms including a radio station, a letter shop, an advertising agency, a departmental store, and an outdobr advertising plant.

For Graduates

See graduate program for Division of Business Administration.

FOR GRADUATES ONLY

The graduate student working toward the Master of Business Administration Degree in any of the fields in the Division of Business Administration or the Degree of Master of Arts in Economics normally will include courses in more than one academic department. Courses from any department in the College may be approved for inclusion in the degree program; however, it is probable that most students will plan to schedule related courses from the various departments in the

Division of Business Administration. For the convenience of the graduate student, the "For Graduates Only" courses have been grouped according to the various *types* or *approaches* under which study is possible. Certainly the graduate student should assume that in the various departments of study within the Division of Business Administration there are many courses available to him. This method of listing the "For Graduates Only" makes possible the individualizing of graduate programs and the ability to revise constantly the subject matter included in the courses in accordance with the changes in a field as dynamic and changing as business.

The graduate student should consult also the preceding pages for additional departmental listings of courses offered "For Undergraduates and Graduates." All 400 and 500 courses may be taken for graduate credit. In addition, a student may, in certain circumstances, register for some 300 courses for graduate credit. Permission must be obtained in advance from the Dean of Business Administration and the Dean of the Graduate School. Not more than three 300 courses (nine or ten semester hours) may be credited on any Master's degree program.

The graduate student may be permitted to repeat under the same number, but with different course title and content, registration for any of the following. The specific course content and title of each course is designated at the time of offering.

511, 531. Problems.* Cr. 1 or 3.
Individual and group investigation, solution, report, and discussion of specific problems under the direction of the instructor. Generally available in all departments of the Division of Business Administration.

522, 532. Research.* Cr. 2 or 3.
Individual student research in selected areas with written reports under the direction of a qualified instructor. Generally available in all departments of the Division of Business Administration.

513, 523, 533. Readings.* Cr. 1, 2, or 3.
Assigned readings of selected literature with oral and written reports under the direction of the instructor. Registration, assignments, and conferences on an individual basis. Generally available in all departments in the Division of Business Administration.

524, 534. Seminar.* Cr. 2 or 3.
Group and individual investigation of areas of particular interest with regularly scheduled reports and discussions under the direction of the instructor. On the graduate level this type of instruction replaces the more formal lecture approach typical at the undergraduate level. Generally available in all departments in the Division of Business Administration.

631-2. Thesis. Cr. 6.

For general details of the graduate programs in this College, refer to the section "Graduate School."

*Typical of standard courses available are: C.P.A. Problems; Market Research; Readings in Current Economic Theory; and Guidance in Business Education, in addition to the more individualized subject matter combinations to care for special student needs.

DIVISION OF ENGINEERING

DYSART E. HOLCOMB, *Dean*

The importance of the Division of Engineering is stressed in the first section of the bill of 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 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 a five-year curricula in architecture and advertising art and design are offered leading to the Degrees of Bachelor of Architecture and Bachelor of Advertising Art and Design, respectively.

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, the researcher, or the supervisor of manufacturing operations.

Engineering training is recognized as desirable preparation for a commercial career. From 60 to 70 percent of engineering graduates in the past have eventually held executive positions. Surveys of employment records of engineering graduates disclose the fact that men who 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. The student who expects to enter the profession of engineering or architecture should not only attain proficiency in his field, but must display as a student those qualities which will be expected of him upon entering his profession, namely absolute honesty in his work, a sense of fair play toward his associates, and a high degree of integrity.

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.

Electives in any curriculum must be approved by the head of the department in which the student seeks the degree 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 incurred prior to September 1953 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 Air Science or 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 Air Science or Military Science. All students are eligible for the Air Force Generalized Curriculum and for the Military Science Infantry Unit. 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. Other students desiring Signal Corps work may contact the Military Science Department for consideration of their background.

It is recommended that all students majoring in chemical engineering, who contemplate undertaking graduate work, acquire a reading knowledge of German.

FIVE-YEAR PROGRAM LEADING TO BACHELOR OF ARTS DEGREE AND BACHELOR OF SCIENCE DEGREE IN ENGINEERING

In order that the student may have a greater opportunity to broaden his general educational studies in the arts and sciences and thus obtain a more complete and well-rounded engineering education, a combination program is offered whereby a student may obtain a Bachelor of Arts Degree and a Bachelor of Science Degree. The student enrolls in the Arts and Sciences Division for the first three years as a pre-engineering student, and in the Division of Engineering for the last two years. Upon successful completion of the five-year program the student is awarded both degrees. Under this program the student can take some of the freshman and sophomore engineering subjects during the first three years and then complete the junior and senior engineering courses in two long sessions and one summer session.

The Degree of Bachelor of Arts may be obtained by completing three years of work in the Division of Arts and Sciences, totaling a minimum of 100 semester hours. This work must satisfy all graduation requirements for the Bachelor of Arts Degree at Texas Technological College with the exception of major requirements. The student must have a minimum grade point average of 1.0 based on the first three years work before he will be allowed to enroll in the Division of Engineering.

Electives scheduled during the time in which the student is enrolled in the Division of Engineering are subject to the approval of the head of the department. Advanced ROTC may be used in some cases for elective credit.

Students desiring to take advantage of the Latin-American Area Studies Program may do so under the five-year program. The student should plan to attend a minimum of at least one additional summer session in order to complete the program.

Students who plan to enroll under the five-year program should first consult with the Dean of Engineering before enrolling in the Division of Arts and Sciences. The College entrance requirements pertaining to high school mathematics and physics as outlined under the section titled "Uniform Requirements for Admission—Special Requirements for a Particular Curriculum" also apply to those students enrolling in the five-year program.

The suggested sequence of courses for the five-year program is outlined for each curriculum on the following pages.

CURRICULA IN DIVISION OF ENGINEERING

Uniform Freshman Year—Four-Year Program

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

First Semester	Credit	Second Semester	Credit
E. D. 131—Engineering Drawing	3	E. Dr. 121—Engineering Drawing	2
Math. 121—Alg., Math. 131—Trig. or	5	Math. 122—Alg., Math 132—Anal., or	5
Math. 151—Algebra & Trigonometry	5	Math. 152—Alg. & Anal. Geom.	5
Eng. 131—English Composition	3	Eng. 132—English Composition	3
Chem. 141—General Chemistry	4	Chem. 142—General Chemistry	4
P.E., or Band, or	1	Govt. 233—American Government	3
ROTC	2	P.E., or Band, or	1
Or. 111—Orientation	1	ROTC	2
	17-18		18-19

Uniform Freshman Year—Five-Year Program

To be used with curricula in Chemical, Civil, Electrical, Industrial, Mechanical, Petroleum, and Textile Engineering in conjunction with the Bachelor of Arts Degree.

First Semester	Credit	Second Semester	Credit
Eng. 131—English Composition	3	Eng. 132—English Composition	3
Govt. 233—Amer. Govt., Org.	3	Govt. 234—Amer. Govt., Funct.	3
Hist. 131—History of Civilization	3	Hist. 132—History of Civilization	3
Chem. 141—General Chemistry	4	Chem. 142—General Chemistry	4
Math. 121—Algebra	2	Math. 122—Algebra	2
P.E., or Band, or	1	P.E., or Band, or	1
ROTC	2	ROTC	2
	16-17		16-17

CHEMICAL ENGINEERING CURRICULA
BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

Four-Year Program

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Chem. 231—Qualitative Analysis	3	Chem. 232—Inorganic Chemistry	3
Chem. 331—Quantitative Analysis	3	Chem. 332—Quantitative Analysis	3
Math. 251—Calculus	5	Ch.E. 244—Introduction to Ch.E.	4
Phys. 235—Engineering Physics	3	Phys. 236—Engineering Physics	3
Phys. 215—Physical Measurements	1	Phys. 216—Physical Measurements	1
Eng. 233—Technical Writing	3	Math. 332—Differential Equations	3
P.E., ROTC, or Band	1	P.E., ROTC, or Band	1
	19		18

Junior Year

First Semester	Credit	Second Semester	Credit
Chem. 353—Organic Chemistry	5	Chem. 354—Organic Chemistry	5
Chem. 441—Physical Chemistry	4	Chem. 442—Physical Chemistry	4
Ch.E. 331—Principles of Ch.E.	3	Ch.E. 332—Principles of Ch.E.	3
Chem. 411—Chemical Seminar	1	Chem. 412—Chemical Seminar	1
E.E. 328—Elements of E.E.	2	E.E. 329—Elements of E.E.	2
E.E. 318—E.E. Laboratory	1	E.E. 319—E.E. Laboratory	1
C.E. 233—Statics	3	C.E. 333—Strength of Materials	3
	19		19

Senior Year

First Semester	Credit	Second Semester	Credit
Ch.E. 431—Unit Processes	3	Ch.E. 432—Process Development	3
Ch.E. 433—Ch.E. Thermodynamics	3	Ch.E. 434—Ch.E. Thermodynamics	3
Ch.E. 425—Unit Operations Lab.	2	Ch.E. 426—Unit Operations Lab.	2
Ch.E. 437—Principles of Ch.E. III	3	Ch.E. 430—Ch.E. Plant Design	3
Ch.E. 435—Instrumentation	3	Speech 338—Bus. and Prof. Speech	3
I.E. 332—Management (or elective)	3	Elective	3
	17		17

Minimum hours required for graduation—140 and P.E., ROTC, or Band.

Electives: Choices from the following are suggested: M. E. 335, Chem. 434, Chem. 438, Chem. 439, Ch.E. 438, and Pet.E. 330. Advanced ROTC may be substituted for Speech 338 and three hours of electives. Other courses may be chosen subject to the approval of the head of the department.

FIVE-YEAR PROGRAM LEADING TO DEGREES OF BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING AND BACHELOR OF ARTS

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 231—Masterpieces of Literature	3	Eng. 232—Masterpieces of Literature	3
Social Science	3	E.Dr. 131—Engineering Drawing	3
Foreign Language	3	Foreign Language	3
Math 131—Trigonometry	3	Math. 132—Analytic Geometry	3
Chem. 231—Qualitative Analysis	3	Chem. 232—Inorganic Chemistry	3
P.E., Band, or ROTC	1	P.E., Band, or ROTC	1
	16		16

Junior Year

First Semester	Credit	Second Semester	Credit
Math. 251—Calculus	5	Phys 236—Engineering Physics	3
Phys. 235—Engineering Physics	3	Phys. 216—Physical Measurements	1
Phys. 215—Physical Measurements	1	Biological Science	3
E.Dr. 121—Engineering Drawing	2	Social Science	3
Biological Science	3	Foreign Language	3
Foreign Language	3	Ch.E. 244—Intro. to Ch.E.	4
	17		17

Summer Session

First Term	Credit	Second Term	Credit
Chem. 331—Quantitative Analysis	3	Chem. 332—Quantitative Analysis	3
Math.332—Differential Equations	3	C.E. 233—Statics	3
	6		6

Fourth Year

First Semester	Credit	Second Semester	Credit
Chem. 353—Organic Chemistry	5	Chem. 354—Organic Chemistry	5
Chem. 441—Physical Chemistry	4	Chem. 442—Physical Chemistry	4
Ch.E. 331—Prin. of Ch. E.	3	Ch.E. 332—Prin. of Ch.E.	3
Chem. 411—Chemistry Seminar	1	Chem. 412—Chemistry Seminar	1
I.E. 332—Management	3	C.E. 333—Strength of Materials	3
	16		16

Fifth Year

First Semester	Credit	Second Semester	Credit
Ch.E. 431—Unit Processes	3	Ch.E. 432—Process Development	3
Ch.E. 433—Ch.E. Thermodynamics	3	Ch.E. 434—Ch.E. Thermodynamics	3
Ch.E. 425—Unit Operations Lab.	2	Ch.E. 426—Unit Operations Lab.	2
Ch.E. 437—Principles of Ch.E. III	3	Ch.E. 430—Ch.E. Plant Design	3
Ch.E. 435—Instrumentation	3	Speech 338—Bus. and Prof. Speech	3
E.E. 328—Elements of E.E.	2	E.E. 329—Elements of E.E.	2
E.E. 318—E.E. Laboratory	1	E.E. 319—E.E. Laboratory	1
	17		17

Minimum hours required for graduation—174 and P.E., ROTC, or Band.

CIVIL ENGINEERING CURRICULA
BACHELOR OF SCIENCE IN CIVIL ENGINEERING

Four-Year Program

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—Calculus	5	Math. 331—Applications of Calculus	3
Phys. 235—Engineering Physics	3	Phys. 236—Engineering Physics	3
Phys. 215—Physical Measurements	1	Phys. 216—Physical Measurements	1
Geol. 233—Geology for Engineers	3	C.E. 233—Statics	3
Eco. 235—Principles of Economics	3	Eng. 233—Technical Writing	3
P.E., Band, or ROTC	1	P.E., Band, or ROTC	1
	19		17

Junior Year

First Semester	Credit	Second Semester	Credit
C.E. 320—Structures	3	C.E. 330—Structures	3
C.E. 321—Municipal Sanitation	2	C.E. 334—Surveying	3
C.E. 332—Kinematics and Kinetics	3	C.E. 333—Strength of Materials	3
C.E. 335—Highway Engineering	3	C.E. 336—Highway Engineering	3
C.E. 339—Fluid Mechanics	3	C.E. 3311—Hydraulics Machinery, or	
M.E. 334—Elements of Heat Engr.	3	M.E. 335—Elements of Heat Engr.	3
C.E. 311—Highway Laboratory	1	Speech 338—Bus. and Prof. Speech	3
C.E. 312—Fluid Mechanics Laboratory	1		18
C.E. 313—Sanitation Laboratory	1		
	19		

Senior Year (Option A)

First Semester	Credit
C.E. 424—Materials	2
C.E. 423—Economics of H'way Design	2
C.E. 431—Reinforced Concrete	3
C.E. 433—Structures	3
E.E. 328—Elements of E.E.	2
E.E. 318—E.E. Laboratory	1
C.E. 439—Law & Ethics in E'neering	3
*Elective A	3
	19

Second Semester	Credit
C.E. 425—Materials	2
C.E. 4312—Soil Mechanics & F'dations	3
C.E. 432—Reinforced Concrete	3
C.E. 434—Structures	3
E.E. 329—Elements of E.E.	2
E.E. 319—E.E. Laboratory	1
*Elective A	3
	17

Minimum hours required for graduation—140 and P.E., ROTC, or Band.

Senior Year (Option B)

First Semester	Credit
C.E. 424—Materials	2
C.E. 423—Economics of H'way Design	2
C.E. 431—Reinforced Concrete	3
C.E. 433—Structures	3
C.E. 437—Water Supply & Treatment	3
C.E. 4313—San. Engi. Design—Water	3
E.E. 328—Elements of E.E.	2
E.E. 318—E.E. Laboratory	1
	19

Second Semester	Credit
C.E. 425—Materials	2
C.E. 439—Law & Ethics in E'neering	3
C.E. 4312—Soil Mechanics & F'dations	3
C.E. 438—Sewerage & Sewage Treat.	3
C.E. 4314—San. Engi. Design—Sewage	3
E.E. 329—Elements of E.E.	2
E.E. 319—E.E. Laboratory	1
	17

Minimum hours required for graduation—140 and P.E., ROTC, or Band. Advanced ROTC may be submitted for Speech 338, and M.E. 335 in accordance with catalog regulations.

FIVE YEAR PROGRAM LEADING TO DEGREES OF BACHELOR OF SCIENCE IN CIVIL ENGINEERING AND BACHELOR OF ARTS

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit
Eng. 231—Masterpieces of Literature	3
E.Dr. 131—Engineering Drawing	3
Foreign Language	3
Math. 131—Trigonometry	3
Geol. 131—General Geology	3
P.E., Band, or ROTC	1
	16

Second Semester	Credit
Eng. 232—Masterpieces of Literature	3
E.Dr. 121—Engineering Drawing	2
Foreign Language	3
Math. 132—Analytic Geometry	3
Geol. 132—General Geology	3
P.E., Band, or ROTC	1
	15

Junior Year

First Semester	Credit
Math. 251—Calculus	5
Phys. 235—Engineering Physics	3
Phys. 215—Physical Measurements	1
Biological Science	3
Foreign Language	3
C.E. 231—Plane Surveying	3
	18

Second Semester	Credit
Math. 331—Applications of Calculus	3
Phys. 236—Engineering Physics	3
Phys. 216—Physical Measurements	1
Biological Science	3
Foreign Language	3
C.E. 232—Plane Surveying	3
	16

Summer Session

First Term	Credit
Eco. 235—Principles of Economics	3
C.E. 233—Statics	3
	6

Second Term	Credit
C.E. 439—Law & Ethics in E'neering	3
C.E. 332—Kinematics & Kinetics	3
	6

*Elective A. Six hours of continuous material are required subject to approval of head of department.

Fourth Year

First Semester	Credit
C.E. 320—Structures	2
C.E. 335—Highway Engineering	3
C.E. 339—Fluid Mechanics	3
C.E. 312—Fluid Mechanics Laboratory	1
C.E. 321—Municipal Sanitation	2
C.E. 313—Sanitation Laboratory	1
C.E. 311—Highway Laboratory	1
M.E. 334—Elements of Heat Engr.	3
	16

Second Semester	Credit
C.E. 330—Structures	3
C.E. 333—Strength of Materials	3
C.E. 334—Surveying	3
C.E. 336—Highway Engineering	3
M.E. 335—Elements of Heat Engr. or	
C.E. 3311—Hydraulics Machinery	3
Speech 338—Bus. & Prof. Speech	3
	18

Fifth Year (Option A)

First Semester	Credit
C.E. 424—Materials	2
C.E. 423—Economics of H'way Design	2
C.E. 431—Reinforced Concrete	3
C.E. 433—Structures	3
E.E. 328—Elements of E.E.	2
E.E. 318—E.E. Laboratory	1
Social Science	3
	16

Second Semester	Credit
C.E. 425—Materials	2
C.E. 4312—Soil Mechanics & F'dations	3
C.E. 432—Reinforced Concrete	3
C.E. 434—Structures	3
E.E. 329—Elements of E.E.	1
E.E. 319—E.E. Laboratory	1
Elective	3
	17

Minimum hours required for graduation—172 and P.E., or ROTC, or Band.

Fifth Year (Option B)

First Semester	Credit
C.E. 424—Materials	2
C.E. 423—Economics of H'way Design	2
C.E. 431—Reinforced Concrete	3
C.E. 433—Structures	3
C.E. 437—Water Supply & Treatment	3
C.E. 4313—San. Engi. Design—Water	3
E.E. 328—Elements of E.E.	2
E.E. 318—E.E. Laboratory	1
	19

Second Semester	Credit
C.E. 425—Materials	2
Social Science	3
C.E. 4312—Soil Mechanics & F'dations	3
C.E. 438—Sewerage	3
C.E. 4314—San. Eng. Design—Sewage	3
E.E. 329—Elements of E.E.	2
E.E. 319—E.E. Laboratory	1
	17

Minimum hours required for graduation—175 and P.E., or ROTC, or Band.

ELECTRICAL ENGINEERING CURRICULA
BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

Four-Year Program

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit
E.E. 231—Principles of E.E.	3
E.E. 221—E.E. Laboratory	2
Math. 251—Calculus	5
Phys. 235—Engineering Physics	3
Phys. 215—Physical Measurements	1
Eng. 233—Technical Writing	3
P.E., Band, or ROTC	1
	18

Second Semester	Credit
E.E. 235—Prin. of DC Machinery	3
E.E. 225—DC Machinery Laboratory	2
Math. 331—Applications of Calculus	3
Phys. 236—Engineering Physics	3
Phys. 216—Physical Measurements	1
C.E. 233—Statics	3
Speech 338—Bus. and Prof. Speech	3
P.E., Band, or ROTC	1
	19

Junior Year

First Semester	Credit
E.E. 332—AC Circuits	3
E.E. 312—AC Circuits Laboratory	1
E.E. 321—Stat. Elec. & Mag. Fields	2
C.E. 332—Kinematics & Kinetics	3
M.E. 330—Engr. Thermo.	3
M.E. 313—Machine Shop	1
Math. 332—Differential Equations	3
Eco. 235—Principles of Economics	3
	19

Second Semester	Credit
E.E. 333—AC Circuits	3
E.E. 313—AC Circuits Laboratory	1
E.E. 337—Electronics	3
E.E. 317—Electronics Laboratory	1
M.E. 331—Engr. Thermo.	3
M.E. 318—Heat Engr. Lab.	1
C.E. 333—Strength of Materials	3
Electives	3
	18

Senior Year

First Semester	Credit
E.E. 4312—AC Machines	3
E.E. 4112—AC Machines Laboratory	1
E.E. 4315—Vac. Tube Cir. & Sys.	3
E.E. 4115—Vacuum Tube Circuits Lab.	1
E.E. 4221—Control System Instru.	2
E.E. 4121—Instrumentation Lab.	1
E.E. 4323—Electrical Trans. Lines	3
Electives	4
	18

Second Semester	Credit
E.E. 4313—AC Machines	3
E.E. 4113—AC Machines Laboratory	1
E.E. 4316—Vac. Tube Cir. & Sys.	3
E.E. 4116—Vacuum Tube Circuits Lab.	1
E.E. 4222—Control System Instru.	2
E.E. 4122—Insrumentation Lab.	1
E.E. 4224—Electrical Trans. Lines	2
E.E. 4124—Transmission Lines Lab.	1
Electives	3
	17

Minimum hours required for graduation—140 and P.E., ROTC, or Band.

FIVE-YEAR PROGRAM LEADING TO DEGREES OF BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING AND BACHELOR OF ARTS

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit
Eng. 231—Masterpieces of Literature	3
E.Dr. 131—Engineering Drawing	3
Foreign Language	3
Math. 131—Trigonometry	3
Eco. 235—Principles of Economics	3
P.E., Band, or ROTC	1
	16

Second Semester	Credit
Eng. 232—Masterpieces of Literature	3
E.Dr. 121—Engineering Drawing	2
Foreign Language	3
Math. 132—Analytic Geometry	3
Social Science	3
P.E., Band, or ROTC	1
	15

Junior Year

First Semester	Credit
Math. 251—Calculus	5
Phys. 235—Engineering Physics	3
Phys. 215—Physical Measurements	1
Biological Science or Elective	3
Elective	2
Foreign Language	3
	17

Second Semester	Credit
Math. 331—Applications of Calculus	3
Phys. 236—Engineering Physics	3
Phys. 216—Physical Measurements	1
Biological Science or Elective	3
C.E. 233—Statics	3
Foreign Language	3
	16

Summer Session

First Term	Credit
E.E. 231—Principles of E.E.	3
E.E. 221—E.E. Laboratory	2
	5

Second Term	Credit
E.E. 235—Principles of E.E.	3
E.E. 225—E.E. Laboratory	2
	5

Fourth Year

First Semester	Credit
E.E. 332—A.C. Current Circuits	3
E.E. 312—A.C. Circuits Laboratory	1
E.E. 321—Stat. Elec. & Mag. Fields	2
C.E. 332—Kinematics and Kinetics	3
M.E. 330—Engr. Thermo.	3
M.E. 313—Machine Shop	1
Math. 332—Differential Equations	3
Speech 338—Bus. & Prof. Speech	3
	19

Second Semester	Credit
E.E. 333—A.C. Circuits	3
E.E. 313—A.C. Circuits Laboratory	1
E.E. 337—Electronics	3
E.E. 317—Electronics Laboratory	1
M.E. 331—Engr. Thermo.	3
M.E. 318—Heat Engr. Lab.	1
C.E. 333—Strength of Materials	3
Electives	3
	18

Fifth Year

First Semester	Credit
E.E. 4312—A.C. Machines	3
E.E. 4112—A.C. Machines Lab.	1
E.E. 4315—Vac. Tube Cir. & Sys.	3
E.E. 4115—Vacuum Tube Circuits Lab.	1
E.E. 4221—Control System Instru.	2
E.E. 4121—Instrumentation Lab.	1
E.E. 4323—Electrical Trans. Lines	3
Electives	2
	16

Second Semester	Credit
E.E. 4313—A.C. Machines	3
E.E. 4113—A.C. Machines Lab.	1
E.E. 4316—Vac. Tube Circ. & Sys.	3
E.E. 4116—Vac. Tube Circ.	1
E.E. 4222—Control System Instru.	2
E.E. 4122—Instrumentation Lab.	1
E.E. 4224—Electrical Trans. Lines	2
E.E. 4124—Transmission Lines Lab.	1
Electives	3
	17

Minimum hours required for graduation—172 and P.E., ROTC, or Band.

INDUSTRIAL ENGINEERING CURRICULA
BACHELOR OF SCIENCE IN INDUSTRIAL ENGINEERING

Four-Year Program

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit
E.Dr. 221—Machine Drawing	2
Math. 251—Calculus	5
Phys. 235—Engineering Physics	3
Phys. 215—Physical Measurements	1
Psy. 230—Introduction to Psychology	3
C.E. 231—Plane Surveying	3
P.E., Band, or ROTC	1
	18

Second Semester	Credit
E.Dr. 222—Descriptive Geometry	2
Math. 331—Applications of Calculus	3
Phys. 236—Engineering Physics	3
Phys. 216—Physical Measurements	1
C.E. 233—Statics	3
Acct. 231—Ind. Acct. for Engineers	3
Eng. 233—Technical Writing	3
P.E., Band, or ROTC	1
	19

Junior Year

First Semester	Credit
I.E. 321—Industrial Relations	2
I.E. 332—Ind. Org. & Mgt.	3
I.E. 333—Manufacturing Processes	3
Eco. 235—Principles of Economics	3
M.E. 334—Elements of Heat Engr.	3
M.E. 313—Machine Shop	1
M.E. 311—Pattern Shop	1
Fin. 338—Business Law	3
	19

Second Semester	Credit
I.E. 331—Motion and Time Study	3
I.E. 336—Tool Design	3
I.E. 337—Prod. Plan. & Control	3
C.E. 333—Strength of Materials	3
M.E. 316—Welding Practice	1
M.E. 335—Elements of Heat Engr.	3
Speech 338—Bus. and Pro. Speech	3
	19

Senior Year

First Semester	Credit	Second Semester	Credit
E.Sem. 412—Engineering Seminar	1	I.E. 411—Ind. Engr. Problems	1
I.E. 432—Ind. Plant Design	3	I.E. 423—Industrial Procurement	2
I.E. 436—Engineering Economy	3	I.E. 433—Industrial Plant Design	3
I.E. 437—Quality Control	3	I.E. 435—Safety Engineering	3
M.E. 312—Foundry Practice	1	E.E. 339—Elements of E.E.	3
E.E. 338—Elements of E.E.	3	E.E. 319—E.E. Laboratory	1
E.E. 318—E.E. Laboratory	1	Elective	3
Elective	3		16
	18		

Minimum hours required for graduation—140 and P.E., ROTC, or Band. Advanced ROTC may be substituted for six hours of electives.

FIVE-YEAR PROGRAM LEADING TO DEGREES OF BACHELOR OF SCIENCE IN INDUSTRIAL ENGINEERING AND BACHELOR OF ARTS

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 231—Masterpieces of Literature	3	Eng. 232—Masterpieces of Literature	3
E.Dr. 131—Engineering Drawing	3	E.Dr. 121—Engineering Drawing	2
Foreign Language	3	Foreign Language	3
Math. 131—Trigonometry	3	Math. 132—Analytic Geometry	3
Eco. 235—Principles of Economics	3	Social Science	3
P.E., Band, or ROTC	1	P.E., Band, or ROTC	1
	16		15

Junior Year

First Semester	Credit	Second Semester	Credit
Math. 251—Calculus	5	Math. 331—Applications of Calculus	3
Foreign Language	3	Foreign Language	3
Phys. 235—Engineering Physics	3	Phys. 236—Engineering Physics	3
Phys. 215—Physical Measurements	1	Phys. 216—Physical Measurements	1
M.E. 313—Machine Shop	1	Speech. 338—Bus. and Pro. Speech	3
Biological Science	3	Biological Science	3
	16		16

Summer Session

First Term	Credit	Second Term	Credit
Psy. 230—Introduction to Psychology	3	C.E. 333—Strength of Materials	3
C.E. 233—Statics	3	Elective	3
	6		6

Fourth Year

First Semester	Credit	Second Semester	Credit
C.E. 231—Plane Surveying	3	I.E. 331—Motion and Time Study	3
I.E. 332—Ind. Organization and Mgt.	3	I.E. 336—Tool Design	3
I.E. 333—Manufacturing Processes	3	I.E. 337—Prod. Planning & Control	3
M.E. 334—Elements of Heat Engr.	3	M.E. 335—Elements of Heat Engr.	3
E.Dr. 221—Machine Drawing	2	E.Dr. 222—Descriptive Geometry	2
Fin. 338—Business Law	3	Acct. 231—Ind. Acct. for Engineers	3
	17		17

Fifth Year

First Semester	Credit	Second Semester	Credit
E.Sem. 412—Engineering Seminar	1	I.E. 411—Ind. Engineering Problems	1
I.E. 321—Industrial Relations	2	I.E. 423—Industrial Procurement	2
I.E. 432—Industrial Plant Design	3	I.E. 433—Industrial Plant Design	3
I.E. 436—Engineering Economy	3	I.E. 435—Safety Engineering	3
I.E. 437—Quality Control	3	E.E. 339—Elements of E.E.	3
M.E. 311—Pattern Shop	1	E.E. 319—E.E. Laboratory	1
M.E. 312—Foundry Practice	1	M.E. 316—Welding Practice	1
E.E. 338—Elements of E.E.	3	Elective	3
E.E. 318—E.E. Laboratory	1		
	18		17

Minimum hours required for graduation—172 and P.E., ROTC, or Band.

MECHANICAL ENGINEERING CURRICULA
BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

Four-Year Program

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Math. 251—Calculus	5	Math. 331—Applications of Calculus	3
Phys. 215—Phys. Meas.	1	Phys. 216—Phys. Meas.	1
Phys. 235—Engineering Physics	3	Phys. 236—Engineering Physics	3
E.Dwg. 221—Machine Drawing	2	C.E. 233—Statics	3
Eng. 233—Technical Writing	3	M.E. 215—Heat Engr. Prob.	1
Econ. 235—Principles of Economics	3	M.E. 237—Metallurgy	3
P.E., Band, or ROTC	1	M.E. 335—Elements of Heat Engr.	3
	17	P.E., Band, or ROTC	1
			18

Junior Year

First Semester	Credit	Second Semester	Credit
M.E. 311—Pattern Shop	1	M.E. 314—Machine Shop	1
M.E. 312—Foundry Practice	1	M.E. 316—Welding Practice	1
M.E. 313—Machine Shop	1	M.E. 331—Engr. Thermo.	3
M.E. 329—Mechanics of Machinery	2	M.E. 339—Mech. of Mach.	3
M.E. 330—Engr. Thermo.	3	I.E. 332—Ind. Org. Mgt.	3
C.E. 332—Kinematics and Kinetics	3	C.E. 333—Strength of Materials	3
E.E. 318—E.E. Lab.	1	E.E. 319—E.E. Lab.	1
E.E. 338—Elem. of E.E.	3	E.E. 339—Elem. of E.E.	3
Math. 332—Differential Equations	3		
	18		18

Senior Year

First Semester	Credit	Second Semester	Credit
M.E. 420—Special Problems	2	M.E. 425—Heat Transfer	2
M.E. 421—Heat Power Lab.	2	M.E. 427—Dynamics, or	
M.E. 426—Dynamics, or		M.E. 429—Air Conditioning	2
M.E. 428—Air Conditioning	2	M.E. 431—Heat Power Lab.	3
M.E. 433—Combustion Engines	3	M.E. 432—Heat Power Des.	3
M.E. 435—Fluid Dynamics	3	M.E. 437—Mechanical Design	3
M.E. 436—Mechanical Design	3	Elective	4
Elective	2		
	17		17

Minimum hours required for graduation—137 and P.E., ROTC, or Band. Advanced ROTC may be used for 6 hours of electives in accordance with catalog regulations.

FIVE YEAR PROGRAM LEADING TO DEGREES OF BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING AND BACHELOR OF ARTS

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 231—Masterpieces of Literature	3	Eng. 232—Masterpieces of Literature	3
E.Dr. 131—Engineering Drawing	3	E.Dr. 121—Engineering Drawing	2
Math. 131—Trigonometry	3	Math. 132—Analytic Geometry	3
Econ. 235—Principles of Economics	3	Social Science	3
Foreign Language	3	Foreign Language	3
P.E., Band, or ROTC	1	P.E., Band, or ROTC	1
	16		15

Junior Year

First Semester	Credit	Second Semester	Credit
Math. 251—Calculus	5	Math. 331—Applications of Calculus	3
Phys. 215—Physical Measurements	1	Math. 332—Differential Equations	3
Phys. 235—Engineering Physics	3	Phys. 216—Physical Measurements	1
E.Dr. 221—Machine Drawing	2	Phys. 236—Engineering Physics	3
Foreign Language	3	Foreign Language	3
Biological Science	3	Biological Science	3
	17		16

Summer Session

First Term	Credit	Second Term	Credit
M.E. 237—Metallurgy	3	C.E. 233—Statics	3
M.E. 313—Machine Shop	1	M.E. 335—Elem. Heat Engr.	3
M.E. 314—Machine Shop	1	M.E. 315—Heat Eng. Prob.	1
	5		7

Fourth Year

First Semester	Credit	Second Semester	Credit
M.E. 311—Pattern Shop	1	M.E. 316—Welding Practice	1
M.E. 312—Foundry Practice	1	M.E. 331—Engr. Thermo.	3
M.E. 329—Mechanics of Machinery	2	M.E. 339—Mechanics of Machinery	3
M.E. 330—Engr. Thermo.	3	I.E. 332—Ind. Org. Mgmt.	3
C.E. 332—Kinematics and Kinetics	3	C.E. 333—Strength of Materials	3
E.E. 318—E.E. Laboratory	1	E.E. 319—E.E. Laboratory	1
E.E. 338—Elements of E.E.	3	E.E. 339—Elements of E.E.	3
Elective	3		
	17		17

Fifth Year

First Semester	Credit	Second Semester	Credit
M.E. 420—Special Problems	2	M.E. 425—Heat Transfer	2
M.E. 421—Heat Power Lab.	2	M.E. 427—Dynamics, or	
M.E. 426—Dynamics, or		M.E. 429—Air Conditioning	2
M.E. 428—Air Conditioning	2	M.E. 431—Heat Power Lab.	3
M.E. 433—Combustion Engines	3	M.E. 432—Heat Power Des.	3
M.E. 435—Fluid Dynamics	3	M.E. 437—Mechanical Design	3
M.E. 436—Mechanical Design	3	Elective	3
	15		17

Minimum hours required for graduation—172 and P.E., ROTC, or Band. Advanced ROTC may be used for 6 hours of electives in accordance with catalog regulations.

PETROLEUM ENGINEERING CURRICULA
BACHELOR OF SCIENCE IN PETROLEUM ENGINEERING

Production Option

Four-Year Program

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Pet.E. 230—Development Methods	3	Pet.E. 220—Drilling Fluids	2
Geol. 131—General Geology	3	Geol. 132—General Geology	3
Eng. 233—Technical Writing	3	Chem. 235—Hydrocarbons	3
Math. 251—Calculus	5	C.E. 233—Statics	3
Phys. 235—Engineering Physics	3	Phys. 236—Engineering Physics	3
Phys. 215—Physical Measurements	1	Phys. 216—Physical Measurements	1
P.E., Band, or ROTC	1	Math. 331—Applications of Calculus	3
	19	P.E., Band, or ROTC	1
			19

Junior Year

First Semester	Credit	Second Semester	Credit
Pet.E. 320—Well Logging	2	Pet.E. 333—Production Methods	3
Geol. 235—Advanced General Geology	3	Geol. 236—Adv. Historical Geology	3
Chem. 236—Analytical Chemistry	3	Eco. 235—Principles of Economics	3
C.E. 332—Kinematics & Kinetics	3	C.E. 333—Strength of Materials	3
C.E. 231—Surveying	3	C.E. 339—Fluid Mechanics	3
Math. 332—Differential Equations	3	C.E. 312—Fluid Mechanics Lab.	1
M.E. 330—Engr. Thermo.	3	M.E. 331—Engr. Thermo.	3
	20		19

Senior Year

First Semester	Credit	Second Semester	Credit
E.Sem. 412—Seminar	1	E.Sem. 412—Seminar	1
Pet.E. 414—Production Laboratory	1	Pet.E. 416—Reservoir Engr. Lab.	1
Pet.E. 433—Adv. Prod. Engr.	3	Pet.E. 436—Reservoir Engineering	3
Geol. 433—Structural Geology	3	Geol. 434—Petroleum Geology	3
E.E. 338—Elements of E.E.	3	E.E. 339—Elements of E.E.	3
E.E. 318—E.E. Laboratory	1	E.E. 319—E.E. Laboratory	1
M.E. 433—Combustion Engines	3	Fin. 3310—Oil & Gas Law	3
M.E. 318—Heat Engr. Lab.	1	Electives	3
Electives	3		18
	19		

Minimum hours required for graduation—145 and P.E., ROTC, or Band. Advanced ROTC may be substituted for electives in accordance with catalog regulations.

BACHELOR OF SCIENCE IN PETROLEUM ENGINEERING

Natural Gas Option

Four-Year Program

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Pet.E. 230—Development Methods	3	Pet.E. 220—Drilling Fluids	2
Geol. 131—General Geology	3	Geol. 132—General Geology	3
Eng. 233—Technical Writing	3	Chem. 235—Hydrocarbons	3
Math. 251—Calculus	5	C.E. 233—Statics	3
Phys. 235—Engineering Physics	3	Phys. 236—Engineering Physics	3
Phys. 215—Physical Measurements	1	Phys. 216—Physical Measurements	1
P.E., Band, or ROTC	1	Math. 331—Applications of Calculus	3
	19	P.E., Band, or ROTC	1
			19

Junior Year

First Semester	Credit	Second Semester	Credit
Pet.E. 321—Phase Behavior	2	Pet.E. 333—Production Methods	3
Geol. 235—Advanced General Geology	3	Geol. 236—Adv. Historical Geology	3
Chem. 236—Analytical Chemistry	3	Eco. 235—Principles of Economics	3
C.E. 332—Kinematics & Kinetics	3	C.E. 333—Strength of Materials	3
C.E. 231—Surveying	3	C.E. 339—Fluid Mechanics	3
Math. 332—Differential Equations	3	C.E. 312—Fluid Mechanics Lab.	1
M.E. 330—Engr. Thermo.	3	M.E. 331—Engr. Thermo.	3
	20		19

Senior Year

First Semester	Credit	Second Semester	Credit
E.Sem. 412—Seminar	1	E.Sem. 412—Seminar	1
Pet.E. 434—Natural Gas Engr.	3	Pet.E. 435—Advan. Nat. Gas Engr.	3
Geol. 433—Structural Geology	3	Geol. 434—Petroleum Geology	3
E.E. 338—Elements of E.E.	3	E.E. 339—Elements of E.E.	3
E.E. 318—E.E. Laboratory	1	E.E. 319—E.E. Laboratory	1
M.E. 433—Combustion Engines	3	Pet.E. 413—Natural Gas Lab.	1
M.E. 318—Heat Engr. Lab.	1	Fin. 3310—Oil and Gas Law	3
Electives	3	Electives	3
	18		18

Minimum hours required for graduation—144 and P.E., ROTC, or Band. Advanced ROTC may be substituted for electives in accordance with catalog regulations.

FIVE-YEAR PROGRAM LEADING TO DEGREES OF BACHELOR OF SCIENCE IN PETROLEUM ENGINEERING AND BACHELOR OF ARTS

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 231—Masterpieces of Literature	3	Eng. 232—Masterpieces of Literature	3
E.Dr. 131—Engineering Drawing	3	E.Dr. 121—Engineering Drawing	2
Foreign Language	3	Foreign Language	3
Math. 131—Trigonometry	3	Math. 132—Analytic Geometry	3
Geol. 131—General Geology	3	Geol. 132—General Geology	3
P.E., Band, or ROTC	1	P.E., Band, or ROTC	1
	16		15

Junior Year

First Semester	Credit	Second Semester	Credit
Math. 251—Calculus	5	Math. 331—Applications of Calculus	3
Foreign Language	3	Foreign Language	3
Phys. 235—Engineering Physics	3	Phys. 236—Engineering Physics	3
Phys. 215—Physical Measurements	1	Phys. 216—Physical Measurements	1
Biological Science	3	Biological Science	3
Pet.E. 230—Development Methods	3	Pet.E. 220—Drilling Fluids	2
	18		15

Summer Session

First Term	Credit	Second Term	Credit
C.E. 233—Statics	3	C.E. 332—Kinematics & Kinetics	3
Math. 332—Differential Equations	3	C.E. 231—Surveying	3
	6		6

Fourth Year

Production Option

First Semester	Credit
Pet.E. 320—Well Logging	2
Geol. 235—Advanced General Geology	3
Chem. 236—Analytical Chemistry	3
M.E. 330—Engr. Thermo.	3
Eco. 235—Principles of Economics	3
Social Science	3
	17

Second Semester	Credit
Pet.E. 333—Production Methods	3
Geol. 236—Adv. Historical Geology	3
C.E. 333—Strength of Materials	3
M.E. 331—Engr. Thermo.	3
C.E. 339—Fluid Mechanics	3
C.E. 312—Fluid Mechanics Lab.	1
Chem. 235—Hydrocarbons	3
	19

Fifth Year

First Semester	Credit
E.Sem. 412—Seminar	1
Pet.E. 414—Production Lab.	1
Pet.E. 433—Advanced Prod. Engr.	3
Geol. 433—Structural Geology	3
E.E. 338—Elements of E.E.	3
E.E. 318—E.E. Laboratory	1
M.E. 433—Combustion Engines	3
M.E. 318—Heat Engr. Lab.	1
Elective	3
	19

Second Semester	Credit
E.Sem. 412—Seminar	1
Pet.E. 416—Reservoir Engr. Lab.	1
Pet.E. 436—Reservoir Engineering	3
Geol. 434—Petroleum Geology	3
E.E. 339—Elements of E.E.	3
E.E. 319—E.E. Laboratory	1
Fin. 3310—Oil & Gas Law	3
Elective	3
	18

Minimum hours required for graduation—177 and P.E., ROTC, or Band. Advanced ROTC may be substituted for electives in accordance with catalog regulations.

Fourth Year

Natural Gas Option

First Semester	Credit
Pet.E. 321—Phase Behavior	2
Geol. 235—Adv. General Geology	3
Chem. 236—Analytical Chemistry	3
M.E. 330—Engr. Thermo.	3
Eco. 235—Principles of Economics	3
Social Science	3
	17

Second Semester	Credit
Pet.E. 333—Production Methods	3
Geol. 236—Adv. Historical Geology	3
C.E. 333—Strength of Materials	3
M.E. 331—Engr. Thermo.	3
C.E. 339—Fluid Mechanics	3
C.E. 312—Fluid Mechanics Lab.	1
Chem. 235—Hydrocarbons	3
	19

Fifth Year

First Semester	Credit
E.Sem. 412—Seminar	1
Pet.E. 434—Natural Gas. Engr.	3
Geol. 433—Structural Geology	3
E.E. 338—Elements of E.E.	3
E.E. 318—E.E. Laboratory	1
M.E. 433—Combustion Engines	3
M.E. 318—Heat Engr. Lab.	1
Elective	3
	18

Second Semester	Credit
E.Sem. 412—Seminar	1
Pet.E. 435—Advan. Nat. Gas Engr.	3
Geol. 434—Petroleum Geology	3
Pet.E. 413—Natural Gas Lab.	1
E.E. 339—Elements of E.E.	3
E.E. 319—E.E. Laboratory	1
Fin. 3310—Oil & Gas Law	3
Elective	3
	18

Minimum hours required for graduation—176 and P.E., ROTC or Band. Advanced ROTC may be substituted for electives in accordance with catalog regulations.

TEXTILE ENGINEERING CURRICULA
BACHELOR OF SCIENCE IN TEXTILE ENGINEERING

Four-Year Program

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
T.E. 234—Cotton Class. & Mkt.	3	T.E. 230—Elem. Yarn Manufacturing	3
Math. 251—Calculus	5	Eco. 235—Economics	3
Math. 238—Statistics	3	C.E. 233—Statics	3
Phys. 235—Engineering Physics	3	Chem. 341—Organic Chemistry	4
Phys. 215—Physical Measurements	1	Phys. 236—Engineering Physics	3
T.E. 235—Textile Fibers	3	Phys. 216—Physical Measurements	1
P.E., Band, or ROTC	1	P.E., Band, or ROTC	1
	19		18

Junior Year

First Semester	Credit	Second Semester	Credit
T.E. 331—Yarn Manufacturing	3	T.E. 332—Yarn Preparation	3
T.E. 333—Bleaching and Dyeing	3	T.E. 334—Bleaching and Dyeing	3
T.E. 335—Weaving and Design	3	T.E. 336—Weaving and Design	3
M.E. 334—Elements of Heat Engr.	3	M.E. 335—Elements of Heat Engr.	3
M.E. 329—Mechanics of Machinery	2	I.E. 331—Motion and Time Study	3
Eng. 233—Technical Writing	3	Elective in English	3
	17		18

Senior Year

First Semester	Credit	Second Semester	Credit
T.E. 437—Textile Costing	3	T.E. 438—Mill Organization	3
T.E. 431—Fab. Anal. & Adv. Design	3	T.E. 430—Mill Qual. Con. & T.T.	3
T.E. 433—Chem. of Dye. & Intermed.	3	T.E. 434—Chem. of Dye. & Intermed.	3
E.E. 328—Elements of E.E.	2	E.E. 329—Elements of E.E.	2
E.E. 318—E.E. Laboratory	1	E.E. 319—E.E. Laboratory	1
Technical Electives	3	T.E. 432—Man-Made Fibers	3
Electives	3	Technical Electives	3
	18		18

Minimum hours required for graduation—139 and P.E., ROTC, or Band. Advanced ROTC may be substituted for electives in accordance with catalog regulations.

FIVE YEAR PROGRAM LEADING TO DEGREES OF BACHELOR OF SCIENCE IN TEXTILE ENGINEERING AND BACHELOR OF ARTS

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 231—Masterpieces of Literature	3	Eng. 232—Masterpieces of Literature	3
E.Dr. 131—Engineering Drawing	3	E.Dr. 121—Engineering Drawing	2
Foreign Language	3	Foreign Language	3
Math. 131—Trigonometry	3	Math. 132—Analytic Geometry	3
Eco. 235—Principles of Economics	3	Social Science	3
P.E., ROTC, or Band	1	P.E., ROTC, or Band	1
	16		15

Junior Year

First Semester	Credit	Second Semester	Credit
Math. 251—Calculus	5	Phys. 236—Engineering Physics	3
Phys. 235—Engineering Physics	3	Phys. 216—Physical Measurements	1
Phys. 215—Physical Measurements	1	T.E. 230—Ele. Yarn Manfacturing	3
T.E. 234—Cotton Classing & Marketing	3	Chem. 341—Organic Chemistry	4
Foreign Language	3	Foreign Language	3
	15	T.E. 235—Textile Fibers	3
			17

Summer Session

First Term	Credit	Second Term	Credit
Biological Science	3	Biological Science	3
Math. 238—Statistics	3	C.E. 233—Statics	3
	6		6

Fourth Year

First Semester	Credit	Second Semester	Credit
T.E. 331—Yarn Manufacturing	3	T.E. 332—Yarn Preparation	3
T.E. 333—Bleaching and Dyeing	3	T.E. 334—Bleaching and Dyeing	3
T.E. 335—Weaving and Design	3	T.E. 336—Weaving and Design	3
M.E. 334—Elements of Heat Engr.	3	M.E. 335—Elements of Heat Engr.	3
M.E. 329—Mechanics of Machinery	2	I.E. 331—Motion and Time Study	3
C.E. 333—Strength of Materials	3	Elective	3
	17		18

Fifth Year

First Semester	Credit	Second Semester	Credit
T.E. 437—Textile Costing	3	T.E. 438—Mill Organization	3
T.E. 431—Fab. Anal. & Adv. Jac. Des.	3	T.E. 430—Mill Qual. Cont. & Tex. Test.	3
T.E. 433—Chem. of Dyes. & Intermed	3	T.E. 434—Chem. of Dyes. & Intermed.	3
E.E. 328—Elements of E.E.	2	E.E. 329—Elements of E.E.	2
E.E. 318—E.E. Laboratory	1	E.E. 319—E.E. Laboratory	1
Technical Elective	3	T.E. 432—Man-Made Fibers	3
Elective	3	Technical Elective	3
	18		18

Minimum hours required for graduation—177 and P.E., ROTC, or Band.

CURRICULA IN ARCHITECTURE AND ADVERTISING ART AND DESIGN
BACHELOR OF ARCHITECTURE

Design or Construction Option

Freshman Year

First Semester	Credit	Second Semester	Credit
Arch. 121—Freehand Drawing	2	Arch. 122—Freehand Drawing	2
Arch. 141—Principles of Design	4	Arch. 142—Principles of Design	4
Math. 121—Algebra and	2	Math. 122—Algebra and	2
Math. 131—Trigonometry or	3	Math. 132—Analytic Geometry or	3
Math 151—Algebra & Trigonometry	5	Math 152—Algebra & Anal. Geom.	5
Orient. 111—Orientation	1	Arch. 125—Architectural Graphics	2
Eng. 131—English Composition	3	Eng. 132—English Composition	3
P.E., Band,	1	P.E., Band,	1
or ROTC	2	or ROTC	2
	16-17		17-18

Construction Option

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Arch 231—Architectural Design I	3	Arch. 232—Architectural Design I	3
Arch 221—Hist of Anc. Arch.	2	Arch. 222—Hist. of Med. Arch.	2
Math. 251—Calculus	5	Math. 331—Applications of Calculus	3
Phys. 235—Engineering Physics	3	Phys. 236—Engineering Physics	3
Phys. 215—Physical Measurements	1	Phys 216—Physical Measurements	1
Eng. 231—Masterpieces of Literature	3	Al. Arts 210—Introduction to the Arts	1
P.E., ROTC, or Band	1	C.E. 233—Statics	3
	18	P.E., ROTC, or Band	1
			17

Junior Year

First Semester	Credit	Second Semester	Credit
Arch. 351—Architectural Design II	5	Arch. 352—Architectural Design II	5
Arch. 322—Hist. of Renaissance Arch.	2	Arch. 323—Hist. of Mod. Arch.	2
Arch. 226—Materials & Meth. of Const.	2	Arch. 227—Materials & Meth. of Const.	2
C.E. 320—Structures	2	C.E. 330—Structures	3
C.E. 332—Kinematics & Kinetics	3	C.E. 333—Strength of Materials	3
M.E. 334—Elements of Heat Engr.	3	Speech 338—Bus. & Prof. Speech	3
	17		18

Senior Year

First Semester	Credit	Second Semester	Credit
Arch. 451—Architectural Design III	5	Arch. 452—Architectural Design III	5
Arch. 333—Arch. Working Drawings	3	Arch. 334—Arch. Working Drawings	3
C.E. 431—Reinforced Concrete	3	C.E. 432—Reinforced Concrete	3
E.E. 335—Wiring & Illumination	3	M.E. 429—Air Conditioning	2
M.E. 428—Air Conditioning	2	Govt. 233—American Government	3
C.E. 231—Plane Surveying	3		
	19		16

Fifth Year

First Semester	Credit	Second Semester	Credit
Arch. 420—Professional Practice	2	Arch. 436—City Planning	3
Arch. 435—Adv. Arch. Work. Draw.	3	C.E. 434—Structures	3
C.E. 433—Structures	3	C.E. 425—Materials	2
C.E. 424—Materials	2	C.E. 4312—Soil Mechanics & Foundation	3
Eco. 235—Principles of Economics	3	Electives	6
Electives	3		
	16		17

Minimum hours required for graduation—167 and P.E., ROTC, or Band.

Design Option

For Uniform Freshman Year See Above

Sophomore Year

First Semester	Credit	Second Semester	Credit
Arch. 231—Architectural Design I	3	Arch. 232—Architectural Design I	3
Arch. 221—Hist. of Anc. Arch.	2	Arch. 222—Hist. of Med. Arch.	2
Arch. 224—Freehand Drawing	2	Arch.225—Beginning Watercolor	2
Arch. 226—Materials & Meth. of Const.	2	Arch. 227—Materials & Meth. of Const.	2
Phys. 141—Elements of College Physics	4	Phys. 142—Elements of College Physics	4
Eng. 231—Masterpieces of Literature	3	Eco. 235—Principles of Economics	3
P.E., ROTC. or Band	1	Al. Arts 210—Introduction to the Arts	1
	17	P.E., ROTC. or Band	1
			18

Junior Year

First Semester	Credit	Second Semester	Credit
Arch. 351—Architectural Design II	5	Arch. 352—Architectural Design II	5
Arch. 326—Anatomy & Life Drawing	2	Arch. 327—Life Drawing	2
Arch. 322—Hist. of Renaissance Arch.	2	C.E. 338—Structural Mechanics	3
C.E. 337—Structural Mechanics	3	Eng. 4351—Appreciation of Lit. or	3
Eng. 232—Masterpieces of Lit. or	3	Foreign Language	3
Foreign Language	3	Speech 338—Bus. and Prof. Speech	3
E.E. 335—Wiring & Illumination	3		
	18		16

Senior Year

First Semester	Credit	Second Semester	Credit
Arch. 451—Architectural Design III	5	Arch. 452—Architectural Design III	5
Arch. 321—Hist. of Early Amer. Arch.	2	Arch. 323—Hist. of Mod. Arch.	2
Arch. 333—Arch. Working Drawings	3	Arch. 334—Arch. Working Drawings	3
C.E. 431—Reinforced Concrete	3	Eng. 4351—Appreciation of Lit. or	3
Eng. 232—Masterpieces of Lit. or	3	continue Foreign Language	3
continue Foreign Language	3	Hort. 422 or C.E. 432	2-3
Electives*	3	Electives	3-2
	19		18

Fifth Year

First Semester	Credit	Second Semester	Credit
Arch. 463—Architectural Design IV	6	Arch. 484—Architectural Design IV	8
Arch. 420—Professional Practice	2	Arch. 436—City Planning	3
Arch. 4316—Architectural Sculpture	3	Arch. 4317—Architectural Sculpture	3
Arch. 435—Adv. Arch. Work. Draw.	3	Govt. 233—American Government	3
C.E. 231—Plane Surveying	3		
	17		17

Minimum hours required for graduation—169 and P.E., ROTC, or Band. Advanced ROTC may be substituted for French 232, Spanish 232, or English 4351 in design option and for 6 semester hours of approved electives in construction option in accordance with catalog regulations.

BACHELOR OF ADVERTISING ART AND DESIGN

Freshman Year

First Semester	Credit	Second Semester	Credit
Arch. 121—Freehand Drawing	2	Arch. 122—Freehand Drawing	2
Arch. 141—Principles of Design	4	Arch. 142—Principles of Design	4
Al. Arts 126—Introduction to Lettering	2	Al. Arts 127—Introduction to Lettering	2
Orient. 111—Orientation	1	Arch. 125—Architectural Graphics	2
Math. 121—Algebra	2	Math. 131—Trigonometry	3
Eng. 131—English Composition	3	Eng. 132—English Composition	3
P.E., Band, or	1	P.E., Band, or	1
ROTC	2	ROTC	2
	15-16		17-18

Sophomore Year

First Semester	Credit	Second Semester	Credit
Arch. 221—Hist. of Anc. Arch.	2	Arch. 222—Hist. of Med. Arch.	2
Arch. 224—Freehand Drawing	2	Arch. 225—Beginning Watercolor	2
Al. Art. 235—Pictorial Composition	3	Al. Art 236—Pictorial Composition	3
Al. Art 238—Pottery	3	Al. Art 239—Pottery	3
Al. Art 210—Introduction to the Arts	1	Eng. 231—Masterpieces of Literature	3
Foreign Language	3	Foreign Language	3
Govt. 233—American Government	3	P.E., ROTC, or Band	1
P.E., ROTC, or Band	1		
	18		17

*To be replaced with course in Heating and Air Conditioning in 1955.

Junior Year

First Semester	Credit
Arch. 322—Hist. of Renaissance Arch.	2
Arch. 326—Anatomy & Life Drawing	2
Al. Art 3212—Illustration	2
Al. Art 3311—Draw., Paint. & Theory	3
Psych. 230—Introduction to Psychology	3
Eng. 232—Masterpieces of Lit. or	3
continue Foreign Language	3
Jour. 330—Typography	3
	18

Second Semester	Credit
Arch. 327—Life Drawing	2
Al. Art 3213—Illustration	2
Al. Art 3312—Draw., Paint. & Theory	3
Psych. 330—Psy. in Bus. & Ind.	3
Eng. 4351—Appreciation of Lit. or	3
continue Foreign Language	3
Jour. 3313—Press Photography	3
	16

Senior Year

First Semester	Credit
Arch. 321—Hist. of Early Amer. Arch.	2
Arch. 423—Life Drawing	2
Al. Art 342—Commercial Design	4
Al. Art 328—Lettering and Layout	2
Al. Art 426—Advanced Painting	2
Al. Art 4318—Hist. of Paint. & Sculp.	3
Speech 338—Bus. and Prof. Speech	3
	18

Second Semester	Credit
Arch. 323—Hist. of Mod. Arch.	2
Arch. 424—Life Drawing	2
Al. Art. 343—Commercial Design	4
Al. Art 329—Lettering and Layout	2
Al. Art 427—Advanced Painting	2
Al. Art 4319—Hist. of Paint. & Sculp.	3
Eco. 235—Principles of Economics	3
	18

Fifth Year

First Semester	Credit
Arch. 320—Hist. of Furn. & Cost.	2
Al. Art 4214—Fashion Illustration	2
Al. Art 4212—Commercial Illustration	2
Al. Art 433—Commercial Design	3
Al. Art 4311—Ceramics	3
Electives	6
	18

Second Semester	Credit
Al. Art. 4215—Fashion Illustration	2
Al. Art 4213—Commercial Illustration	2
Al. Art 434—Commercial Design	3
Al. Art 4312—Ceramics	3
Electives	6
	16

Minimum hours for graduation—167 and P.E., ROTC, or Band.
Recommended Electives: Marketing 334, 438, 4317, 4318.

Department of Architecture and Allied Arts

PROFESSORS BARRICK, BRADSHAW, KLEINSCHMIDT, LOCKARD. ASSOCIATE PROFESSOR SASSER. ASSISTANT PROFESSORS DURAN, HOUGHTON. INSTRUCTORS PARKINSON, TRACY.

The Department of Architecture and Allied Arts 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 Art, 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 Advertising Art and Design, a five-year curriculum.

The five-year program for majors in architecture is a gradual, orderly and integrated development toward apprenticeship and into professional practice. Opportunities in many branches of the building industry are open to graduates having the background of architecture. Standards upheld by the various state registration boards are met, and a degree is the logical step toward apprenticeship and a license to practice architecture.

The primary objective is the creative development of the student as an individual through enlarging his capacities for principled and disciplined thought.

The degree may be obtained through the Design Option or the Construction Option. The first-year work is the same in both options so that a student may be given ample opportunity to appraise the two avenues of study. In the design curriculum, 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 the construction curriculum, considerable attention is given to artistic ideals, but mainly the factors of safety and economy in building are made significant. This course includes more advanced mathematics and required specialization in structural engineering.

The five-year program for majors in advertising art and design is carefully arranged to give a suitable balance of theories, backgrounds, sources, and skills to students who plan to enter any of the diversified branches of the profession. An excellent preparation is given to those entering specialized fields. Students seeking a creative art career in drawing and painting, sculpture and ceramics, and art education will find the courses especially designed to give freedom of expression and to promote creative development.

Insofar as possible the design work in the department is taught by the program-competition method in which the students compete with each other 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.

The problem-solving process, which is the essence of adequate education in the creative arts, is brought into play at every opportunity. Students are stimulated to recognize needs, to express them in terms of programs upon which analysis and research may be applied to reach creative solutions. A comprehensive collection of books, photographs, prints, projection slides, and art objects is available within the department for research in the allied art fields.

Architectural majors are urged to spend their summer months in an office of a registered architect. A student may receive credit for the laboratory period in Architecture 333 and in Architecture 435 upon presentation to the department head of satisfactory evidence of three months of summer work for each course in working drawings and details in a registered architect's office.

The department reserves the right to retain, exhibit, and reproduce the work submitted by students for credit in any course.

ARCHITECTURE

For Undergraduates

121-2. Freehand Drawing I, II. Cr. 2 each. (0-6).

Representational drawing in charcoal emphasizing fundamental skills. Alternating problems stressing creative interpretation. Culminating work introducing color with pastels.

125. Architectural Graphics, Cr. 2. (0-6).

Theory of perspective and architectural shades and shadows. Exercises involving application of principles of descriptive geometry to common geometrical solids and architectural forms.

141-2. Principles of Design. Cr. 4 each. (1-9).
Study of the basic principles of design with emphasis on three-dimensional non-objective problems. Exercises in drafting, lettering and rendering in several media.

221. History of Ancient Architecture. Cr. 2.
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.
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).
Prerequisite: Architecture 121-2. Pencil, pen and ink rendering and sketching from life and nature.

225. Beginning Watercolor. Cr. 2. (0-6).
Prerequisite: Architecture 224. Beginning course in watercolor painting from life and from nature .

226. Materials and Methods of Construction. Cr. 2.
Prerequisite: Registration in Architecture 231. Introduction to properties, specifications and uses of architectural materials.

227. Materials and Methods of Construction. Cr. 2.
Continuation of Architecture 226 with emphasis on analysis of structural systems related to architecture.

231-2. Architectural Design, Grade I. Cr. 3. (0-9).
Prerequisite: Architecture 125, 141-2. 9-hour to 45-hour problems under individual criticism dealing with elements of plan and evaluation. Introduction to the project completing method of study. 9-hour sketch problems emphasizing composition and presentation.

326. Anatomy and Life Drawing. Cr. 2. (0-6).
Prerequisite: Architecture 224. Study of anatomical structure. Drawing from life. $5 model fee.

327. Life Drawing I. Cr. 2. (0-6).
Prerequisite: Architecture 326. Drawing from life in a variety of media and approaches with emphasis upon aesthetic factors. Instruction by individual criticism. $5 model fee.

351-2. Architectural Design, Grade II. Cr. 5 each. (0-15).
Prerequisite: Architecture 231-2. 15-hour to 72-hour problems under individual criticism dealing with small building types. The project completion method of study is used. 9-hour sketch problems dealing with detail of architecture and with larger architectural compositions.

451-2. Architectural Design, Grade III. Cr. 5 each. (0-15).
Prerequisite: Architecture 351-2. 18 to 90-hour problems under individual criticism dealing with more comprehensive building types and groups of buildings. 9-hour sketches are offered to test creative ability and expression in a limited amount of time.

463. Architectural Design, Grade IV. Cr. 6. (0-18).
Prerequisite: Architecture 451-2. 24 to 120-hour problems under individual criticism dealing with large compositions which include groups of buildings, site planning and studies of circulation, etc. 9-hour sketches are also given.

484. Architectural Design, Grade IV. Cr. 8. (0-24).
Prerequisite: Architecture 463. Continuation of Architecture 463 with one final "thesis" problem selected and programmed by the individual student.

For Undergraduates and Graduates

320. History of Furniture and Costume. Cr. 2. (2-9).
Prerequisite: Architecture 323. Study of development and relationship of furniture and costume from prehistoric through modern times. Illustration by means of lectures and slides, photographs. Library research.

321. History of Early American Architecture. Cr. 2.
Prerequisite: 322. A technical history of architecture of the early American periods. Illustrated lectures. Library research.

322. History of Renaissance Architecture. Cr. 2.
Prerequisite: Architecture 222. Technical history of architecture of the Italian, French, Spanish, English, and German Renaissance. Illustrated lectures. Library research.

323. History of Modern Architecture. Cr. 2.
Prerequisite: Architecture 322. Modern movements in architecture in Europe and in the Americas. Illustrated lectures. Library research.

333-4. Architectural Working Drawing. Cr. 3 each. (1-6).
Prerequisite: Architecture 232. Preparation of working drawings and specifications for small residences or commercial buildings; drawing complete details for construction including heating, plumbing and electrical services. Occasional visits to building under construction.

420. Professional Practice. Cr. 2.
Prerequisite: Junior standing. Office organization, ethics, professional relations.

423-4. Life Drawing II, III. Cr. 2 each. (0-6).
Prerequisite: Architecture 327. Continuation of Architecture 327. $5 model fee each.

4316-17. Architectural Sculpture. Cr. 3 each. (1-6).
Prerequisite: Architecture 224. Clay modeling. Study of the historic development of sculptural techniques. Architectonic studies in clay and other media. Plaster-mold making. Glazing and firing. Fee for ceramics materials $5 each.

435. Advanced Architectural Working Drawings. Cr. 3. (1-6).
A continuation of Architecture 333-4. Preparation of working drawings and specifications to comply with building and zoning codes for superior fire resistant buildings; analyzing and integrating structural system details with architectural design details.

436. City Planning. Cr. 3. (1-6).
Prerequisite: Architecture 435 and registration in Architecture 352. The theory and problems of city development, community planning, housing, and their drawn and rendered solutions under individual criticism.

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

ALLIED ARTS COURSES IN ADVERTISING ART AND DESIGN

Allied Arts courses which are combined with courses in architecture form the basis for the advertising art and design curriculum. The training and background of several departmental faculty members makes it possible to offer courses that are available to students pursuing training in Public School art fields both on the undergraduate and graduate levels.

For Undergraduates

126-7. Introduction to Lettering. Cr. 2 each. (0-6).
Familiarity with general commercial lettering styles and practices with emphasis upon skill in single stroke lettering in pen and brush. Introduction to layout and lettering for reproduction.

210, 211. Introduction to the Arts. Cr. 1 each.
Prerequisite: Sophomore standing. Guided discussions of the arts through a study of current art exhibitions on the campus and investigations of critical reviews in contemporary publications.

235-6. Pictorial Composition. Cr. 3 each. (1-6).
Prerequisite: Architecture 141-2. Theory of space design with emphasis on line and area composition.

238-9. Pottery. Cr. 3 each. (0-9).
Prerequisite: Allied Arts 141-2 or consent of instructor. All hand methods of pottery production and simple commercial ones. Decorating, glazing and firing of ware. For ceramic materials fee, $5 each.

328-9 Advanced Lettering and Art Layout. Cr. 2 each. (0-6).
Prerequisite: Allied Arts 3212-13. Advanced commercial lettering and art layouts as applied to newspaper, magazine, etc.

3212-13. Commercial Illustration I. Cr. 2 each. (0-6).
Prerequisite: Allied Arts 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.

3311-12. Principles of Drawing and Painting, and Theory of Design. Cr. 3 each. (1-6).
Prerequisites: Architecture 225, Allied Arts 235-6. Advanced analysis of principles governing good drawing and painting throughout the ages. Lectures illustrated. Laboratory work in line drawing and color.

342-3. Commercial Design I. Cr. 4 each. (1-9).
Prerequisites: Allied Arts 235-6. Structural representation of orginally designed commercial products emphasizing effective techniques of rendering in a variety of materials.

426-7. Advanced Painting. Cr. 2 each. (0-6).
Prerequisite: Architecture 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. $5 model fee each.

4212-13. Commercial Illustration II. Cr. 2 each. (0-6).
Prerequisite: Allied Arts 3212-13. A continuation of Allied Arts 3212-13 with problems in presentation and studio practice; specialization in illustration with completion of full scale work.

4214-15. Fashion Illustration. Cr. 2 each. (0-6).
Prerequisite: Architecture 424, Allied Arts 3212-13. The drawing and design of the costumed figure for newspaper and magazine fashion illustrations.

For Undergraduates and Graduates

341. Art Workshop. Cr. 4. (0-12).
For those who wish a refresher course in drawing, painting, pottery or ceramics.

433-4. Commercial Design II. Cr. 3 each. (0-9).
Continuation of Allied Arts 342-3. Problems involving extended research and group product development. Construction of scale models or execution of the finished product where feasible.

4311-12. Ceramics. Cr. 3 each. (0-9).
Prerequisite: Allied Arts 3311-12. Advanced pottery design and production. Glaze calculation and clay body construction. Research. Ceramics materials fee $5 each.

4318-19. History of Painting and Sculpture. Cr. 3 each.
Prerequisite: Architecture 324. Illustrated lectures in the development of painting and sculpture from the Egyptian period to the present day. Three hours of library research per week.

SERVICE COURSES PRIMARILY FOR EDUCATION MAJORS AND FOR THOSE TEACHING PUBLIC SCHOOL ART

Students who wish to work towards a Bachelor of Arts degree with a major in Art Education should consult with the head of the department and arrange for a four-year course of study.

For Undergraduates

335-6. History of Art. Cr. 3 each.
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 reproduction from the Carnegie Collection and collateral reading. Library research. Open to all students except those majoring in advertising art and architecture, design option.

For Undergraduates and Graduates

4313-14. Methods of Teaching Art Integrated for the High School. Cr. 3 each. (2-3).
Prerequisite: Allied Arts 335-6, 337-8, or senior standing. Problems on the methods of presenting the study of art to students of high school levels.

4321-22. Methods of Teaching Art Integrated for the Elementary School. Cr. 3 each. (2-3).
Prerequisite: Allied Arts 335-6, 337-8, or senior standing. Problems on the methods of presenting the study of art to students of elementary school levels.

4335. Art in Elementary Education. Cr. 3. (1-6).
Prerequisite: 12 semester hours of Allied Arts or equivalent, or two years art teaching experience plus 6 hours of Child Psychology. Enrollment limited to graduate students in elementary education. A course in drawing and painting, composition, and color designed primarily for those who have had at least two years of teaching art in public schools.

4351. Art in the Modern World. Cr. 3.
Prerequisite: Graduate standing. A survey and development of influences upon art forces in the modern world.

Courses in Chemical Engineering

For faculty and introductory subject matter, see Department of Chemistry and Chemical Engineering, pages 120-123.

For Undergraduates

244. Introduction to Chemical Engineering. Cr. 4. (3-3).
Prerequisite: Sophomore standing. An introduction to the equipment and calculations of chemical engineering. The problems involve material and energy balances. The laboratory includes elementary engineering measurements, and testing of fuels, lubricants and water.

331-2. Principles of Chemical Engineering I-II. Cr. 3 each.
Prerequisite: Ch.E. 244, calculus. Prerequisite or parallel: Chem. 441-2. Principles of the basic unit operations of chemical engineering such as flow of fluids, heat transfer, etc.

For Undergraduates and Graduates

425-6. Unit Operations Laboratory. Cr. 2 each. (0-6).
Prerequisite: Ch.E. 331-2. Laboratory experiments on the unit operations of chemical engineering with written reports.

430. Chemical Engineering Plant Design. Cr. 3. (1-6).
Prerequisite: Ch.E. 437 and parallel registration in Ch.E. 432. Development of a plant process from the pilot plant stage to the industrial size unit.

431. Unit Processes. Cr. 3. (3-0).
Prerequisite: Chem. 353-4, Ch.E. 331-2. A study of the more important chemical industries from the point of view of the unit processes and unit operations involved.

432. Process Development. Cr. 3. (3-0).
Prerequisite: Ch.E. 431. This course must be taken before or in parallel with Ch.E. 430. A problem course on the application of fundamental principals in the process calculations and design of pilot plants.

433-4. Chemical Engineering Thermodynamics. Cr. 3 each.
Prerequisite: Ch.E. 331-2. A problem course in chemical process calculations and thermodynamics.

435. Instrumentation. Cr. 3. (2-3).
Prerequisite: Ch.E. 331-2. A study of the characteristics of industrial instruments and their manner of use in controlling process variables.

437. Principles of Chemical Engineering III. Cr. 3.
Prerequisite or parallel: Ch.E. 331-2. Theory and problems on selected unit operations.

438. Petroleum Refining Engineering. Cr. 3.
Prerequisite: Consent of the instructor. The application of principles of engineering and chemistry to various types of refinery processes.

For Graduates

531. Advanced Chemical Engineering Thermodynamics. Cr. 3.
Prerequisite: Ch.E. 433-4 and Ch.E. 437 or equivalent. Advanced topics in applied thermodynamics, including phase equilibria, fluid flow, etc.

532. Chemical Engineering Design. Cr. 3. (1-6).
Prerequisite: Ch.E. 430, Ch.E. 431-2, and Ch.E. 437 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.

533. Organic Unit Processes. Cr. 3.
Prerequisite: Chem. 353-4. A detailed study of the major organic unit processes. Equipment, reaction theory, and the unitary aspects of each organic unit process are considered.

534. Absorption and Extraction. Cr. 3.
Prerequisite: Ch.E. 433-4 and Ch.E. 437 or equivalent. Theory of absorption and extraction with emphasis on design of equipment and operational problems.

535. Heat Transfer. Cr. 3.
Prerequisite: Ch.E. 433-4 and Ch.E. 437 or equivalent. Fundamentals of heat transmission with emphasis on the design of heat transfer equipment.

536. Distillation. Cr. 3.
Prerequisite: Ch.E. 433-4 and Ch.E. 437 or equivalent. Theory of distillation with special emphasis on multicomponent distillation and application of theory to problems of design.

537, 538. Advanced Work in Specific Fields. Cr. 3 each.
Prerequisite: Graduate standing. Course and credit depend on interests of students. All registration must be approved by the head of the department. Offered on demand. See Chem. 537, 538.

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

Department of Civil Engineering

PROFESSORS MURDOUGH, ADAMS, McREE. ASSOCIATE PROFESSORS DECKER, WHETSTONE, OVERBY.

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 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.

For Undergraduates

231. Plane Surveying. Cr. 3. (2-3).
Prerequisite: Math. 131. The uses and adjustment of surveying instruments, differential and profile leveling; cross sections; stadia; open and closed traverses; simple and vertical curves; land subdivision.

232. Plane Surveying. Cr. 3. (2-3).
Prerequisite: C.E. 231. Mathematics of simple, compound, spiraled, and vertical curves; earthwork cross sections, areas, volumes, mass diagram.

233. Applied Mechanics. Statics. Cr. 3.
Prerequisite: Math. 251. Resultants of coplanar and non-coplanar force systems; equilibrium of force systems, friction, centroids, moments of inertia. Slide rule is required.

311. Highway Laboratory. Cr. 1. (0-3).
Prerequisite: Junior engineering standing. Standard tests of road building materials.

312. Fluid Mechanics Laboratory. Cr. 1. (0-3).
Prerequisite: Registration in C.E. 339.

313. Sanitation Laboratory. Cr. 1. (0-3).
Prerequisite: Registration in C.E. 321. Bacteriology and microscopy of public water supplies and sewage.

320. Structures. Cr. 2. (2-2).
Prerequisite: C.E. 233. Graphic statics; shear, moment, and stresses in framed structures by graphical and analytical methods.

330. Structures. Cr. 3.
Prerequisite: C.E. 320 and registration in C.E. 333. Moment and shear curves; influence lines, stresses in framed structures; moving loads systems; beam design; column design.

332. Applied Mechanics—Kinematics and Kinetics. Cr. 3.
Prerequisite: C.E. 233. 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.
Prerequisite: C.E. 233. Stresses and strains in elastic bodies subject to tension, compression, and shear; bending and torsion; deflection in homogeneous beams; column theory, combined stresses.

334. Surveying. Cr. 3. (2-3).
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 each.
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 each.
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.
Prerequisite: Registration in C.E. 332. Dynamics of viscous and non-viscous fluids, impulse and momentum, pipe flow, fluid resistance.

423. Economics of Highway Design. Cr. 2. (0-6).
Prerequisite: C.E. 336.

For Undergraduates and Graduates

321. Municipal Sanitation. Cr. 2.
Prerequisite: Junior standing or approval of head of department. General principles of sanitation as applied to the community, including water supply, sewerage, refuse disposal, rodent and pest control, food and milk sanitation, housing, lighting, ventilation, and swimming pools. This course is the same as C.E. 426 of previous catalogs, and together with C.E. 313 is the same as C.E. 3310 of previous catalogs.

3311. Hydraulic Machinery. Cr. 3.
Prerequisite: C.E. 332 and 339. Theory and performance of centrifugal pumps, impulse and reaction turbines, and other hydraulic machinery.

424. Materials. Cr. 2. (1-3).
Prerequisite: Junior engineering standing. The properties and tests of materials of engineering, with special reference to concrete materials.

425. Materials. Cr. 2. (1-3).
Prerequisite: C.E. 333. The properties and tests of materials of engineering, with special reference to wood and steel.

431. Reinforced Concrete. Cr. 3.
Prerequisite: C.E. 333. Study and application of the theory of reinforced concrete design.

432. Reinforced Concrete. Cr. 3.
Prerequisite: C.E. 431.

433. Structures. Cr. 3. (2-6).
Prerequisite: C.E. 330, 333. Design and detail of steel structures.

434. Structures. Cr. 3.
Prerequisite: C.E. 333. Brief presentation of the theory of statically indeterminate structures.

437. Water Supply and Treatment. Cr. 3. (2-3).
Prerequisite: C.E. 339, or, Ch.E. 332. Consumption of water; quality of water; sources of supply-streams, lakes, impounding reservoirs, wells; theory of treatment-coagulation, softening, filtration, recarburation, aeration, chlorination; laboratory work in the chemistry of water.

438. Sewerage and Sewage Treatment. Cr. 3. (2-3).
Prerequisite: C.E. 339, or, Ch.E. 332. Quantity of sewage—both sanitary and storm; composition of sewage; construction of sewers and sewerage systems; theory of different methods of treatment; laboratory work in the chemistry of sewage.

439. Law and Ethics in Engineering. Cr. 3.
Prerequisite: Senior standing in engineering or approval of head of department. Professional and industrial problems, contracts, specifications, ethics of engineering.

4312. Soil Mechanics and Foundations. Cr. 3.
Prerequisite: C.E. 333. Physical and mechanical properties of soils; theories of stress, settlement, and consolidation; stability of earth masses; bearing capacity and settlement of structures.

4313. Sanitary Engineering Design—Water. Cr. 3. (1-6).
Prerequiite: Registration in C.E. 437. The design of structures used in collection, treatment, and distribution of public water supplies.

4314. Sanitary Engineering Design—Sewage. Cr. 3. (1-6).
Prerequisite: Registration in C.E. 438 and C.E. 431. The design of structures employment in the collection of sanitary and storm sewage, the treatment of sewage, and its ultimate disposal.

Department of Electrical Engineering

PROFESSOR BULLEN. ASSOCIATE PROFESSORS HOUSTON, SPUHLER. ASSISTANT PROFESSORS BLACKWELL, STENIS.

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 opportunities in a variety of engineering fields. Graduates in electrical engineering find employment in such fields as manufacturing, public utilities, business, contracting, sales, research, teaching, design, construction, transportation, illumination, and communication. Specialization in any of these fields usually follows graduation.

The undergraduate curriculum is designed to give a comprehensive background in electrical engineering, and is broadened by the inclu-

sion of courses in pure science, the humanities, and related fields of engineering. The graduate may go equally well into advanced studies or directly into the engineering profession. Several areas of specialization are available at the graduate level. For offerings in the graduate curriculum consult the Graduate Catalog.

Laboratories are equipped with the latest types of radio, electronic equipment and machines. Theory studied in the classroom is verified experimentally in the laboratory.

For Undergraduates

221. Electrical Engineering Laboratory. Cr. 2. (0-6).
Prerequisite: Registration in E.E. 231. A laboratory course to accompany E.E. 231.

225. Direct Current Machines Laboratory. Cr. 2. (0-6).
Prerequisite: Registration in E.E. 235. A laboratory course to accompany E.E. 235.

231. Principles of Electrical Engineering. Cr. 3.
Prerequisite: Parallell enrollment in Calculus. Fundamental principles of electric and magnetic circuits. Magnetic properties of iron and steel. Induced and generated electromotive force. Forces on conductors.

235. Principles of Direct Current Machinery. Cr. 3.
Prerequisite: E.E. 231, Math. 251 or parallel enrollment. A theoretical study of the operating characteristics and applications of direct current generators and motors.

318-9. Electrical Engineering Laboratory. Cr. 1 each. (0-3).
Prerequisite: Registration in E.E. 328-9 or E.E. 338-9. A laboratory course to provide experience in testing and operating electrical machinery and apparatus. Not for electrical engineering majors.

328-9. Elements of Electrical Engineering. Cr. 2 each.
Prerequisite: Phys. 236, Math. 251. Principles and applications of direct and alternating current circuits, apparatus and machines. For civil, chemical, textile, and agricultural engineering students.

335. Illumination. Cr. 3.
Prerequisite: Math. 132, 6 semester hours of physics. Basic theory and modern methods of illumination. Design considerations. Required for achitectural students.

338-9. Elements of Electrical Engineering. Cr. 3 each.
Prerequisite: Phys. 236, Math. 251. Principles and applications of direct and alternating current circuits, apparatus, and machines. For industrial, mechanical, and petroleum engineering students.

For Undergraduates and Graduates

312-3. Alternating Current Circuits Laboratory. Cr. 1 each. (0-3).
Prerequisite: Registration in E.E. 332-3. Laboratory course to accompany E.E. 332-3.

317. Electronics Laboratory. Cr. 1. (0-3).
Prerequisite: Registration in E.E. 337. A laboratory course to accompany E.E. 337. An experimental study of high vacuum tubes, gas tubes, photo-tubes and semiconductors.

321. Static Electric and Magnetic Fields. Cr. 2.
Prequisite: Phys. 236, Math. 331. Basic theory of static electric and magnetic fields. Investigation is made of fields having spherical, cylindrical and plane boundaries. Includes basic concepts of capacitance and inductance.

332-3. Alternating Current Circuits. Cr. 3 each.
Prerequisite: E.E. 221, 231, Math. 251. Fundamentals of alternating current circuits. Network theorems, coupled circuit phenomena, transients and non-sinusoidal wave forms.

337. Electronics. Cr. 3.
Prerequisite: E.E. 321, 332. Fundamental principles of high vacuum tubes, gas tubes, photo-tubes and semiconductors. Electrical characteristics of these devices.

436-7. Principles of Electromagnetic Fields. Cr. 3 each.
Prerequisite: Math. 321, E.E. 321. Static field equations, elementary boundary value problems, solutions of Maxwell's equations. High-frequency potential, circuit concepts, and skin effect. Propagation of electromagnetic waves. Wave guides and resonant cavities. Radiation. This is not a required course and can be given only on the basis of sufficient registration.

4112-13. Alternating Current Machinery Laboratory. Cr. 1 each. (0-3).
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 theoretical characteristics.

4115-16. Vacuum Tube Circuits Laboratory. Cr. 1 each. (0-3).

Prerequisite: Parallel enrollment in E. E. 4315-16. A laboratory course to accompany 4315-16.

4121-22. Control System Instrumentation Laboratory. Cr. 1 each. (0-3).

Prerequisite: Registration in E.E. 4221-22. A laboratory course to accompany E.E. 4221-22.

4124. Electrical Transmission Lines Laboratory. Cr. 1. (0-3).

Prerequisite: Registration in E.E. 4224. A laboratory course to accompany E.E. 4224.

4221-22. Control System Instrumentation. Cr. 2 each.

Prerequisite: Senior standing in electrical engineering. For non-majors, consent of instructor. Dynamics of closed-loop automatic control systems. Basis study of the instrumentation problem. Fundamentals of transducers. Transmission, indication and recording of data. Emphasis on the electrical methods of measurement and control with applications to industrial instrumentation problems.

4312-13. Alternating Current Machines. Cr. 3 each.

Prerequisite: E.E. 334. Theory and operation of alternating current machines. Transformers, three-phase synchronous motors and generators, three-phase induction motors and small single-phase motors. Theoretical operating characteristics are derived by equivalent circuit solutions and graphical analysis.

4315-16. Vacuum Tube Circuits and Systems. Cr. 3 each.

Prerequisite: E.E. 337, 334. Electronic sources of power, amplifiers, oscillators, modulators, demodulators, frequency converters, wave-shaping circuits, and antenna systems.

4323-4224. Electrical Transmission Lines. Cr. 3, 2.

Prerequisite: E.E. 334, 321. Theory of electrical transmission lines. Basic long-line equations, calculation of line parameters, standing and traveling waves. The fundamental equations are considered in their particular applications to power, telephone, and high-frequency lines.

For Graduates

531-2. Vacuum Tubes and Associated Circuits. Cr. 3 each.

Prerequisite: E.E. 4316 or the equivalent and consent of instructor. A detailed study of vacuum tubes and associated circuits. Steady-state and transient response of linear amplifiers, random noise, power amplifiers, feed-back amplifiers, stability criteria, oscillators, and special topics from current literature.

533. Symmetrical Components. Cr. 3.

Prerequisite: B.S. in E.E. or consent of instructor. The theory of the method of symmetrical components is reviewed 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 and unbalanced loading. The symmetrical component impedances of machines are defined and calculated, also the zero sequence impedance of lines and cables.

535. Electric Power Systems. Cr. 3.

Prerequisite: E.E. 4224 or consent of instructor. Line constants, long-line equations, power-circle diagrams, traveling waves, system stability, line construction, corona.

536-7. Advanced Network Theory. Cr. 3 each.

Prerequisite: B.S. in E.E. or consent of instructor. Solution of transients in linear systems by means of the LaPlace transform and matrix methods. Theory of two-terminal and four-terminal networks, impedance transformation, Foster's theorem and extensions, conventional and lattice filters, equalizers, network design and synthesis, application of network theory to vacuum-tube circuits.

538-9. Advanced Electrical Machine Theory. Cr. 3 each.

Prerequisite: B.S. in E.E. or consent of instructor. A rigorous exposition of machine theory. Application of the methods of Doherty, Nickle, and Park to many problems. Direct and quadrature-axis concepts of steady-state and transient reactance. Field and armature transient currents by operational calculus methods. Space and time harmonics of magneto-motive force. Emphasis is on operation, but design factors such as flux plotting are considered.

5211-12. Special Problems in Electrical Engineering. Cr. 2 each.

Experimental work to accompany advanced theory courses in Electrical Engineering.

5311-12. Automatic Control Systems. Cr. 3 each.

Prerequisite: E.E. 4221-22. or equivalent. Quantitative study of closed-loop automatic control system behavior. Relation between transient and steady-state performance. System synthesis for prescribed design criteria.

631-2. Thesis. Cr. 3 each.

Department of Industrial Engineering and Engineering Drawing

PROFESSORS DWYER, PENICK, PERRYMAN, ST. CLAIR. ASSISTANT PROFESSORS ATKINSON, JENKINS, MACKENZIE

INDUSTRIAL ENGINEERING

The industrial engineering curriculum is concerned with the operation and management of industrial organizations. Courses offered by the department deal primarily with the problems of cost, quality, and quantity of production in manufacturing establishments. The successful solution of such problems involves organizing, planning, and coordinating the effective utilization and control of materials, facilities, and personnel which requires the consideration of human and economic factors as well as the technical. The curriculum includes the basic courses in mechanical, electrical, and civil engineering. Graduates in industrial engineering enter such fields as production planning and control, motion and time study, plant design, tool design, safety engineering, quality control, industrial relations, supervision, etc.

For Undergraduates

321. Industrial Relations. Cr. 2.
Prerequisite: Junior standing. A study of the policies and practices of industrial organizations relative to employees. Developing and maintaining an effective working force; recruitment, motivation, working conditions, remuneration, evaluation, grievances, etc.

331. Motion and Time Study. Cr. 3. (2-3).
Prerequisite: Junior standing. Methods of analyzing processes and operations for economical operation; principles of motion economy; micromotion study; man-machine and multiple activity analysis; techniques of stopwatch time study to establish work standards; wage incentive applications; standard data.

332. Industrial Organization and Management. Cr. 3.
Prerequisite: Junior standing. The fundamentals of organization, standardization, specialization, departmental functions, coordination, administrative control, cost analysis, etc. as applied to industrial organizations.

333. Manufacturing Processes. Cr. 3.
Prerequisite: Junior standing in engineering. Manufacturing processes as used in various industries such as metal, non-metallic minerals, chemicals, textile, food, etc. A brief history of each industry up to the present. Study of types of machines; characteristics of buildings; working conditions; annual value of products; centers of production.

336. Tool Design. Cr. 3. (1-6).
Prerequisite: E.Dr. 221, and C.E. 333 or parallel registration. The study of types and characteristics of tools best suited for use in processing various materials. Jigs, dies, fixtures, gauges, etc. are designed in the laboratory.

337. Production Planning and Control. Cr. 3.
Prerequisite: I.E. 332. The planning and control of quantity production of goods. Methods of controlling materials, machines, personnel, quality and cost of products. Preparation of manufacturing information and authorization, scheduling, routing, etc.

For Undergraduates and Graduates

411. Industrial Engineering Problems. Cr. 1. (0-3).
Prerequisite: Senior standing in Industrial Engineering. The practical solution of a variety of problems which the industrial engineer may be expected to encounter in his work.

423. Industrial Procurement. Cr. 2.
Prerequisite: Senior standing. Policies affecting procurement of equipment and materials; factors involved in the decision to make or buy; preparation of specifications; the effect of quality and quantity on prices; sources of supply; sub-contracts; etc.

432-433. Industrial Plant Design. Cr. 3 each. (1-6).
Prerequisite: Senior standing in Industrial Engineering; C.E. 333 or parallel registration. The planning and design of a complete industrial plant covering location, processes, capacity, material handling and routing, buildings, machinery, storage facilities.

435. Safety Engineering. Cr. 3.
Prerequisite: Senior standing in engineering. History of safety movement as applied to industry; cost of accidents; methods of training and enforcing safety; fundamentals of machine guarding; safety organization; accident rates; accident investigations and reports; protective equipment; fire protection; health hazards; first aid.

436. Engineering Economy. Cr. 3.
Prerequisite: 3 hours economics and senior standing in engineering. Analysis and evaluation of factors involved in making decisions; economic differences in alternatives; cost studies; time value of money; prospective return on increment investments; depreciation; equipment retirement policies.

437. Quality Control. Cr. 3.
Prerequisite: Senior standing in engineering. The application of statistical techniques to the control of quality in industry. Acceptance sampling by attributes and variables, control charts, inspection procedures, organization and administration of quality control.

ENGINEERING DRAWING

The courses offered in engineering drawing are fundamental for all courses in engineering. The objective of these courses is to familiarize the student with engineering drawing conventions and to train the student to use skillfully and intelligently, engineering drawing techniques as a basis for specialized engineering design work.

Approved drawing equipment is required in all courses.

For Undergraduates

121. Engineering Drawing. Cr. 2. (0-6).
Prerequisite: E.Dr. 131, or equivalent. Intersections, developments, dimensioning, slant lettering, oblique drawing, elementary working drawings.

131. Engineering Drawing. Cr. 3. (1-6).
The essentials of drafting including freehand sketching, use of instruments, vertical lettering, engineering geometry, orthographic projection, sections, insometric drawings.

221. Machine Drawing. Cr. 2. (0-6).
Prerequisite: E.Dr. 121 or the equivalent. Application of the graphic language to engineering purposes; engineering sketches; machine fastenings; conventional practice; machine details, and assembly drawings.

222. Descriptive Geometry. Cr. 2. (1-3).
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.

Department of Mechanical Engineering

PROFESSORS POWERS, GODEKE, HARDGRAVE*. ASSOCIATE PROFESSOR NEWELL. ASSISTANT PROFESSORS HELMERS, MONASCH.

Mechanical engineering is that branch of engineering whose basic functions deal with the transformation of energy into work and the mechanisms by which this is accomplished. The course of study thus deals with the generation, transmission, and utilization of heat and mechanical power, and with the design, construction, operation, and testing of machines. Shop and laboratory courses are employed to familiarize the student with manufacturing processes and testing methods. Emphasis is placed on acquiring a thorough foundation in fundamentals so that the graduate will be prepared to advance and develop in the profession of engineering.

*Deceased, December 1953.

COMBINATION COURSE
MECHANICAL ENGINEERING—PETROLEUM ENGINEERING

The Departments of Mechanical Engineering and Petroleum Engineering are cooperating in offering a five-year curriculum. At the successful completion of four years of this curriculum, the Degree of Bachelor of Science in Petroleum Engineering, Production or Natural Gas Option, will be awarded.

The work of the first four years will include the curriculum of the Petroleum Engineering Option chosen, except that petroleum students will add M.E. 329 and M.E. 339.

The fifth year will include the following Mechanical Engineering courses: 311, 312, 313, 314, 316, 425, 426, 427, 431, 432, 435, 436, and 437.

For Undergraduates

215. Heat Engineering Problems. Cr. 1. (0-3).
Prerequisite: Registration in M.E. 335. Study and practice of slide rule operations; form and presentation of engineering computations with particular reference to elementary heat engineering problems.

237. Metallurgy. Cr. 3. (2-3).
Prerequisite: 6 hours of chemistry. Study of metallic crystal structures and their engineering properties; effects of alloying on engineering properties of metals; equilibrium and non-equilibrium systems, metallography and heat treatment for engineering applications.

311. Pattern Shop. Cr. 1. (0-3).
Prerequisite: E.Dr. 121. Methods and principles of pattern making, individual instruction in the use of machine and hand tools.

312. Foundry Practice. Cr. 1. (0-3).
Prerequisite: Parallel registration in M.E. 311. Methods and principles of foundry practice.

313. Machine Shop. Cr. 1. (0-3).
Prerequisite: E.Dr. 121. Machine tools and equipment, gauging and inspection, machine tool operations, and bench work.

314. Machine Shop. Cr. 1. (0-3).
Prerequisite: M.E. 313. A continuation of M.E. 313.

316. Welding Practice. Cr. 1. ((0-3).
Methods and principles of arc, resistance, oxy-acetylene, thermit, and atomic hydrogen welding, care and operation of welding equipment.

318. Heat Engineering Laboratory. Cr. 1. (0-3).
Prerequisite: M.E. 330, or M.E. 334, or M.E. 335. Standard tests of engines, pump, blower, air compressor, turbine, and refrigeration machine.

329. Mechanics of Machinery. Cr. 2. (1-3).
Prerequisite: E.Dr. 121, C.E. 233. Analytical study of the functions, geometrical properties, and motions of linkages, cams, and gears.

334. Elements of Heat Engineering. Cr. 3.
Prerequisite: Math. 251, Math. 331, Phys. 142 or Phys. 235. Properties of air and steam, ideal gas laws, cycles, and steam apparatus.

335. Elements of Heat Engineering. Cr. 3.
Prerequisite: Math. 251, Phys. 142 or Phys. 235. Descriptions, functions, and performance of heat power apparatus.

339. Mechanics of Machinery. Cr. 3. (2-3).
Prerequisite: M.E. 329, C.E. 332. Graphical analysis of velocities, accelerations, and dynamic forces in common machines.

421. Heat Power Laboratory. Cr. 2. (1-3).
Prerequisite: M.E. 331. Tests of power plant equipment, with emphasis on preparation and presentation of engineering reports.

For Undergraduates and Graduates

330. Engineering Thermodynamics. Cr. 3.
Prerequisite: Parallel enrollment in Math. 331, Phys. 142 or Phys. 235. First and second laws of thermodynamics, reversibility, thermodynamic properties of gases and vapors.

331. Engineering Thermodynamics. Cr. 3.
Prerequisite: M.E. 330. Thermodynamic analysis of combustion processes, of cycles, and of machines.

420. Special Problems in Mechanical Engineering. Cr. 2.
Prerequisite: Parallel enrollment in M.E. 435, 436. Advances and techniques in mechanical engineering technology.

425. Heat Transfer. Cr. 2.
Prerequisite: M.E. 331 or Phys. 332, M.E. 435. Heat transfer by conduction, convection, and radiation. Applications to condensing vapors and to design problems.

426. Dynamics. Cr. 2.
Prerequisite: C.E. 332, Math. 332. Steady state and transient vibration response of mechanical systems, vibration isolation.

427. Dynamics. Cr. 2.
Prerequisite: M.E. 426. Critical speeds, distributed mass systems, special methods of analysis.

428. Air Conditioning. Cr. 2.
Prerequisite: M.E. 331 or M.E. 334 or M.E. 335. Thermodynamics of air-steam mixtures, heating and cooling calculations.

429. Air Conditioning. Cr. 2.
Prerequisite: M.E. 428. Ventilation requirements, air conditioning system design.

431. Heat Power Laboratory. Cr. 3. (1-6).
Prerequisite: M.E. 318 or M.E. 421, M.E. 433. Special purpose testing of engines, turbines, compressors, heat exchangers, and air conditioning apparatus.

432. Heat Power Design. Cr. 3.
Prerequisite: M.E. 435. Economic and thermodynamic analysis of steam and combustion engine power plants.

433. Combustion Engines. Cr. 3.
Prerequiste: M.E. 331 or M.E. 334. Ideal and actual cycles, combustion, detonation, mixture requirements, and performance of spark ignition engines, compression ignition engines, and gas turbines.

435. Fluid Dynamics. Cr. 3.
Prerequisite: M.E. 331 or Physics 332, Math. 332. Hydrodynamic theory, compressible flow, dynamic lift, propulsion, and dynamic similitude.

436. Mechanical Design. Cr. 3. (2-3).
Prerequisite: C.E. 333. Introduction to design through applications of mechanics to analysis of stresses in and functions of machine elements such as shafting, springs, gearing, brakes, bearings, columns, and cylinders.

437. Mechanical Design. Cr. 3. (1-6).
Prerequisite: M.E. 436. A continuation of M.E. 436 with emphasis on design of one or more complete machines. Lectures on theory pertinent to the design problems.

ORIENTATION AND ENGINEERING SEMINAR

111. Orientation. Cr. 1.
Development of correct study habits; study and preparation of time budgets; relationship of the student to the College; brief talks by representatives of engineering departments with particular emphasis being placed on the qualifications, opportunities and nature of work performed by graduates in each department; talks by representatives of College Health Service; engineering ethics; responsibility of the engineer as a citizen. Required of all entering freshman engineering students during their first semester.

412. Engineering Seminar. Cr. 1.
Prerequisite: Senior standing and permission of head of department unless course is specifically required in curriculum. The investigation and study of engineering problems of special interest and value to the student. May be repeated for credit.

Department of Petroleum Engineering

PROFESSOR DUCKER. ASSISTANT PROFESSORS LAMONT, JOHNSON.

The Petroleum Engineering curricula are designed to equip the graduate with a knowledge of the fundamentals of mathematics, physics, chemistry, mechanical sciences, geology, economics, and 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.

Although the emphasis of this department is on a sound foundation in the fundamentals of engineering, the technology of petroleum has made such advances in recent years that it is no longer possible to cover all of its phases in a single four-year course. The work toward a Bachelor of Science Degree in Petroleum Engineering has been divided, therefore, into the following options, each containing special courses that direct the emphasis toward 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 mechanics, 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 similar to those of the Production Option. In the senior year specialized courses pertaining to production, transportation, and marketing of natural gas and gasoline are required.

(3) Mechanical Engineering Combination

For the requirements for a Bachelor of Science Degree in Mechanical Engineering in a five-year combination with Petroleum Engineering, see Mechanical Engineering Department.

For Undergraduates

220. Rotary Drilling Fluids. Cr. 2. (1-3).
Prerequisite: Sophomore standing in engineering. A study of the testing methods for determining drilling fluid characteristics, drilling fluid problems, and the use of special drilling fluids. Laboratory exercises consist of the practice of altering properties of fresh water and special drilling fluids for drilling through troublesome zones with the rotary system.

230. Petroleum Development Methods. Cr. 3.
Prerequisite: Enrollment in Math. 251. Exploration methods; spacing of wells; rotary and cable tool drilling methods; directional drilling; drilling hazards; oil field hydrology and well completion practices.

330. Introduction to Petroleum Industry. Cr. 3.
Prerequisite: Junior standing in geology or engineering. A general study of the industry including: the history of the industry; chemistry of petroleum; its occurence in nature and its importance in the world economy; leasing and royalty; exploration, drilling and production methods; conservation; transportation and refining; economics of the industry.

For Undergraduates and Graduates

320. Well Logging Methods. Cr. 2.
Prerequisite: Pet.E. 230 or junior standing in geology. A study of the theories of electrical, micro-electrical, radiation, optical, chemical and mechanical well logging methods and applications of these theories; field examples and problems.

321. Phase Behavior. Cr. 2.
Prerequisite: Junior standing in petroleum engineering and enrollment in M.E. 330. Introduction to the phase behavior of multiple component hydrocarbon mixtures. Application to the production of crude oil and condensate reservoirs, and to the separation of natural gasoline from natural gas.

333. Petroleum Production Methods. Cr. 3. (2-3).
Prerequisite: Pet.E. 230 and junior standing. A study of the properties of reservoir fluids and characteristics of the reservoir which influence rate of recovery. Production by flowing, gas-lift and pumping methods. Oil dehydration, lease operation and lease storage. Laboratory exercises include core analyses, treatment of oil field emulsions, pumping well characteristics.

413. Natural Gas Laboratory. Cr. 1. (0-3).
Prerequisite: Registration in Pet.E. 434. Natural gas analysis and testing; measurement and calibration of flow-metering devices, regulation and control devices; gas-phase relations, and natural gasoline techniques.

414. Production Laboratory. Cr. 1. (0-3).
Prerequisite: Registration in Pet.E. 433. A study of engineering methods utilized in the development of an oil field by means of a continuing problem from discovery to depletion of the reservoir.

416. Reservoir Engineering Laboratory. Cr. 1. (0-3).
Prerequisite: Registration in Pet.E. 433. The p-v-T relations of reservoir fluids from bottom-hole and recombined well samples; gas-oil ratios; capillary pressures.

420. Special Petroleum Engineering Problems. Cr. 2.
Prerequisite: Senior standing and approval of the head of the department.

430. Special Natural Gas Problems. Cr. 3.
Prerequisite: Senior standing and approval of the head of the department.

433. Advanced Production Engineering. Cr. 3.
Prerequisite: Pet.E. 320, Pet.E. 333, C.E. 339. Study of the physical properties and behavior of petroleum fluids and the mathematical expressions of their flow through the reservoir, reservoir energy and producing mechanisms, the material balance and gas drive reservoirs.

434. Natural Gas Engineering. Cr. 3.
Prerequisite: M.E. 331, M.E. 318. Study of the methods of production, treating, compression, distribution, measurement, analysis and utilization of natural gas, and the related thermodynamic principles.

435. Advanced Natural Gas Engineering. Cr. 3.
Prerequisite: Pet.E. 434. Study of distillate wells and distillate reservoir behavior. Extraction methods and techniques of natural gasoline production. Liquefied petroleum gases, distillate production.

436. Reservoir Engineering. Cr. 3.
Prerequisite: Pet.E. 433. Study of water-drive and condensate reservoirs, secondary recovery methods, the effects of well spacing on recovery and methods of predicting recoverable reserves.

Department of Textile Engineering

PROFESSOR PARSONS. ASSOCIATE PROFESSOR BUNTON.
PART-TIME INSTRUCTORS TOWERY, POWER.

It is the purpose of the Textile Engineering Department to prepare well-rounded graduates who have a firm grasp not only of the fundamentals of textiles, but who also have a thorough grounding in engineering. It is expected that these men and women will have a definite sense of responsibility both to their employers and to the community in which they live.

In order to provide the textile industry with graduates who will help raise the status of both society and industry and add to the value of human resources, every effort is made to develop leadership ability on the part of students and faculty.

It is felt that the Textile Engineering Department should be of every possible service to the textile and related industries in Texas and the Southwest. This involves providing not only the trained personnel, but such research facilities as are needed to solve problems of the industry which in many instances is remotely located from other sources of such aid. Efforts are made to encourage in every way the growth of the textile industries in Texas and the area served by the College.

To this end a full program of research as well as a degree course in Textile Engineering is essential. Present state-supported cotton research carried on in the Textile Department is being expanded to more fully meet the needs of the industry and of agriculture.

For Undergraduates

T.E. 230. Elementary Yarn Manufacturing. Cr. 3. (2-3).
Fundamentals of the processes of opening, picking, carding, combing, and drawing on the cotton and modified systems.

T.E. 234. Cotton Classification and Marketing. Cr. 3. (2-3).
A study of practices and methods of marketing cotton with emphasis on the economics of the system and new methods used in determining value of cotton. Practical laboratory work in grading and stapling.

T.E. 235. Textile Fibers. Cr. 3.
The physical and chemical properties of natural textile fibers, their fields of uses and how they are prepared for manufacturing.

T.E. 331. Yarn Manufacturing. Cr. 3. (2-3).
Critical studies of processes of roving and spinning with emphasis on new methods and machines as well as study of older conventional machinery.

T.E. 332. Yarn Preparation. Cr. 3. (2-3).
Prerequisite: T.E. 230-331. The principles of twisting, winding, spooling, warping and slashing.

T.E. 333. Textile Chemistry and Bleaching. Cr. 3. (2-3).
Prerequisite: Current registration in Chem. 341. Relationship between chemical structure of fibers and their behavior. Study of bleaching and preliminary operations.

T.E. 334. Dyeing. Cr. 3. (2-3).
Prerequisite: T.E. 333. The theory of dyeing and laboratory dyeing of fiber, yarns and fabrics with various classes of dyestuffs.

T.E. 335. Fabric Design and Weaving. Cr. 3. (1-6).
Theory of fabric design and cloth structure for manufacturing on cam looms, dobbies, and box looms. One laboratory each week devoted to design and one to weaving.

T.E. 336. Fabric Design and Weaving. Cr. 3. (1-6).
A continuation of T.E. 335, leading into more advanced designs and weaving problems.

T.E. 430. Mill Quality Control and Textile Testing. Cr. 3. (2-3).
Prerequisite: T.E. 230-331-332. A study of techniques and practices employed in laboratory testing and evaluation of textile materials, and careful consideration of methods of quality controls used in textile mills.

T.E. 431. Fabric Analysis and Advanced Design. Cr. 3. (2-3).
Prerequisite: T.E. 335-336. Jacquard loom mechanics, study of advanced fabric design, structure and manufacture through the medium of analysis.

T.E. 432. Man-made Fibers. Cr. 3.
Prerequisite: Chem. 341. A study of the basic concepts, structure and theory of all the synthetic fibers. Methods of production are studied, and emphasis is placed on uses of the newest of such fibers.

T.E. 433. Chemistry of Dyestuffs and Intermediates. Cr. 3.
The chemical principles involved in the preparation of dyes and intermediates. Methods of application of fast dyestuffs.

T.E. 434. Chemistry of Dyestuffs and Intermediates. Cr. 3. (2-3).
A continuation of the principles in T.E. 433. Includes practical laboratory application of theory.

T.E. 437. Textile Costing. Cr. 3.
Prerequisite: E.E. 331-2, 335-6. A thorough study of basic cost concepts, historical and predetermined costs applied to textiles as an aid to management.

T.E. 438. Mill Organization. Cr. 3. (2-3).
Prerequisite: T. E. 437. The student designs the plant and machinery layout of a mill to manufacture a given quantity of a textile product. Lectures on duties of operating executives and technical staffs.

COTTON RESEARCH OF TEXAS TECHNOLOGICAL COLLEGE

PROFESSOR HESSLER. RESEARCH ENGINEER TOWERY.
TEXTILE TECHNOLOGIST POWER.

Cotton Research of Texas Technological College is a state-supported organization engaged primarily in research related to the spinning, weaving, testing and utilization of Texas cotton. The facilities of the Textile Engineering Department are made available to the Research Committee which maintains close cooperation with the department. The services of the specialists of the Cotton Research Committee are made available on a part-time basis for instructional purposes.

DIVISION OF HOME ECONOMICS

WILLA VAUGHN TINSLEY, *Dean*

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

Courses in the Division of Home Economics are planned to meet the following purposes:

(1) To contribute to the liberal education of individuals by aiding in their development as persons and as world citizens.
(2) To provide learning experiences directed specifically to the development of individuals in assuming their roles in home and family living.
(3) To offer opportunity for individuals to prepare themselves to fulfill the demands for positions in home economics and related fields.

The offerings in home economics are designed to serve both men and women in three groups, namely:

1. Students registered in the Division of Home Economics who plan to work toward a degree in home economics, and those who do not expect to be applicants for a degree.
2. Students registered in other divisions of the College but who wish training either for homemaking or for supplementing their degree plans. Individual courses, or a series of courses leading to a minor in home economics, are available to these students.
3. Individuals in the area served by the College who are out-of-school, including both youth and adults, who wish to work toward an advanced degree with a major or minor in home economics, and those who wish special or refresher courses at either the undergraduate or graduate level.

Field for Graduates. A nation-wide shortage of women with training in home economics results in many interesting positions open in a wide variety to choose from at the local, state and national levels in educational, commercial, industrial, recreational and religious fields. Texas Tech has never been able to meet the demands for its graduates in home economics.

Undergraduate Degree. The Degree of 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 Applied Arts, Child Development and Family Relations, Clothing and Textiles, Foods and Nutrition, and Home Economics Education.

A degree is also given with a major in Home and Family Life (formerly called General Home Economics) for those students who wish a broad background of preparation for homemaking and related occupations but who do not wish to specialize in any one of the other professional areas of home economics.

The Department of Home Management, while not offering a major at present, furnishes required and elective service courses to all the major departments in the Division of Home Economics as well as to students from other divisions.

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 Certificate of Approval for Homemaking Education (vocational) should select the Home Economics Education curriculum. (The certificate may be obtained with either the bachelor's or master's degree). The curriculum in home economics education as outlined also qualifies the student, upon graduation, to secure the Legal Permanent High School Certificate and the Legal Special Certificate in Home Economics. The Certificate of Approval referred to above is not in lieu of these state teachers' certificates, but is in addition thereto.

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.

Other Certificates. Students majoring in departments of home economics other than Home Economics Education may qualify, upon graduation, for legal teachers' certificates by electing a sufficient number of appropriate courses in education. However, only those students fulfilling the requirements set forth in the Home Economics Education curriculum will be eligible to receive the Certificate of Approval entitling them to teach in vocational homemaking programs.

Master's Degree in Home Economics. The Division of Home Economics offers a Master of Science Degree in Home Economics with majors in Clothing and Textiles, Foods and Nutrition, and Home Economics Education. Minors are offered in these departments as well as in Applied Arts and in Child Development and Family Relations. A Master's Degree with a major in General Home Economics is also given whereby a composite major composed of 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 the Graduate School.

Requirements for Graduation. Completion of a curriculum leading to a bachelor's degree usually requires four years. This time may be shortened by attending summer sessions. 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.

The standard amount of work for a student registered in the Division of Home Economics is 16 to 18 semester hours each semester. More than 18 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.

Every freshman student is given careful guidance in exploring the opportunities in all areas of home economics available to those with college training. Guidance of students is continued throughout the four years in order that each individual student may realize her fullest possibilities in her own personal development and in her professional training.

Training in home economics draws from the offerings in all departments in the Division of Home Economics as well as from many other areas of the College. This is shown by a study of the core curriculum required of all students majoring in any of the fields in the Division of Home Economics.

Provisions are made for all majors in the division to have considerable choice in meeting degree requirements, both in deciding upon particular courses to meet the semester-hour requirement in a given field, and in free electives whereby a student may take any course in the College for which he has the necessary prerequisites. However, to insure breadth in general education as well as in the total field of home economics, all students majoring in any area of home economics are required to take a common core of courses.

CURRICULA IN THE DIVISION OF HOME ECONOMICS

I. Core Curriculum to Provide Breadth in Liberal Education ..... 40 or 42 sem. hrs.

Eng. 131-2—English Composition	6
Eng. 231-2—Masterpieces of Literature .	6
Govt. 233—American Government	3
Math. 135—Math. in Gen. Ed. or Elective*	3
Eco. 231—Principles of Economics or 235—Principles of Economics** ...	3
P.E. or Band	4
Zool. 137—Anatomy and Physiology ...	3
Bact. 231—Bacteriology	3
Soc. 230—Introd. to Soc. or 233—Cur. Soc. Prob. ***	3
Chem. 133-4—Elementary Chemistry or 141-2—Gen. Chem.****	6 or 8

II. Core Curriculum to Provide Breadth in Home Economics ..... 19 sem. hrs.

ApA. 131—Art Appl. to Daily Liv.	3
Ch.D & F.R. 131—Pers. and Fam. Rel. .	3
Clo. & Tex. 131—Ward. Planning & Construction	3
Foods & Nutr. 131—Fam. Food Prob. ..	3
Foods & Nutr. 334—Elem. Nutr.	3
HE Ed. 411—H. E. Lectures	1
H. Mgt. 131—Mgt. & Cons. Prob.	3

III. Concentration of Courses in Major Field (in addition to those in Core Curriculum II above) ..... 21 to 30 sem. hrs.

IV. Supplementary Courses in Special Areas to Support Major Field ..... 24 to 36 sem. hrs.

V. Free Electives ..... 9 to 20 sem. hrs.

Total 127 sem. hrs.

Each student enrolled in the division is encouraged to pursue during the first year a uniform freshman curriculum.

*Students passing a proficiency test in mathematics are excused from Math. 135 and may elect a 3 sem. hr. course instead.

**Ag. Eco. 235—Fundamentals of Economics, may be taken upon approval of major professor.

***R. Soc. 432—Rural Sociology, may be taken upon approval of major professor.

****Students who plan to major in Foods and Nutrition must choose Chemistry 141-2 instead of Chemistry 133-4.

RECOMMENDED UNIFORM FRESHMAN YEAR for ALL STUDENTS IN HOME ECONOMICS

First Semester	Credit
Eng. 131—English Composition	3
P.E. or Band	1
Zool. 135—Anat., Phys., & Hyg. or Chem. 133—Elementary Chemistry or Chem. 141—General Chemistry or Elective	3 or 4
Any three of the following	9
Ap.A. 131—Art Appl. to Daily Liv.	
Ch.D. & F.R. 131—Pers. & Fam. Rel.	
Clo. & Tex. 131—Ward. Plan. & Constr.	
Foods & Nutr. 131—Fam. Food Prob.	
H. Mgt. 131—Mgt. & Cons. Prob.	
	16 or 17

Second Semester	Credit
Eng. 132—English Composition	3
P.E. or Band	1
Bact. 231—Bacteriology or Chem. 134—Elementary Chemistry or Chem. 142—General Chemistry or Elective	3 or 4
Math. 135—Math. in Gen. Ed. or Elective	3
The two home economics courses not scheduled the first semester	6
	16 or 17

BACHELOR OF SCIENCE IN HOME ECONOMICS MAJOR IN APPLIED ARTS

In addition to Core Curricula, I and II above,

III. Concentration of Courses in Major Field ..... 24 sem hrs.

Ap.A. 133—Design	3
Ap.A. 231—Costume Design	3
Ap.A. 328—Apprec. of Art Today	2
Ap.A. 331—Interior Design	3
Arch. 210—Introduction to Art	1
Approved electives in Ap.A.	12

IV. Supplementary Courses in Special Areas to Support Major Field ..... 24 sem. hrs.

Ch.D. & F.R. 132—Intro. to Child Guidance or elective	3
H.E. Ed. 331—Methods of Teaching	3
Proposed electives from the following:	12 sem. hrs.
Clo. & Tex. 335—Weaving & History of Textiles	3
Clo. & Tex. 435—Home Furnishings	3
Psy. 330—Psych. in Bus. & Ind.	3
Clo. & Tex. 231—Textl. for the Consumer	3
H. Mgt. Elective	3
Physics 237—Techniques of Photo.	3
Speech 333—Stage Craft	3
Acct. 244—Elementary Accounting	4

V. Free Electives* ..... 18 or 20 sem. hrs.

Total 127 sem. hrs.

*Students wishing to take one of the following options may use the 18 or 20 sem. hrs. of free electives to complete it.

Interior Design Option, 15 sem. hrs. approved electives from the following:

Clo. & Tex. 335—Weaving & History of Textiles	3
Clo. & Tex. 435—Home Furnishings	3
H. Mgt. 431—Housing the Family	3
H. Mgt. 433—Home Equipment	3
Arch. 211—Introduction to Art	1
Arch. 133—Commercial Lettering	3
Arch. 239—Pottery	3
Arch. 320—History of Ornament	2
Arch. 335—History of Art	3
Free Electives	3 or 5 sem. hrs.

Recreation Option ..... 15 sem. hrs.

Ap.A. 437—Art for Exceptional Child	3
Foods & Nutri. 437—Quan. Cook.	3
Physics 237—Techniques of Photo.	3
Speech 333—Stagecraft	3
Arch. 133—Introduction to Lettering or 239—Pottery	3
Free Electives	3 or 5 sem. hrs.

Teaching Option. Students wishing to qualify for public school teaching must meet state certification requirements for the type certificate desired. HE Ed. 331, required for the B.S. Degree with a major in Applied Arts, may count as 3 hrs. of professional education methods.

See recommended uniform freshman year above for suggested distribution of courses the first year.

BACHELOR OF SCIENCE IN HOME ECONOMICS MAJOR IN CHILD DEVELOPMENT AND FAMILY RELATIONS

In addition to Core Curricula, I and II above,

III Concentration of Courses in Major Field ..... 21 sem. hrs.

Ch. D & F.R. 132—Introduction to Child Guidance;
432—Skills & Technique in Working with Pre-School Children;
433—Fam. Rel. 9
Ch.D. & F.R. 231—The Infant, or
331—Early Childhood, or
431—Later Childhood 3
Ch.D. & F.R. 435—Student Teaching, or 436—Parent Education, or
438—Exceptional Children in the Family 6
Ch.D. & F.R. elective 3

IV. Supplementary Courses in Special Areas to Support Major Field ..... 36 sem. hrs.

Ap.A. 232—Crafts Survey 3
Clo. & Tex. 232—Dress Design or
334—Family Clothing 3
Foods & Nutr. 331—Meal Planning & Table Service 3
H. Mgt. 332—Gen. Home Mgt.;
432—H. Mgt. Res. 6
H.E. Ed. 331—Methods of Teaching;
435—Adult Leadership 6
Psy. 331—Child Psychology;
433—Mental Hygiene 6
Ed. 230—Education Psychology;
333—Curriculum Development in Elementary Education;
3310—Children's Literature 9

V. Free Electives ..... 13 sem. hrs.

Total 127 sem. hrs.

See recommended uniform freshman year above for suggested distribution of courses the first year.

BACHELOR OF SCIENCE IN HOME ECONOMICS MAJOR IN CLOTHING AND TEXTILES

In addition to Core Curricula, I and II above,

III. Concentration of Courses in Major Field ..... 27 sem. hrs.

Clo. & Tex. 231—Textiles for the Consumer;
232—Dress Design & Tailoring 6
Clo. & Tex. 336—Dress Decoration or
431—Advanced Textiles 3
Clo. & Tex. 432—Textile Testing or
434—Advanced Tailoring 3
Clo. & Tex. electives 15

IV. Supplementary Courses in Special Areas to Support Major Field* ..... 27 sem hrs.

Ap.A. 231—Costume Design;
331—Interior Design 6
Ch.D. & F.R. elective 3
Foods & Nutr. elective 3
H. Mgt. 332—General Home Management or H.E.Ed. 331—Methods of Teaching 3
Electives in H.E. 9
Ed. 230—Educational Psychology 3

V. Free Electives ..... 12 to 14 sem. hrs.

Total 127 sem. hrs.

See recommended uniform freshman year above for suggested distribution of courses the first year.

*Students wishing to secure a legal teaching certificate should elect other professional courses to qualify for the type certificate required.

BACHELOR OF SCIENCE IN HOME ECONOMICS
MAJOR IN FOODS AND NUTRITION

In addition to Core Curricula, I and II above,

III. Concentration of Courses in Major Field ..... 21 sem. hrs.

Foods & Nutr. 231—Food Preparation; 436—Experimental Cookery; 331—Meal Planning & Table Serving 9

Dietetics Option ..... 12 hrs.
Foods & Nutr. 437—Large Quan. Cook.; 438—Inst. Org. & Adm.; 431—Nutrition in Disease 9
Foods & Nutrition elective 3

Institutional Management Option ..... 12 hrs.
Foods & Nutri. 437—Large Quan. Cook.; 438—Inst. Org. & Adm. 6
Acct. 244—Elementary Accounting 4
Foods & Nutrition elective 2

Research Option ..... 12 hrs.
Chem. 331-2—Quantitative Analysis ... 6
Food & Nutrition electives 6

Teaching Option* ..... 12 hrs.
H.E. Ed. 331—Methods of Teaching; 431—Advanced Methods of Teaching .. 6
Foods & Nutrition electives 6

IV. Supplementary Courses in Special Areas to Support Major Field ..... 29 sem. hrs.

Ap.A. 331—Interior Design 3
Ch.D. & F.R. elective 3
Clo. & Tex. 231—Textile for Consumer; elective 6
Psy. 230—Introduction to Psychology .. 3
H.E. Ed. 331—Methods of Teaching or Ed. 230—Educational Psychology or 330—Prin. of Modern Educ. 3
Chem. 341—Intro. to Org. Chem.; 342—Physical Chemistry 8
H.Mgt. 432—Home Mgt. Res. 3

V. Free Electives ..... 13 sem. hrs.

Total 127 sem. hrs.

See recommended uniform freshman year above for suggested distribution of courses the first year.

BACHELOR OF SCIENCE IN HOME ECONOMICS
MAJOR IN HOME ECONOMICS EDUCATION

(Vocational Home Economics Teacher Education)

In addition to Core Curricula, I and II above,

III. Concentration of Courses in Major Field ..... 23 sem. hrs.

H.E. Ed. 331—Meth. of Teach.; 426—Prob. in Stud. Teach.; 431—Adv. Meth. of Teach.; 461—Stud. Teach. in Home Econ. ... 14
Ed. 230—Educ. Psych.; 330—Prin. of Modern Education 6
Home Econ. Ed. or Ed. elective 3

IV. Supplementary Courses in Special Areas to Suport Major Field ..... 32 sem. hrs.

Ap.A. 231—Costume Design; 331—Interior Design 6
Ch.D. & F.R. electives 6
Clo. & Tex. 231—Textile for Consumer; elective 6
Foods & Nutr. 331—Meal Planning & Table Service 3
H. Mgt. 432—H. Mgt. Res. 3
Elective in Div. of Home Econ. 3
Electives not in Div. of Home Econ. 5

V. Free Electives ..... 11 or 13 sem. hrs.

Total 127 sem. hrs.

See recommended uniform freshman year above for suggested distribution of courses the first year.

*Other professional courses to qualify for the type certificate required. (The 16 hrs. of free electives may be counted toward satisfying the certification requirements.)

BACHELOR OF SCIENCE IN HOME ECONOMICS
MAJOR IN HOME AND FAMILY LIFE

(Formerly called General Home Economics)

In addition to Core Curricula, I and II above,

III Concentration of Courses in Major Field ..... 30 sem. hrs.

Ap.A. 231—Costume Design; 331—Interior Design	6	Clo. & Tex. 231—Textl. for the Cons. or 431—Adv. Textl.	3
Ch.D. & F.R. 132—Introduction to Child Guidance or 331—Early Childhood; 433—Fam. Rel.	6	Clo. & Tex. 232—Dress Design or 334—Family Clothing	3
Foods & Nutr. 231—Food Prep. or 331—Meal Plan. & Tab. Serv.	3	H.E. Ed. 331—Methods of Teaching	3
		H. Mgt. 332—Gen. H. Mgt; 432—H. Mgt. Res.	6

IV. Supplementary Courses in Special Areas to Support Major Field ..... 27 sem. hrs.

Psy. 230—Indroduction to Psychology	3	Speech*, Journalism or Radio and Television	3
Mus. Apprec. or Art Apprec.	3	Elec. In Div. of Home Economics	9
History, Anthropology, Philosophy or Religious Education	3	Elec. not in Div. of Home Economics	9

V. Free Electives ..... 9 to 11 sem. hrs.

Total 127 sem. hrs.

See recommended uniform freshman year above for suggested distribution of courses the first year.

CURRICULUM FOR PRENURSING STUDENTS

Students who contemplate the study of nursing as a profession should consult the Dean of Home Economics for the recommended curriculum.

Department of Applied Arts

PROFESSOR RANDALL. ASSISTANT PROFESSORS BEITLER, LOCKARD.

Applied Arts provides learning experiences in such a manner that they can be used by the individual for his own personal, business or professional use. Instruction in this department is based on beliefs that:

1. Every individual desires information which will help in the selection of more beautiful articles for use in enjoyable living.
2. Every individual has some creative ability which can be developed under efficient leadership and in a sympathic environment.
3. Applied Arts can contribute to the health and happiness of the individual, the family and the community.

There is an increased demand for designers in the business world and for persons with good taste and judgment. Professional consultation is available to students desiring assistance in selecting courses for homemaking, recreation, professional, or commercial positions. A student may secure either a major or minor in the Department of Applied Arts. Experiences are offered leading to the Degree of

*Students passing a speech proficiency test may choose any 3 sem. hr. course in this group; others are required to take Speech 233 or 238.

Bachelor of Science in Home Economics with a major in Applied Arts. Students in the Division of Arts and Sciences may also qualify for a major or minor in Applied Arts by following the provisions prescribed for a Bachelor of Arts Degree as given on pages 108-110.

For Undergraduates

111. Design. Cr. 1.
Experience in creating designs and applying them to different materials; attention given to developing an understanding and appreciation of good design in all areas. May be repeated for credit. May not be applied to a degree program in home economics.

131. Art Applied to Daily Living. Cr. 3. (2-3)
Basic knowledge and experience in art as it functions in the life of the individual, the home, the school, the office, and the community.

133. Design. Cr. 3. (1-6).
Study of the elements and principles of design and the use of basic art techniques as a means of expression.

231. Costume Design. Cr. 3. (2-3).
Prerequisite: Ap.A. 131 or equivalent. 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 Survey. Cr. 3. (1-6).
Prerequisite: Non-majors, sophomore standing; majors, 6 semester hours of Applied Arts or equivalent. Exploration and use of various materials; design and construction of minor crafts to use in homes, schools and recreational departments.

233. Textile Decoration. Cr. 3. (1-6).
Prerequisite: Previous training satisfactory to instructor. Methods of textile decoration and their application in linoleum block print; stencil; tie-dye; batik.

328. Appreciation of Art Today. Cr. 2.
Prerequisite: Sophomore standing. A thought-provoking approach to the meaning of beauty and the value of art training in everyday life. Gives practice in evaluating objects with reference to beauty, cost and use.

331. Interior Design. Cr. 3. (2-3).
Prerequisite: Junior standing. Application of design principles to selection and arrangement of wall coverings, rugs, furniture, curtains, pictures, and accessories; study of house plans with emphasis on utility, beauty, and convenience.

332. Woodworking. Cr. 3. (1-6).
Prerequisite: Junior standing. Study of different woods and the finishing of wood. Experience in designing for construction and lathe works; use and care of tools; craftsmanlike habits and procedures emphasized.

335. Homes and Their Furnishings. Cr. 3.
Prerequisite: Junior standing. Study of homes in the United States in relation to the exterior and interior design and how they have met the needs of the occupants in a changing civilization.

337-8. Art in Elementary Education. Cr. 3. (2-3).
Practical application of current art education practices in providing creative experiences for children in our schools.

For Undergraduates and Graduates

425. Silk Screen Printing. Cr. 2. (0-6).
Creative experience in designing for the silk screen. Study of all phases of silk screen printing. Serigraphs and textiles executed.

426. Leatherwork. Cr. 2. (0-6).
Experience in designing for leatherwork. Natural characteristics and beauty of leather emphasized.

427. Sculpture in Wood. Cr. 2. (0-6).
Creative experience in sculpture and carving executed in wood; study of the characteristics and natural beauty of available woods.

433. Advanced Interior Design. Cr. 3. (1-6).
Prerequisite: Junior standing and Ap.A. 331. Advanced work in planning and selecting furnishings for homes and public areas in the community; emphasis on sketching and rendering elevation plans.

434. Metal and Plastic. Cr. 3. (1-6).
Prerequisite: Junior standing. Creative problems executed in metal and plastic, including jewelry-making; structural processes; raising, bending, riveting, soldering; decorative processes; etching, saw-piercing, engraving, inlay enameling.

435. Lapidary. Cr. 3. (1-6).
Prerequisite: Junior standing. Experience in cutting, polishing and drilling local and semi-precious stones. Study of the physical characteristics of stones. Cabochon as well as faceted stones cut.

437. Arts for Exceptional Chldren. Cr. 3. (2-3).
Prerequisite: Ch.D. & F.R. 438. Review of the characteristics of atypical children; application of this knowledge in unfolding the creative potentialities of each child through the use of art experiences as a vocational as well as a recreational medium.

439. Experience Training in Applied Arts. Cr. 3. (0-9).
Prerequisite: Senior standing. Arrangement for student to gain first-hand experience in business, industry, or service in some phases of applied art through cooperative provisions between department and local places of business. Course may be repeated once for credit.

For Graduates

4335. Theory and Practice of Art for Elementary Teachers. Cr. 3.
Prerequisite: Graduate standing. A study of art activities and experiences which will help the child to understand and more fully enjoy the world in which we live.

531. Special Problems. Cr. 3. (1-6).
Prerequisite: Twelve semester hours in applied arts or the equivalent; three hours must have been taken in the medium chosen for the special problems:

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

May be repeated for credit.

Department of Child Development and Family Relations

PROFESSOR CALLAN. ASSISTANT PROFESSOR GIFFORD.
INSTRUCTOR CAMP.

Family relations and parent education are integral parts of the child development program. Students are prepared through the study of the development of the child in infancy to adolescence for homemaking, for teaching, and for work with children's organizations in the community. Majors in this department are equipped to direct nursery schools and other pre-school centers. The nursery school provides a laboratory for student observation and participation. Other laboratory facilities are cooperatively arranged to utilize community resources.

For Undergraduates

111. Nursery School Organization and Management. Cr. 1.
Study of content, facilities, materials and activities suited to pre-school centers. May not be applied to a degree program in home economics.

131. Personal and Family Relationships. Cr. 3.
Guidance in helping students to grow in ability to establish and maintain more satisfying personal, family, and family-community relationships; the influence of family living on the growth and development of the individual; problems encountered in courtship, engagement and early years of marriage as they affect personal and family goals, establishing a home, and preparing for parenthood.

132. Introducton to Child Guidance. Cr. 3. (2-3).
Elementary understanding of the young child at various levels of development; practical techniques of guidance. Nursery school used as laboratory.

231. The Infant. Cr. 3.
Family preparations for the infant; development of the baby during pre-natal period and infancy; visits into homes of infants.

331. Early Childhood. Cr. 3. (2-3).
Prerequisite: Ed. 230 or Psy. 230. Growth of the young child in physical, mental, social and emotional areas; a consideration of his relationships in the family, early school and community. Work with pre-school groups used as a laboratory.

For Undergraduates and Graduates

431. Later Childhood. Cr. 3. (2-3).
Prerequisites: Ed. 230 or Psy. 230; junior standing. Continued development of the child through pre-adolescent stage; a consideration of his relationships in the family and with peer groups. Laboratory experiences with children in organized groups in the community, such as Scouts, play centers, church and community recreation groups, Campfire, Junior Red Cross, etc.

432. Skills and Techniques in Work with Pre-School Child. Cr. 3. (2-3).
Prerequisite: Ch.D. & F.R. 331. Facilities, materials and activities suited to the young child.

433. Family Relations. Cr. 3.
Prerequisite: Junior standing. Intensive study of special problems of living together in the family as affected by family composition, family resources, traditions and practices.

435. Student Teaching in Pre-School. Cr. 3. (1-6).
Prerequisite: Ch.D. & F.R. 432; senior standing in Ch.D. & F.R. Observation and teaching in the pre-school.

436. Parent Education. Cr. 3. (2-3).
Prerequisites: Senior standing, 6 hrs. in Ch.D. & F.R., Psy. 230. Materials and programs for parent groups; laboratory consists of actual work with parents of pre-school children.

438. Exceptional Children in the Family. Cr. 3. (2-3).
Prerequisite: Junior standing. Personal-social development of exceptional children (gifted, disturbed, retarded and physically handicapped); family attitudes and responsibilities in relation to such children; community resources and other agencies which supplement the family in providing for exceptional children; cooperative laboratory work with Departments of Psychology, Health and Physical Education, Speech, Applied Arts and Education.

For Graduates

5336. Family Life Conference. Cr. 3.
Prerequisite: Graduate standing in Home Economics, Education, Psychology or Sociology. Offered in summer only. Emphasis on group processes, social factors influencing family adjustments, personality adjustments, methods and techniques of counseling and teaching.

Department of Clothing and Textiles

PROFESSOR ERWIN. ASSOCIATE PROFESSOR BUSTER.
ASSISTANT PROFESSOR KINCHEN.

The Department of Clothing and Textiles endeavors to develop an understanding of basic principles and concepts in the selection, use, and care of fabrics and in 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.

In addition to courses required for the Degree of Bachelor of Science in Home Economics, many courses are arranged to be used as a minor by students majoring in other fields.

In addition to courses required for a bachelor's degree, the Department of Clothing and Textiles offers graduate work leading to the degree of Master of Science. Also, courses are offered which may be used as minors by graduate students in Home Economics Education or General Education as partial fulfillment for a master's degree.

For Undergraduates

131. Wardrobe Planning and Construction. Cr. 3. (2-3).
For home economics majors. Planning a coordinated wardrobe. Techniques in construction of dresses, semi-tailored suits and home accessories.

132. Buying and Making Clothes. Cr. 3. (2-3).
Open only to non-home economics majors. Buying clothing and accessories to harmonize on different cost levels. Modern methods based on speed and efficient organization in constructing a dress and simple suit.

231. Textiles for the Consumer. Cr. 3.
No prerequisite: Judging fabric quality. Evaluation of consumer literature, terms, labels, laws, and advertising of yard goods, ready-mades, and home furnishings. Projects to compare making with buying ready-made skirts, blouses, etc. Emphasis on cleaning, pressing, and suitability to ultimate use.

232. Dress Design and Tailoring. Cr. 3. (2-3).
Prerequisite: Clo. 131. Principles of dressmaking and basic tailoring applied to a wool coat or suit. Fitting and designing original patterns for blouses and dresses.

233. Decorator Fabrics. Cr. 3. (2-3).
Refinishing and upholstering a chair. Making curtains, cushions, and other furnishings.

331. Simplified Techniques in Dressmaking. Cr. 3. (2-3).
Prerequisite: Junior standing or sewing experience. Designed for non-home economics majors and also for transfers, adults or evening program students. Emphasis on streamlined methods with minimum basting, principles of organization, fitting, cutting, fabric choices; adjusting machine; making a dress and semi-tailored suit.

332. Dress Design and Draping. Cr. 3. (2-3).
Prerequisite: Clo. 232. Construction and design of garments by modeling on a dress form. Emphasis on original line and use of textures.

334. Family Clothing. Cr. 3.
Planning and making clothes to suit various family spending patterns. Problems in speed sewing, shopping and designing to fit to size and other needs, with emphasis on children.

335. Weaving and History of Textiles. Cr. 3. (2-3).
Hand weaving on table and floor looms. Survey of development of textiles from primitive to contemporary life.

336. Dress Decoration. Cr. 3. (2-3).
Prerequisite: Clo. 232. Techniques in original designing and decorative details for garments and accessories.

For Undergraduates and Graduates

When used for graduate credit, these courses must be petitioned for at time of registration. An added problem is required.

411. Special Problems. Cr. 1.
Prerequisites: Senior standing and advanced courses. Short units involving reports and individual projects in limited areas, such as weaving, home decoration, wardrobe problems; merchandising; inventory and budgets. May be repeated for 2 or 3 hours credit.

431. Advanced Textiles. Cr. 3.
Prerequisites: Clo. 231 and Eco. 231. Inherent characteristics of both staples and synthetics as basic guide to selecting textile quality suited for specific needs. Evaluation of consumer literature and practices; standards, laws and performance tests. Purchase and care of household fabrics and clothing suited to individual and family spending patterns.

432. Textile Testing. Cr. 3. (2-3).
Prerequisites: Clo. 231, 431. Practice in standard methods of testing textiles. Wearability studies. Review of research and current developments in textiles.

433. History and Philosophy of Dress. Cr. 3.
Prerequisite: Junior standing. Study of economics and social development of other civilizations as contribution to dress and the fashion industry. Evolution of silhouette, details, and accessories of dress. Effects of religion, psychology, government, and art on modern philosophy of dress and life. Use of historic data as source material for dress design.

434. Advanced Tailoring. Cr. 3. (2-3).
Prerequisite: Junior standing in Clothing. Special techniques in custom tailoring and fitting. Emphasis on interfacings, linings, setting sleeves, rolling lapels and collars. Shrinking and steam pressing; tailor's plackets, pockets and buttonholes. Wool suit, mannish shirt or shirt-waist dress.

435. Home Furnishings. Cr. 3. (2-3).
Prerequisite: Senior standing, Clo. 232 and A.A. 331 or parallel. Application of simplified sewing techniques and fabric choices to upholstering furniture; making interlined draperies, bedspreads, tablecloths, rugs, slipcovers for foam rubber and other cushions.

436. Advanced Pattern Design. Cr. 3. (2-3).
Prerequisite: Clo. 232 and A.A. 231. Use of fundamental dart as basic theory in fitting and designing of patterns. Creative design through fullness, extensions, new structural lines, and silhouette; French dart bodice; basic and varied armholes. Making blouse, jacket, dress. Sizing and grading of patterns.

437. Clothing in Secondary Schools. Cr. 3.
Prerequisites: Clo. 232, H.E.Ed. 331. Planning clothing units for different class levels, adjusting class projects to equipment available. Preparation of teaching aids as illustrative materials, exhibits, tests, demonstrations, assignments. Planning for problem solving in consumer buying of fabrics, color, design, patterns. Adjusting sewing machines. Selection and use of equipment.

For Graduates

4335. Textile Trends and Resources for Elementary Teachers. Cr. 3.
Prerequisite: Graduate standing in elementary education. Consumer source materials; historical and recent developments in textiles. Primitive looms and other textile industries important in history of mankind. Units of special significance for each elementary grade. Special attention to consumer problems for the personal use of class members.

511. Advanced Clothing Units. Cr. 1.
Prerequisites: Advanced clothing courses and graduate standing. May be repeated for two or three hours credit. Short units in special areas such as preparation of patterns and fabrics, sizing to fit, illustrative material; basic techniques and principles of simplified garment construction; tailoring by simplified methods; evaluation of processes.

531. Special Problems in Clothing and Textiles. Cr. 3.
Prerequisites: Advanced clothing courses and graduate standing. May be repeated for six or nine hours credit. Projects on current problems of importance in the personal and professional advancement of class members. Techniques and principles and how to teach them in such areas as advanced study of pattern making and alterations; standards, techniques and principles for securing well-fitted garments; wardrobe coordination; the fashion industry; and the psychology of buying. Readings, reports and projects in basic factual literature and in recent developments in textiles.

631. Thesis.

632. Thesis.

Department of Foods and Nutrition

PROFESSOR MICHIE. ASSOCIATE PROFESSORS LAMB, TWYFORD.

The Department of Foods and Nutrition offers courses leading to the Degree of Bachelor of Science in Home Economics with a major in Foods and Nutrition. Several specializations are offered to train students to be homemakers, teachers and research workers in the field of foods and nutrition, commercial food demonstrators, dietitians and public health nutritionists. The curriculum includes options for these specializations.

In addition to the courses required for the undergraduate degree, the Department of Foods and Nutrition offers work leading to the Degree of Master of Science in Home Economiccs.

For Undergraduates

131. Family Food Problems. Cr. 3. (2-3).
An introductory study of food preparation with application to the planning and service of nutritionally adequate and attractive meals. Emphasis is placed upon efficient use of time, money, energy and equipment.

145. Food Selection and Preparation. (for Nurses) Cr. 4. (3-3).
Principles of food selection, preparation and service with emphasis on the nutritive value of foods. For the needs of students studying nursing.

231. Food Preparation. Cr. 3. (2-3).
Principles of food preparation as applied to food groups and their use in meals.

331. Meal Planning and Table Service. Cr. 3. (1-6).
A study of current food costs, wise consumer practices and family food budgets. Planning, preparing and serving family meals.

332. Consumer Education in Foods. Cr. 3. (2-3).
Prerequisite: Foods & Nutr. 131. Food economics as it relates to the consumer, to food legislation; and to the use of time, labor and equipment.

334. Elementary Nutrition. Cr. 3. (2-3).
Prerequisite: Sophomore standing. The essentials of an adequate diet. Food requirements of persons of different ages and the nutritive values of common food materials. Experimental work with laboratory animals.

For Undergraduates and Graduates

411. Nutrition and the School Lunch. Cr. 1.
Factors of acceptability of foods, nutritional requirements of the school child, methods of developing good food habits through the use of the school lunch. Analysis of the school lunch program.

415. Food Preservation. Cr. 1. (0-3).
Prerequisites: Bact. 231 or equivalent, junior standing. Methods of food preservation such as sterilization, freezing, drying and the use of preservatives. Training in judging quality and causes of spoilage. May be repeated for credit.

431. Nutrition in Disease. Cr. 3. (2-3).
Prerequisites: Foods & Nutr. 334, Organic Chemistry. Adaptation of diet to the sick; dietary treatment of diseases which are influenced by food.

432. Advanced Nutrition. Cr. 3. (2-3).
Prerequisites: Foods & Nutr. 334. The functions of the nutrients and their relation to the chemistry and physiology of the human body.

433. Child Nutrition. Cr. 3.
Prerequisites: Foods & Nutr. 331, 334. The principles of child nutrition; methods of judging nutritional status; planning of food and dietaries for children.

434. Food Service for Special Occasions. Cr. 3. (1-6).
Prerequisites: Foods & Nutr. 331, 334. Experience in preparation and service of foods for special occasions; offers experience in catering.

435. Food Demonstration. Cr. 3. (2-3).
Prerequisite: Foods & Nutr. 331. A study of techniques in food demonstration. To study, observe and practice demonstration methods.

436. Experimental Cookery. Cr. 3. (1-6).
Prerequisite: Foods & Nutr. 331, Elementary Chemistry. Experimental work on the scientific factors influencing food preparation, testing recipes, developing proportions for new recipes.

437. Large Quantity Cookery. Cr. 3. (1-6).
Prerequisites: Foods & Nutr. 331, junior standing. Meal planning, food purchasing and preparation of food in large quantity.

438. Institutional Organization and Administration. Cr. 3. (2-3).
Prerequisite: Foods & Nutr. 437. Management of time, employer-employee relations, budgets and other factors leading to effective management in institutions.

For Graduates

4335. Principles and Applications of Nutrition for Elementary School Teachers. Cr. 3.
Prerequisite: Graduate standing in elementary education. Principles of nutrition; emphasis on nutrient and food requirements of the school child. Use of illustrative materials and animal demonstrations.

531. Problems in Foods and Nutrition. Cr. 3. (1-6).
Prerequisite: Graduate standing in Foods and Nutrition. Areas of study chosen in consultation with major professor in the department. May be repeated for credit.

533. Readings in Nutrition. Cr. 3.
A critical study of the recent literature in the field of nutrition. Preparation and presentation of reports on selected topics. May be repeated for full credit.

631. Thesis. Cr. 3.

632. Thesis. Cr. 3.

Department of Home Economics Education

PROFESSORS ADAMS, CLEWELL. ASSISTANT PROFESSOR NESBITT.

The curriculum in the Department of Home Economics Education meets the requirements for the Certificate of Approval for Vocational Homemaking Education (often referred to as Smith-Hughes); the Special Home Economics Certificate and the Permanent High School Certificate. The department also makes provisions for a Master of Science Degree in Home Economics or a Master of Education Degree with a major in Home Economics Education. See the bulletin of the Graduate School for details.

For Undergraduates

331. Methods of Teaching Home Economics. Cr. 3. (3-0 or equiv.).
Prerequisite: Junior standing in Home Economics. Philosophy and purposes basic to learning experiences; analysis of state and local homemaking programs; study of community needs; study and observation in approved centers of all phases of year-round homemaking programs and their place in the total school-community education program; consideration of professional and technical aspects of teaching in developing competence as a teacher.

411. Home Economics Lectures. Cr. 1.
Required of all graduating seniors in home economics. Study of recent literature and research in home economics. Aspects of professional preparation and development.

431. Advanced Methods of Teaching Home Economics. Cr. 3.
Prerequisite: H.E. Ed. 331. Development of plans for providing a total homemaking curriculum based on community needs; study and observation in approved centers of teaching; techniques in evaluation; individual preparation for student teaching.

For Undergraduates and Graduates

413. Instructor Training in Home Care of the Sick. Cr. 1.
Prerequisite: Senior standing in Home Economics. Workshop course of one week designed to give special training in effective methods of teaching home care of the sick. Prepares instructors to teach Red Cross Home Nursing classes, thereby assisting in the civil defense programs of their communities.

414. Specific Problems in Planning and Preparing Teaching Materials in Home Economics. Cr. 1.
Prerequisites: Senior standing in Home Economics Education, H.E. Ed. 461, or approval of the Head of the Department. A study of the organization and presentation of selected areas or aspects of the home economics program. May be repeated for credit.

426. Problems in Student Teaching. Cr. 2.
Prerequisite: H.E. Ed. 461 (Student Teaching in H.E.) or parallel. Analysis of student teaching problems and ways and means whereby they may be solved.

433. Civil Defense in Home and Community. Cr. 3.
Prerequisite: Junior standing in Home Economics Education. Civil defense problems which affect the home; emphasis on techniques in home care of the sick; home safety and common home emergencies. Planning for incorporating these phases into the teaching program.

435. Adult Leadership in Home Economics. Cr. 3.
Prerequisites: H.E. Ed. 331; senior standing in the Division of Home Economics. Survey of community programs for home and family life education; emphasis on techniques and problems in promotion and organization of programs for adults, out-of-school youth and parents. Interpretations to the community of homemaking programs. Designed for home economics teachers, extension workers in home economics, home service workers, and leaders and workers in other fields of home economics.

461. Student Teaching in Home Economics. Cr. 6. (3-15).
Prerequisite: H.E. Ed. 431. Observation of and participation in teaching in approved centers for a full school day for half a semester, or for half a school day for a full semester.

For Graduates

532. Curriculum Development in Home Economics. Cr. 3.
Philosophy, history and development of year-round programs in home and family life education; administration and legislation pertaining to home economics programs.

533. Evaluation in Home Economics. Cr. 3.
Evaluation techniques and their use in home economics education. Procedures for appraisal of progress in the total program in home economics. Development of evaluative instruments and interpretation of data in the evaluation of various types of home economics programs .

534. Techniques of Research in Home Economics. Cr. 3.
Study of methods and techniques of research in home economics. Interpretation of findings and application to selected situations and problems.

536. Problems. Cr. 3.
Study of individual and group problems according to special interests and needs of the class. May be repeated for credit.

537. Techniques of Supervision in Home Economics. Cr. 3.
Philosophy, responsibilities and techniques of supervision in home economics. Designed for experienced home economists.

631. Thesis. Cr. 3.

632. Thesis. Cr. 3.

Department of Home Management

PROFESSOR TINSLEY. ASSOCIATE PROFESSOR DREW.

The Department of Home Management is a service department to both the majors in the various home economics curricula and to students from other divisions who may wish to elect courses in home management. It aims to give students an appreciation of the value of good management in home and family living as well as to provide means of developing skills in homemaking activities. Residence in the Home Management House gives opportunity for securing actual experiences in the managerial and social aspects of homemaking, including the care of an infant. Provisions are made for married students and experienced homemakers to study special problems in home management in lieu of residence in meeting certification requirements for vocational homemaking teachers.

For Undergraduates

131. Management and Consumer Problems. Cr. 3.
Personal and family problems in use of time, money, energy; guides to better buymanship.

332. General Home Management. Cr. 3.
Philosophy of home management; work simplification; planning for family financial security and general management of all the family's resources.

For Undergraduates and Graduates

411. Household Equipment Workshop. Cr. 1.
Same as Home Management 433, but organized into independent units of one credit each, which may be repeated for credit. Offered in Summer Sessions only.

431. Housing the Family. Cr. 3. (2-3).
Prerequisite: Junior standing in any division of the College. Study of housing as it relates to good family living. Problems of home ownership and operation are stressed, such as space needs; functional arrangement; adequate wiring, heating, lighting, plumbing; building materials; cost, financing, legal and business aspects; and new trends in housing, community and city development.

432. Home Management Residence. Cr. 3.
Prerequisite: Senior standing in home economics. At least six weeks residence in supervised application of skills in all phases of home living, including the care of an infant. Students pay a fixed fee for room and board. In lieu of residence in the nome management house, married students maintaining a home in the community and mature experienced homemakers with the permission of the dean, may work on personal managerial problems under supervision.

433. Household Equipment. Cr. 3. (2-3).
Prerequisite: Junior standing in any division of the College. Selection, operation and care of large and small household equipment; comparative study of gas and electrical applicances.

AIR AND MILITARY SCIENCE AND TACTICS

(Reserve Officers Training Corps)

All physically fit male students of the freshman and sophomore years, except veterans, are required to elect either band, physical education, or Air or Military Science (ROTC). Should the student elect participation in the 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.

The Departments of the Army and the Air Force each maintain a senior division of the ROTC at Texas Technological College, which is classified as a CC (Civilian College) institution. The mission 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 or Air Force of the United States. The Departments of Air and Military Science and Tactics place 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. Besides producing reserve officers, the senior division ROTC provides the principal source of procurement of junior officers for the Regular Army and Regular Air Force. The Department of the Army maintains three units of ROTC at the College, which are: Corps of Engineers, Signal Corps, and Infantry. The Department of the Air Force maintains an AF ROTC generalized course which is open to all freshman, sophomore, junior and senior students.

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 Departments of Air and Military Science and Tactics may allow up to two years' credit in the basic courses for previous honorable active service in the armed forces. Veterans of World War II who have had 6 to 12 months of 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 at least full sophomore college standing for Military Science and full junior standing for Air Science, the minimum considered necessary for the advanced course. In some cases, veterans without sufficient background will be required to complete certain portions of the basic course before being considered qualified 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, services, or specialties. 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 ROTC advanced course and four years of college work the graduate will be tendered a commission as second lieutenant in the Organized Reserve Corps (Army) or in the Air Forces Reserve (Air Force).

Distinguished Military Students are so designated by the Professor of Military Science and Tactics or the Professor of Air 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 at the end of the first year of advanced work and is progressive in that a student so selected, 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 for a maximum of 595 days. (During the fiscal year 1953-54 this was 90 cents per day.) 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 MI .30 caliber rifles, .45 caliber pistols, carbines, machine guns, automatic rifles, .22 caliber rifles, ammunition for small bore rifle shooting, mortars, 20 mm., and 75 mm. guns, trucks, 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. Water purification kit, model combat portable bridging, dummy mines and booby traps, explosives and demolitions, and pioneer, carpenter, electrician, and plumbing tool sets are also provided.

Discipline

Texas Technological College is not a military school. Discipline in the Air and Military Science Division is accomplished by instilling pride in the individual student and by a system of demerits for minor offenses, such as failure to properly 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.

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; 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.

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 the Department of the 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. No student will be enrolled in the advanced course after he has reached 27 years of age. He must sucessfully 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 ROTC to complete the course of instruction offered unless sooner released by the Department of the Army or the Department of the Air Force, and to accept a commission as a second lieutenant if tendered upon completion of ROTC training. Sucessful completion of the advanced course, once begun, is a requirement for graduation unless the student is officially released by the Department of the Army or the Department of the Air Force. A student dropped from the advanced course for the convenience of the government will not be held for credit for the advanced course for graduation.

A basic AF ROTC or Army ROTC student may be released *by mutual agreement between the academic dean* and the Professor of Air Science and Tactics or Professor of Military Science and Tactics, respectively. Once a student has formally enrolled in the advanced course, *however,* he must complete the required work or be officially released by the proper military authorities. The Commandant, Headquarters AF ROTC, determines the disposition of an advanced AF ROTC stu-

dent's case, and the Commanding General of the 4th Army determines the disposition of an advanced Army ROTC student's case. If the student is dropped for the convenience of the government, the student is not required to refund the government the commutation he has received as a contract student. A student who does not fulfill the obligations of his contract will be required to refund all commutation before he is eligible to graduate. 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 conscription, 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 1951.) Students receiving such a deferment from the draft must agree to serve, subject to call by the Department of the Army or Department of the Air Force, two years' active duty after receipt of a commission. Such personnel will be called only if their services are needed. The student may, on his own decision, accept the deferment if offered or elect not to accept the deferment.

Academic Credit

Credit is granted toward a degree for the completion of course in air or 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. A large number of band instruments are furnished by the government; however, students owning instruments are encouraged to use them.

Air Force ROTC Generalized Course

The generalized course covers such special subjects as Elements of Aerial Warfare, Introduction to Aviation, Air Force Administration, Aircraft Engineering, Navigation and Weather, Principles of Leadership, Air Force Management, World Political Geography, Military Law, Courts and Boards, Careers in USAF, and Military Aviation and the Art of War.

The educational mission of the AF ROTC program at Texas Technological College is to select and prepare students, through a permanent program of instruction to serve as Junior officers in the Regular and Reserve Components in the USAF.

The general objectives of AF ROTC, in view of the above stated mission, are:

a. To develop by precept, example and cadet participation, the attributes of character, personality and leadership which are indispensable to every officer of the Air Force.

b. To develop an understanding of the Air Force and an understanding of its organization, missions, problems and techniques.

c. To provide the cadet with a balanced course of training which, in conjunction with academic curriculum, will qualify him to discharge the normal duties and responsibilities which may be required of him as an officer of the Air Force.

d. To arouse in the cadet the desire to obtain an aeronautical rating in the Air Force after graduation.

Corps of Engineers

This 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 in such a manner as to qualify the student for assuming positions of leadership.

Admission to the engineer unit is limited to those applicants who are enrolled in courses leading to an engineering, technical or scientific degree.

This course includes the basic military engineering subjects in the sophomore year, such as History and Traditions of the Corps of Engineers, Weapons, Explosives and Demolitions, Mines and Booby Traps, and Tactics of Small Units; in the first year advanced the courses of instruction become more technical in nature and of greater scope, including subjects such as Bridge Design and Classification, Military Roads and Runway Construction, and Organization and Tactics of Large Engineer Units and Combat Divisions; the second year advanced completes the required education of a future Corps of Engineers Reserve Officer by instruction in River Crossing Operations, Engineer Operations with the Air Force, Construction Utilities and Job Management, and Command and Staff.

Infantry

The Infantry Unit has as its aim the training of students in the mission and operation of the Infantry in such a manner as to qualify them to assume positions of leadership.

Admission to the Infantry unit is open to all academic fields of study. Any qualified student enrolled in any academic course may apply.

The Infantry course is primarily concerned with the study of all Infantry weapons; direct and indirect fire of those weapons; tactics of Infantry Units; and forming of military teams for the accomplishment of special operations. Short courses of study in organization, communications, troop movements, etc., are given to enable students to properly master the study of tactics. The study of tactics is largely

taught through student participation in solving map and sand table problems. Since the Infantry is concerned with direct relationship with individuals, leadership and command ability is of utmost importance and is constantly stressed.

Signal Corps

This unit has for its aim the instruction and training of students in the mission and functioning of the Signal Corps in the Army in such a manner as to qualify them for positions of leadership. The course provides demonstrations and practical problems involving the use of military wire and radio material. The course supplements the technical instruction of the Division of Engineering, particularly in the Electronics field.

Admission to the Signal Corps course is limited to those otherwise qualified who are enrolled in courses leading to a degree in engineering, electronics, or physics; however, students enrolled in courses other than those may be admitted as a second priority.

Typical course subjects include, message center and signal center procedure, Signal Corps photography, field wire, field radio, teletypewriter, and Signal Corps supply, carrier equipment and radar.

Military Awards and Recognition of Achievement

The Department of the Air Force and the Army annually offer regular commissions to a limited number of qualified cadets in the ROTC unit.

The Professor of Air Science and Tactics and the Commandant, Headquarters Air Force ROTC, annually awards the Distinguished AF ROTC Student Certificate and the Distinguished AF ROTC Graduate Certificate respectively to those AF ROTC Junior students and AF ROTC graduates, who have achieved scholastic excellence, and who possess outstanding qualities of leadership, character, and aptitude for military service.

The Society of American Military Engineers awards annually the Society's ROTC Gold Medal with Key Replica to ten Air Force ROTC senior students and ten Air Force ROTC junior students throughout the United States. Award is based on outstanding Air Force ROTC and academic proficiency.

The Air Force Association of Washington, D. C., annually awards a medal to the most outstanding Air Force ROTC cadet in the junior class.

The Armed Forces Communication Association annually awards a medal to the most outstanding senior student in the Signal Corps branch of the Army ROTC unit.

The Association of the U.S. Army of Washington, D. C., annually awards a medal to the most outstanding Infantry ROTC cadet in the graduating senior class.

The Society of American Military Engineers annually awards a medal to the most outstanding engineer ROTC cadet in the senior and junior classes.

AIR AND MILITARY SCIENCE AND TACTICS (ROTC)

PROFESSORS TURNER, GREEN. ASSOCIATE PROFESSORS McCLELLAND, BROWN, CAPLE, PENUEL, BAUMGARDNER.
ASSISTANT PROFESSORS WALKER, FLOURNOY, RICHTER.
SERGEANT INSTRUCTORS ADAIR, HILL, L. C. JONES, J. T. JONES, KENNEDY, KNIGHT. RIDER. NUTT, J. E. PETERSON, V. A. PETERSON, PRESTRIDGE, SCHULTZ, PARMER.

AIR SCIENCE AND TACTICS

AS 121. First Year Basic. Cr. 2.

Prerequisite: Physical and mental qualifications prescribed by the Department of the Air Force. This basic course is devoted to details of the AF ROTC Program; moral and statutory obligations for military service; introduction to aviation; fundamentals of global geography; factors of world power; the nation's defense organization; drill-basic military training.

AS 122. First Year Basic. Cr 2.

Prerequisite: AS 121 or equivalent. This course is a continuation of AS 121.

AS 211. Second Year Basic. Cr. 1.

Prerequisite: AS 121-2 or equivalent. This course is devoted to the purpose, process, and primary elements of aerial warfare: targets, weapons, delivery aircraft, the air ocean, bases, and people; purpose and provisions of the USAF Officer Career Program; survey of occupational fields open to USAF officers; opportunities for and obligations of a career in the USAF as an officer or airman; cadet noncommissioned officer training.

AS 212. Second Year Basic. Cr. 1.

Prerequisite: AS 121-2 and 211. This course is a continuation of AS 211.

AS 331. First Year Advanced. Cr. 3.

Prerequisite: AS 121-2 and 211-2 or equivalent. This course is devoted to the study of command and staff concepts; leadership laboratory; problem-solving techniques; communications processes; principles and techniques of learning and teaching; Air Force correspondence and publications; military law, courts, and boards; applied air science, including principles of flight, aircraft engineering, aerial navigation and weather; and functions of the Air Force Base.

AS 332. This course is a continuation of AS 331.

AS 431. Second Year Advanced. Cr. 3.

Prerequisite: AS 331-2. This course is devoted to the study of principles of leadership and management, career guidance, military aspects of world political geography, military aviation and the art of war and briefing for commission service, and leadership drill and exercise of command.

AS 432. This course is a continuation of AS 431.

MILITARY SCIENCE AND TACTICS

MS 121-2. First Year Basic. Cr. 2.

Prerequisite: Physical and mental qualifications prescribed by the Department of the Army. A basic course concerned with courses common to all military units. Includes Military Courtesy; Military Organization; Evolution of Warfare; Military Policy of the United States; National Defense Act and ROTC; Individual Weapons and Marksmanship; Military Problems of the United States; Maps and Aerial Photography; First Aid and Hygiene; Leadership, Drill, and Exercise of Command.

MS 211-2. Second Year Basic (Corps of Engineers). Cr. 1.

Prerequisite: MS 121-2 or equivalent. History and Traditions of the Corps of Engineers; Characteristics of Weapons; Camouflage, Defense Against Chemical Attack; Explosives and Demolitions; Hand Tools and Rigging; Mines and Booby Traps; Organization and Tactics of Small Units; Organization of the Ground and Field Fortifications; Leadership, Drill, and Exercise of Command.

MS 217-8. Second Year Basic (Infantry). Cr. 1.

Prerequisite: MS 121-2 or equivalent. An elementary course of Basic Infantry. A study of Infantry Weapons (M-1 rifle, automatic rifle, light machine gun, pistol, carbine, grenades and rocket launchers); Marksmanship; Combat Formations; Technique of Fire of Rifle Squad; Infantry Organization; Scouting and Patroling; Tactics of a Rifle Squad; Leadership, Drill, and Exercise of Command.

MS 213-14. Second Year Basic (Signal Corps). Cr. 1.

Prerequisite: MS 121-2 or equivalent. Evolution of Communications and Communications Equipment; History of the Signal Corps; Explanation and Demonstration of Means of Signal Communications and Future Trends; Organization and Mission of the Signal Corps and Organization Capabilities and Functions of the Infantry; Armored and Airborne Division Signal Companies; Basic Wire and Basic Radio Communications; Leadership, Drill, and Exercise of Command.

MS 331-2. First Year Advanced (Corps of Engineers). Cr. 3.

Prerequisite: MS 211-2 or equivalent. Bridge Design and Classification; Engineer Signal Communications; Engineer Combat Intelligence; Engineer Supply; Military Roads and Runways; Organization of Combat Divisions; Tactics of Engineer Units; Vehicles; Leadership. Drill and Exercise of Command.

MS 333-4. First Year Advanced (Signal Corps). Cr. 3.

Prerequisite: MS 213-14 or equivalent. Leadership, Drill, and Exercise of Command. Tactics and techniques of the Signal Corps consists of the following courses: Communication Security; Signal Orders; Records and Reports; Field Wire Communications, (including the installation of telephone systems and circuits, teletypewriter and telegraph systems); Field Radio Communications (including the installation of radio sets and practical demonstration of all types of radio equipment, both AM and FM, operation of the equipment, the required operating procedures and maintenance of station records); Signal Communications Problems of the Infantry Division in Combat; Message and Communication Center Operations; Army and Technical Services System of Supply, (with emphasis upon signal supply); Career Guidance; Weapons and Marksmanship.

MS 337-8. First Year Advanced (Infantry). Cr. 3.

Prerequisite: MS 217-8 or equivalent, leadership, drill and Exercise of Command, Weapons; Gunnery; Military Organization; Combat Intellegence; Field Fortifications; Tactics of Infantry Units; Estimate of the Situation.

MS 431-2. Second Year Advanced (Corps of Engineers). Cr. 3.

Prerequisite: MS 331-2. Includes the following courses common to all military branches: Military Administration and Personnel Management; Military Teaching Methods; Psychological Warfare; and Individual Weapons and Marksmanship. Corps of Engineers subjects are: Engineer Support for the Air Force; Engineer Support for the Communications Zone; Engineer Support for the Type Field Army; Command and Staff; Construction, Utilities and Job Management; Motor Movements; River Crossing Operations; Leadership, Drill, and Exercise of Command.

MS 437-8. Second Year Advanced (Infantry). Cr. 3.

Prerequisite: MS 337-8. An advanced course of subjects essential to all branches of service, includes Military Teaching Methods; Psychological Warfare; Administration; Military Law and Boards; Individual Weapons and Marksmanship; Command and Staff. A further study of advanced infantry subjects, including Organization; Motors and Transportation; Troop Movement; Supply and Evacuation; Tactics of the Infantry Battalion; The Military Team; Communications; New Developments; Leadership, Drill, and Exercise of Command.

MS 433-4. Second Year Advanced (Signal Corps). Cr. 3.

Prerequisite: MS 333-34. Courses common to all military branches include Military Teaching Methods; Psychological Warfare; Military Administration; Military Law and Boards; Individual Weapons and Marksmanship; Leadership, Drill, and Exercise of Command. Tactics and Techniques of the Signal Corps include Wire Communication (material use by the infantry division); Higher Echelon Signal Communications and Equipment (to include telephone and telegraph, radio relay, carrier systems and radar); Duties, Responsibilities, and Problems of a Post Signal Officer; Career Guidance for Signal Corps Officers; Photographic Practices and Darkroom Techniques; Individual Weapons and Marksmanship; Command and Staff; and Combat Intelligence.

GRADUATE SCHOOL

W. B. GATES, *Dean*

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

Admission

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

After September 1, 1954, every one (including graduates of Texas Technological College) seeking admission to the Graduate School with the intention of working toward a graduate degree will take the Aptitude Test of the Graduate Record Examinations either prior to registration or at the first examination date thereafter. Details concerning the examination fee and the dates on which this examination is given at Texas Technological College may be secured from the Dean of the Graduate School.

Admission to the Graduate School does not imply acceptance of a student by a department nor does it imply admission to candidacy for a graduate degree. These are steps taken only after the applicant has satisfied certain specific requirements.

Courses

Graduate credit may be earned in certain of the courses numbered 300 and 400 and in those numbered 500 and above. The departmental material in this catalog indicates which courses may be taken for graduate credit.

Degrees

Texas Technological College offers work leading to the following graduate degrees: Master of Arts, Master of Business Administration, Master of Education, Master of Science, Master of Science in Agriculture, Master of Science in Chemical Engineering, Master of Science in Electrical Engineering, Master of Science in Home Economics, Doctor of Education in various areas of professional education and Doctor of Philosophy with majors in American Civilization, Chemistry, Education, English, and History.

Graduate Bulletin

The division publishes a separate Graduate Bulletin containing a complete account of the general regulations of the Graduate School, requirements for degrees, and other information of value to graduate students. For a copy of this bulletin, those interested should address The Registrar, Texas Technological College, Lubbock, Texas.

DIVISION OF EXTENSION

JACOB H. MILLIKIN, *Director*

Texas Technological College, through the Division of Extension, offers approximately 250 courses through correspondence study for those who cannot attend regularly scheduled classes. Correspondence and Extension Class study courses have been approved by the Association of Texas Colleges. The Division of Extension is a member of the National University Extension Association.

Correspondence Department

The following general regulations govern correspondence courses:

Eighteen semester hours of the work for a Bachelor's Degree may be done through correspondence work. No student may register for or complete a correspondence course during the last semester or summer term before graduation, unless registration is approved by his dean because of schedule conflict or the absence of the needed course in the residence schedule. In any event, a maximum of six hours of the final semester's work may be completed by correspondence, provided the work does not constitute a part of the major or minor requirements toward the degree.

The minimum time for completing a course of 2 semester hours is thirty days; and for a course of 3 semester hours, 45 days.

No credit toward a degree will be given for a correspondence course on which the student has made a grade of F in residence. Failure in residence of a course for which there are alternate choices in meeting degree requirements precludes the taking of the alternate course, or courses, by correspondence.

One-half of the work required for a teacher's certificate may be done by correspondence study.

The registration fee for each semester hour is $7 (a 3 semester hour course costs $21). All fees are payable in advance and are not refundable. A correspondence course may not be exchanged for another course nor transferred to another person.

A student pursuing a degree program at Texas Technological College may not complete more than 6 semester hours by correspondence study during any 12 month period beginning September 15, if he is enrolled full-time in both long and summer sessions, and carries a normal course load. If the course load is more than 15 hours per semester, or 6 hours each summer term, the dean of the student's division may reduce the above maximum of 6 hours by correspondence. If the student should not be enrolled during any semester, or during either or both terms of the summer session, the dean may permit a proportionate increase in the amount of correspondence work to be completed in any 12-month period beginning September 15.

A resident student may begin or continue work in the Extension Division only with the approval of his academic dean 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.

Correspondence courses for credit must be concluded by a final examination taken under the supervision of the designated person on a college campus.

Correspondence study courses are available in the following divisions and departments:

AGRICULTURE

Agricultural Economics and Rural Sociology.

ARTS AND SCIENCES

Bible; Biology; Education and Philosophy; English; Foreign Languages (French, German, Latin and Spanish); Geology (Geography); Government; History, Anthropology and Sociology; Mathematics and Astronomy; Psychology; and, Physical Education.

BUSINESS ADMINISTRATION

Accounting and Finance; Economics; Marketing; and, Secretarial Administration.

HIGH SCHOOL

College entrance courses are available in the following fields: Agriculture; business; English; foreign languages (French, Latin and Spanish); history and social sciences; mathematics and science.

Extension Department

Extension classes may be organized in convenient centers upon the request of a sufficient number of students, depending upon the distance from the campus. Both graduate and undergraduate courses are available.

Registration fees for extension class courses are $7 per semester hour credit. Laboratory fees may be required for courses entailing laboratory work. All fees are required in advance and are not refundable after a course is started.

A maximum of 6 semester hours of extension class credit will be allowed toward a Master's Degree. One fourth of the work for a Bachelor's Degree may be earned through extension class and/or correspondence study work (provided that not more than 18 semester hours may be done through correspondence study alone).

ENROLLMENT

Enrollment for the Long Session, 1953-54

	Freshmen	Sophomores	Juniors	Seniors	Graduates	Total
Agriculture	273	140	153	183	53	802
Arts and Sciences	726	367	354	342	653	2442
Business Administration	492	297	252	191	81	1313
Engineering	646	295	211	247	7	1406
Home Economics	143	53	46	45	24	311
Totals	2280	1152	1016	1008	818	6274

Total Men Students—4485 Total Women Students—1789

Enrollment for the Summer Session, 1953

	Freshmen	Sophomores	Juniors	Seniors	Graduates	Total
Agriculture	19	26	33	68	57	203
Arts and Sciences	122	97	164	287	660	1330
Business Administration	62	63	68	106	33	332
Engineering	78	60	60	126	2	326
Home Economics	65	17	26	43	80	231
Totals	346	263	351	630	832	2422

Total Men Students—1438 Total Women Students—984

EXTENSION

Individual enrollments in extension classes	296
Individual enrollments in correspondence courses	2542
Enrollment for Period, Sept. 1, 1953 to Aug. 31, 1954	2838

Attendance 1925-1953

Year	Long Session	Summer Session	Extension	Totals
1925-26	1043	336		1379
1926-27	1535	677		2122
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	3189	3006	12945
1949-50	6511	3127	4212	13850
1950-51	6124	2745	3627	12496
1951-52	5634	2389	3282	11305
1952-53	5885	2422	2677	10984
1953-54	6274		2838	

DEGREES CONFERRED 1927-1953

	Conferred in 1953			Totals
	Men	Women	Both	1927-53
Division of Agriculture				
Bachelor of Science in Agriculture	130	1	131	1635
Total for Division of Agriculture	130	1	131	1635
Division of Arts and Sciences				
Bachelor of Arts	63	51	114	3268
Bachelor of Science	47		47	744
Bachelor of Science in Education	27	75	102	1476
Bachelor of Music	1	5	6	9
Total for Division of Arts and Sciences	138	131	269	5497
Division of Business Administration				
Bachelor of Business Administration	122	30	152	2096
Bachelor of Science	6		6	80
Total for Division of Business Administration	128	30	158	2176
Division of Engineering				
Bachelor of Architecture	17		17	134
Bachelor of Arts	2	2	4	108
Bachelor of Commercial Arts				5
Bachelor of Science in Architectural Engineering				33
Bachelor of Science in Chemical Engineering	16		16	259
Bachelor of Science in Civil Engineering	25		25	376
Bachelor of Science in Electrical Engineering	31		31	521
Bachelor of Science in Geological Engineering				23
Bachelor of Science in Industrial Education				1
Bachelor of Science in Industrial Engineering	9		9	148
Bachelor of Science in Mechanical Engineering	24		24	443
Bachelor of Science in Petroleum Engineering	27		27	335
Bachelor of Science in Textile Engineering	5		5	136
Bachelor of Science in Textiles				19
Total for Division of Engineering	156	2	158	2541
Division of Home Economics				
Bachelor of Science in Home Economics		40	40	1156
Total for Division of Home Economics		40	40	1156

Graduate School

Master of Arts				
Arts and Sciences	3	5	8	531
Total Master of Arts	3	5	8	531
Master of Business Administration				
Business Administration	6	2	8	48
Total Master of Business Administration	6	2	8	48
Master of Education				
Agriculture	17		17	50
Arts and Sciences	66	72	138	642
Business Administration	2		2	2
Home Economics		1	1	1
Total Master of Education	85	73	158	695
Master of Science				
Agriculture	4		4	100
Arts and Sciences	5	1	6	102
Engineering	1		1	23
Home Economics		2	2	29
Total Master of Sciences	10	3	13	254
Master of Home Economics				
Home Economics				1
Master of Science in Education				
Arts and Sciences				1
Professional in Chemical Engineering				
Engineering	1		1	2
Doctor of Education				
Arts and Sciences	3		3	3
Doctor of Philosophy				
Arts and Sciences	2	1	3	4
Total Doctor's Degrees	5	1	6	7
Honorary Degrees				
Doctor of Law	3		3	11
Doctor of Science				1
Total Honorary Degrees	3		3	12
Total Degrees Conferred	667	286	953	14556

SUMMARY OF DEGREES CONFERRED 1927-1953

Total Bachelors Degrees	13005	Total Men Receiving Degrees	9125
Total Masters Degrees	1530	Total Women Receiving Degrees	5431
Total Professional Degrees	2		
Total Doctors Degrees	7	Total Degrees Conferred	14556
Total Honorary Degrees	12		
Grand Total Degrees Conferred	14556		

APPENDIX A

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 the Texas Technological College; providing for the location of such college; its government; the control of its finances; defining its 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 appropriation 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 this 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) meridian, 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 manufacturing of raw materials into finished products; and said college shall also have complete courses in the 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 their 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 their highest usefulness and greatest happiness and in so doing may prepare themelves 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 adaption of 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 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 those agencies (physical, mental and moral) for the development of the 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 a prerequisite to any aid now extended or hereafter to be extended by the Government of the United States to State institutions of this character and all such white male students shall, during their attendance at such college, be subject to such military discipline and control as the board of directors may 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 the 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 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 students' 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 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 the 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 power 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 revenues 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 purpose of paying the expense 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 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 purposes 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 institution 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 separate days, it is therefore enacted that said rule be suspended and this act take effect and be in force on and after its passage.

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