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TEXAS TECHNOLOGICAL COLLEGE

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TWENTY-SIXTH  
ANNUAL CATALOG

*With Announcements for 1951-52*



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## 1951

1952

JANUARY							FEBRUARY							MARCH							APRIL						
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# COLLEGE CALENDAR 1951-52

## Twenty-Seventh Annual Session

### SUMMER SESSION 1951

1951

#### First Term

- June 3. Sunday, 9 A.M. Dormitories open for room occupancy.
- June 4. Monday. Summer Session begins. Registration for first term. Breakfast served as first meal in dormitories.
- July 13. Friday. First term ends.

#### Second Term

- July 16. Monday. Registration for second term.
- Aug. 24. Friday. Second term ends. Summer Session closes. Commencement 8 P.M.

### LONG SESSION 1951-52

#### FALL SEMESTER

1951

- Sept. 14. Friday, 3 P.M. General faculty meeting, Aggie Memorial Auditorium.
- Sept. 15. Saturday, 9 A.M. Divisional faculty meetings.
- Sept. 16. Sunday, 9 A.M. Dormitory rooms open for occupancy. First meal, breakfast Monday, September 17.
- Sept. 17. Monday. Fall semester begins.
- Sept. 17. Monday, 1:30 P.M. All entering freshmen report to college Gymnasium.
- Sept. 17-19. Monday-Wednesday. Freshmen counseling program.
- Sept. 19. Wednesday. Pre-registration consultations for all students.
- Sept. 20-21. Thursday-Friday. Registration for fall semester.
- Sept. 20. Thursday. All-Church Night—Lubbock churches.
- Sept. 22. Saturday. 8 A.M. Classes begin.

- Sept. 24. Monday. Late registration fee will be charged after this date.
- Sept. 27. Thursday. Last day to complete registration and pay fees for fall semester. Last day to add courses.
- Oct. 3. Wednesday. 10-12 A.M. Student convocation. Election of class officers for the year.
- Oct. 13. Saturday. Last day for filing with academic dean requests to make up examinations missed and postponed or to remove conditions incurred during the preceding Spring Semester.
- Oct. 22. Monday, 5 P.M. Progress reports on freshmen due in Registrar's Office.
- Oct. 27. Saturday. Date for taking examinations petitioned for on October 13.
- Nov. 1. Thursday. Last day on which a course may be dropped without grade penalty.
- Nov. 5-8. Monday-Thursday. Religious Emphasis Week.
- Nov. 17. Saturday, 3 P.M. Mid-semester reports due in Registrar's Office.
- Nov. 21. Wednesday, 10 P.M. Classes dismissed for Thanksgiving holidays.
- Nov. 26. Monday, 8 A.M. Classes resumed.
- Nov. 27. Tuesday. A course cannot be dropped after this date without a grade of WF, unless drop is initiated by academic dean.
- Dec. 21. Friday, 10 P.M. Classes dismissed for Christmas holidays.

## 1952

- Jan. 3. Thursday, 8 A.M. Classes resumed.
- Jan. 21-25. Monday-Friday. Week of restricted social activities.
- Jan. 26.-  
Feb. 1. Saturday-Friday. Final examinations Fall Semester.
- Feb. 2. Saturday. Students without room reservations for the Spring Semester must vacate dormitory rooms not later than noon this date. Fall Semester ends.

## SPRING SEMESTER

- Feb. 3. Sunday, 12 Noon. Dormitory rooms open to new occupants.
- Feb. 4. Monday, 8 A.M. Spring Semester begins. Entering freshmen assemble in Aggie Memorial Auditorium.

- Feb. 5-6. Tuesday-Wednesday. Registration for Spring Semester.
- Feb. 7. Thursday, 8 A.M. Classes begin.
- Feb. 7. Thursday. All-Church Night—Lubbock churches.
- Feb. 9. Saturday. Late registration fee charged after this date.
- Feb. 12. Tuesday. Last day to complete registration and pay fees for Spring Semester. Last day to add courses.
- March 1. Saturday. Last day for filing with academic dean requests to make up examinations incurred during the preceding Fall Semester.
- March 7. Friday, 5 P.M. Progress reports on freshmen entering this semester due in Registrar's Office.
- March 10-13. Monday-Thursday. Willson Lectures.
- March 12. Wednesday. Last day on which petition may be filed to drop a course without penalty.
- March 15. Saturday. Date for taking examinations petitioned for on March 1.
- March 20. Thursday. Last day for filing with academic dean statement of intention to graduate on May 26, 1952.
- April 5. Saturday, 5 P.M. Mid-semester reports due in Registrar's Office.
- April 10. Thursday, 10 P.M. Classes dismissed for Easter vacation.
- April 15. Tuesday, 8 A.M. Classes resumed.
- April 19. Saturday. A course cannot be dropped after this date without a grade of WF, unless drop is initiated by academic dean. Last day for submission of first draft of thesis for Master's Degree for May graduates.
- May 12. Monday. Last day for instructors to file with Registrar correspondence course grades for candidates for graduation on May 26. Students should complete final examination in time for same to be mailed to instructor by May 1.
- May 19-23. Monday-Friday. Week of restricted social activities.
- May 23. Friday, 5 P.M. Meeting of Divisional Faculties to approve candidates for degrees. Last day for submission of theses for binding (graduate students).
- May 24-30. Saturday-Friday. Final examinations, Spring Semester.
- May 25. Sunday, 8 P.M. Baccalaureate sermon.

May 26. Monday, 8 P.M. Commencement.  
May 30. Friday, 5 P.M. Spring Semester ends.

SUMMER SESSION

June 2. Monday. Summer Session, 1952, begins.

## BOARD OF DIRECTORS

### OFFICERS

CHARLES C. THOMPSON, *Chairman*  
CHANSOR E. WEYMOUTH, *Vice Chairman*  
W. T. GASTON, *Secretary*

### MEMBERS

#### Term Expires 1953

LEON INCE.....	Houston
CHANSOR E. WEYMOUTH.....	Amarillo
CHARLES W. WOOLDRIDGE.....	Dallas

#### 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

### STANDING COMMITTEES

Building: Weymouth, Ince, Price.  
Executive: Benson, Abbott, Pfluger, Wooldridge.  
Finance: Price, Benson, McLaughlin.  
Legislative: McLaughlin, Abbott, Benson, Ince.  
Local Affairs: Ince, Abbott, Benson.

### SPECIAL COMMITTEES

Agriculture: Pfluger, Price, Weymouth.  
Textiles: Wooldridge, Benson, Ince, Pfluger.  
Minerals: Weymouth, Abbott, McLaughlin.

## OFFICIAL DIRECTORY

Academic Year 1950-51

## OFFICERS OF ADMINISTRATION

- DOSSIE MARION WIGGINS, B.A., M.A., Ph.D., LL.D., President  
Office, 217 Administration Building
- CLIFFORD BARTLETT JONES, LL.D., President Emeritus
- EDWARD NEWLON JONES, B.S., Ph.D., LL.D., Vice President  
Office, 217 Administration Building
- \*\* JAMES ROY WELLS, B.B.A., B.A., M.B.A., Assistant to the President  
Office, 217 Administration Building
- \* LEMUEL EDWIN SMITH, B.B.A., M.B.A., Assistant to the President  
Office, 217 Administration Building
- JAMES GEORGE ALLEN, B.A., M.A., Dean of Student Life  
Office, 209 Administration Building
- WARREN PERRY CLEMENT, B.A., M.A., Registrar and Director of Admissions  
Office, 112 Administration Building
- WILLIAM THOMAS GASTON, Business Manager and Secretary of Board of Directors  
Office, 102 Administration Building
- WILLIAM BRYAN GATES, B.S., M.A., Ph.D., Dean of Graduate Studies  
Office, 101 Museum Building
- ROBERT CABANISS GOODWIN, B.A., M.A., Ph.D., Dean of Arts and Sciences  
Office, 211 Administration Building
- ZOE HARRIS, B.S., M.A., Director of Food Service  
Office, Dormitory Administration Building
- GEORGE GAIL HEATHER, B.S., M.A., Ph.D., Dean of Business Administration  
Office, 219 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
- JACOB HOMER MILLIKIN, B.A., M.A., Director of Extension  
Office, 106 Extension Building
- MARSHALL LEE PENNINGTON, B.B.A., Comptroller  
Office, 101 Administration Building
- WENZEL LOUIS STANGEL, B.S., M.S., Dean of Agriculture  
Office, 201A Agriculture Building
- MARGARET GESSNER TWYMAN, B.A., M.A., Dean of Women  
Office, 319 Administration Building
- MARGARET WATSON WEEKS, B.S., M.S., Dean of Home Economics  
Office, 104 Home Economics Building
- OLLEN TURNER, Colonel, U.S. Air Force, Professor of Air Science and Tactics  
Office, 1 Military Science Building
- WILLARD WHITE, B.S., Colonel, U.S. Army, Professor of Military Science and Tactics  
Office, 1 Military Science Building
- \* \* \* \*
- FLORENCE EVELYN CLEWELL, B.A., Assistant Registrar  
Office, 112 Administration Building
- NEIL CASEY FINE, B.S., M.S., Assistant Dean of Agriculture  
Office, 201A Agriculture Building
- WARREN GAMALIEL HARDING, B.A., M.Ed., Assistant Registrar  
Office, 112 Administration Building

\* Fall Semester.

\*\* Spring Semester.

LEWIS NORTON JONES, B.S., M.A., Assistant Dean of Student Life  
Office, 110 Administration Building

NANCY NALL, B.A., M.Ed., Assistant Dean of Women  
Office, 319 Administration Building

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

MARION THOMPSON, B.A., M.A., Assistant Dean of Women  
Office, 319 Administration Building

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



## FACULTY

\* Fall Semester Only, 1950-51

\*\* Spring Semester Only, 1950-51

§ On Leave

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

**DOSSIE MARION WIGGINS**, President, 1948.

B.A., Simmons; M.A., Ph.D., Yale; L.L.D., Hardin-Simmons.

**BYRON ROBERT ABERNETHY**, Professor of Government, 1941, 1947.

B.A., N. Dakota State Teachers; M.A., North Dakota; Ph.D., Iowa.

**JAMES FOOTE ADAMS**, Instructor in Government, 1947.

M.A., Chicago.

**OTTO VINCENT ADAMS**, Professor of Civil Engineering, 1927, 1932.

B.S. in C. and I.E., Colo. A.&M.; M.S.E., Michigan; D.Sc., Colo. A.&M.

**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.

**WALTER HERBERT ALEXANDER, JR.**, Professor of Geology, 1950.

A.B., Marietta College; M.A., Cincinnati.

**RENDEL B. ALLDREDGE**, Assistant Professor of Economics, 1950.

B.S., Oregon.

**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.

**HUGH ALLEN ANDERSON**, Coordinator of Veterans Affairs and 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.

**JACK OTHO ASHWORTH**, Instructor in Agricultural Economics, 1949.

B.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**, Director of Guidance Center and Professor of Education and Psychology, 1933, 1939.

B.S., M.A., Ph.D., George Peabody.

**JEANNE HINES BATTS**, Part-time Instructor in Biology, 1950.

B.A., Texas Tech.

**HAYNES MADDEN BAUMGARDNER**, Captain U. S. Air Force, Assistant Professor of Air Science and Tactics, 1948.

B.S., Texas Tech.

**JOHN HENRY BAUMGARDNER**, Assistant Professor of Animal Husbandry, 1945.

B.S., M.S., Texas Tech.

**DAN ALAN BEE**, Part-time Instructor in Petroleum Engineering, 1950.

B.S., Texas Tech.

**ETHEL JANE BEITLER**, Assistant Professor of Applied Arts, 1947.

B.S., Iowa State; M.Ed., Marquette.

§ **BYRON JIRDEEN BENNETT**, Associate Professor of Electrical Engineering, 1943, 1946.

B.S. in E.E., Texas Tech; M.S. in E.E., Stanford.

- § JAMES WAYLAND BENNETT, Assistant Professor of Agricultural Economics, 1948.  
B.S., Texas Tech.
- NEIL WARNER BERST, Assistant Professor of Chemistry and Chemical Engineering, 1950.  
B.S., Iowa State; M.S., Ph.D., Penn. State.
- LOTUS BERRY BLACKWELL, Instructor in Marketing, 1948.  
B.A., M.A., Hardin-Simmons.
- WILLIAM ALLEN BLACKWELL, Instructor in Electrical Engineering, 1950.  
B.S., Texas Tech.
- \* HAROLD AVRILL BOLINGER, Part-time Assistant Professor of Accounting and Finance, 1950.  
C.P.A.
- RALPH HURD BOND, Associate Professor of Geology, 1948.  
B.A., M.S., Ohio State.
- FRED WILLIAM BOREN, Instructor in Animal Husbandry, 1950.  
B.S., Texas A.&M.; M.S., Kansas State.
- ADRAIN C. W. BOWDEN, Assistant Professor of Civil Engineering, 1942, 1950.  
B.S. in C.E., Texas Tech.
- WELDON LEROY BRADSHAW, Professor of Architecture, 1938, 1943.  
B.S. in Arch., Texas A.&M.
- § JOHN PAUL BRAND, Associate Professor of Geology, 1948.  
B.A., M.A., Miami, Ohio.
- FRANCIS J. BROCK, Instructor in Agricultural Economics, 1950.  
B.S., Texas A.&M.; M.S., Texas Tech.
- JEWELL BROCK, Instructor in Chemistry, 1948.  
B.S., West Texas; M.S., 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.
- LAWRENCE ORR BUNTON, Associate Professor of Textile Engineering, 1947.
- HARRY RAY BURKHART, Assistant Professor of Animal Husbandry, 1948.  
B.S., Colo. A.&M.; M.S., Texas A.&M.
- § EARL BURNETT, Assistant Professor of Agronomy, 1948.  
B.S., M.S., Texas Tech.
- MELVIN BURNETT, Major, U. S. Air Force, Assistant Professor of Air Science and Tactics.
- EDNA WALKER BUSTER, Associate Professor of Clothing and Textiles, 1927, 1937.  
B.S., T.S.C.W.; M.A., Columbia.
- MARTHA WASHINGTON BUTTRILL, Assistant Professor of Foods and Nutrition, 1945.  
B.S., M.A., T.S.C.W.
- SANNIE CALLAN, Professor and Head Department of Child Development and Family Relations, 1936, 1937.  
B.S., Pittsburgh; M.A., Columbia.
- EARL D. CAMP, Assistant Professor of Biology, 1945, 1948.  
B.S., Texas Tech; M.S., New Mexico.
- TRUMAN WILDES CAMP, Professor and Head Department of English, 1935, 1949.  
B.A., Ph.D., Yale.
- § JOE THOMAS CARDWELL, Instructor in Dairy Manufactures, 1947.  
B.S., M.S., Texas Tech.
- 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.

- \* SAMUEL WHITTEN CHISHOLM, Half-time Assistant Professor of Accounting and Finance, 1950.  
B.B.A., M.B.A., Texas Tech; C.P.A., Texas.
- JAMES HUBERT CLEM, First Lieutenant, U. S. Air Force, Assistant Professor of Air Science and Tactics, 1949.  
B.S., Furman.
- GERALDINE CLEWELL, Associate Professor of Home Economics Education, 1935, 1944.  
B.S., Texas Tech.; M.S., Iowa State.
- VERNON THOMAS CLOVER, Associate Professor of Economics, 1947.  
B.S., M.S., Kansas State (Ft. Hays); Ph.D., Colorado.
- \* MARGARET ETHEL COBB, Instructor in English, 1946.  
B.A., Queens.
- OTIS HERBERT COLVIN, JR., Instructor in Music, 1950.  
B.A., B.Mus., Baylor; M.Mus., Colorado.
- LEWIS BRISCOE COOPER, Associate Professor of Education and Psychology, 1938.  
B.S., North Texas; M.A., Texas; Ph.D., Cincinnati.
- WILLIAM MOORE CRAIG, Professor of Chemistry, 1926.  
B.A., M.A., Southwestern; M.A., Texas; Ph.D., Harvard.
- JAMES CECIL CROSS, Professor and Head Department of Biology, 1948.  
B.A., Southwestern; M.A., Ph.D., Texas.
- DERYEE ASHTON CROSSLEY, JR., Part-time Instructor in Biology, 1949.  
B.A., Texas Tech.
- MARY ELLA CROZIER, Instructor in Child Development, 1950.  
B.S., Texas; Merrill-Palmer School; M.A., Michigan.
- ALBERT BENJAMIN CUNNINGHAM, Professor Emeritus of English, 1929, 1939.  
B.A., Muskingum; B.D., Drew; M.A., Ph.D., New York; Litt.D., Lebanon.
- § DEAN INGRAM DAULEY, Instructor in Government, 1948.  
B.A., Texas Tech; M.A., Vanderbilt.
- RAYMOND LEON DAVIDSON, Assistant Professor of Education, Extension Division, 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 C.E., Michigan.
- 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.
- ROGER FOSTER DETMAN, Assistant Professor of Chemical Engineering, 1949.  
B.S. in Ch.E., M.S., Ph.D., Louisiana.
- ENCHEL HUNTER DODGE, Assistant Professor of Chemical Engineering, 1948.  
B.S. in Ch.E., Purdue; M.S. in Ch.E., Washington.
- 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.
- ANDERSON HUNTER DUPREE, Assistant Professor of History, 1950.  
A.B., Oberlin; A.M., Harvard.
- GEORGE W. DUPREE, Part-time Professor of Accounting and Finance, 1943.  
L.L.B., Texas.

- JAMES EDGAR DYKES**, Instructor in Marketing, 1950.  
B.A.A., Alabama Polytechnic.
- CHARLES DUDLEY EAVES**, Professor of History, 1925.  
B.A., Texas; M.A., Chicago; Ph.D., Texas.
- LUTA PELHAM EAVES**, Assistant Professor of Accounting and Finance, 1942.  
B.B.A., M.B.A., Texas Tech.
- TED ELDON EDWARDS**, Part-time Instructor in Education, 1950.  
B.A., Howard Payne; M.A., Hardin-Simmons.
- § GEORGE OLIVER ELLE**, Assistant Professor of Horticulture, 1938, 1940.  
B.S., Oregon State; M.S., Texas Tech.
- RAYMOND PRUITT ELLIOTT**, Assistant Professor of Music, 1950.  
B.M., M.S., Kansas.
- MABEL DEANE ERWIN**, Professor and Head Department of Clothing and Textiles, 1926.  
B.S., Purdue; M.A., Columbia.
- 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.
- \* FAY EVELYN FLETCHER**, Fiber Technologist, Cotton Research, 1950.  
B.A., Texas Tech.
- EDMOND HUGH FORD**, Instructor in Mechanical Engineering, 1949.  
B.S. in M.E., Texas Tech.
- ROBERT WALLER FRIEDBERG**, Instructor in Marketing, 1949.  
B.S., Teachers College of Connecticut; M.A., New York.
- GORDON FULLER**, Professor of Mathematics, 1950.  
B.A., West Texas; M.A., Ph.D., Michigan.
- STERLING HALE FULLER**, Assistant Professor of Government, 1950.  
B.S., M.A., Oklahoma.
- WILLIAM McNAIR FOX**, Assistant Professor of Management, 1950.  
B.B.A., M.B.A., Michigan.
- 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 Graduate Studies, 1925, 1950.  
B.S., Millsaps; M.A., Vanderbilt; M.A., Michigan; Ph.D., Pennsylvania.
- ERNEST WILLIS GIBSON**, Assistant Professor of Accounting and Finance, 1944.  
B.A., Transylvania; M.A., Kentucky; C.P.A.
- WINNIFRED GARLAND GIFFORD**, Assistant Professor of Child Development, 1949.  
B.S., Illinois; M.S., Iowa State.
- CHARLES WADE GILBERT**, Instructor in Civil Engineering, 1950.  
B.S. in C.E., Texas Tech.; M.S. in C.E., Texas.
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B.S. in C.E., M.S. in C.E., Texas.
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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, Instructor in Chemistry, 1946.  
B.A., M.A., Texas Tech.
- RICHARD ARTHUR STUDHALTER, Professor of Botany, 1925.  
B.A., Texas; M.A., Washington; Ph.D., Chicago.
- ARCHIE WILLIAM SULLIVAN, Assistant Professor of Agricultural Engineering, 1948.  
B.S., M.S., Alabama Polytechnic.
- § HASKELL GRANT TAYLOR, Professor of Accounting and Finance, 1937, 1948.  
B.B.A., M.A., Texas Tech.
- GUSSIE LEE TEAGUE, Associate Professor of English, 1926, 1943.  
B.A., Oklahoma; M.A., Colorado.
- ETHEL KING TERRELL, Associate Professor of Business Education and Secretarial Administration, 1942, 1947.  
B.A., Baylor; M.A., Texas Tech.
- EDISON HUXLEY THOMAS, Instructor in Mathematics, 1947.  
B.A., M.B.A., Texas.
- ISABEL CECILIA THOMPSON, Assistant Professor of Speech, 1949.  
B.S., Sul Ross; M.A., Iowa.
- MILTON ELDON THOMPSON, Instructor in Education, 1949.  
B.S., Abilene Christian; M.Ed., Texas Tech.
- NOEL EDGAR THOMPSON, Part-time Instructor in Speech, 1951.  
B.A., Texas Tech.

- POLLY IMOGENE TILTON, Instructor in Biology, 1947.  
B.A., M.A., Texas Tech.
- JACK R. TINNEY, Instructor in Agricultural Education, 1948.  
B.S., Texas A.&M.
- WILLIAM HARRY TINNEY, Associate Professor of Dairy Manufactures, 1947, 1949.  
B.S., Texas Tech.; M.S., Texas A.&M.
- JACK DAWSON TOWERY, Research Engineer, Cotton Research, 1950.  
B.S. in T.E., Texas Tech.
- 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, Instructor in Spanish, 1945.  
B.A., M.A., Texas.
- SARAH AGATHA TURNER, Assistant Professor of Architecture, 1950.  
B.A., Texas Tech.; M.A., Cranbrook.
- KIRK B. TURNER, Assistant Professor of Animal Husbandry, 1948.  
B.S., Utah State; M.S., Oklahoma A.&M.
- 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.
- ZELDA RAY UNDERWOOD, Instructor in Geology, 1949.  
B.A., Texas Tech.
- JOHN LUCIEN UPSHAW, Assistant Professor of Speech, 1946, 1949.  
B.A., Texas Tech.; M.A., Colorado.
- ELO JOE URBANOVSKY, Professor of Horticulture, and Landscape Architect, 1949.  
B.S., Texas A.&M.
- MARY JEANNE van APPLEDORN, Instructor in Music, 1950.  
B.Mus., M.Mus. Rochester.
- § IDA STEVENSON VERNON, Assistant Professor of History, 1947, 1948.  
B.A., M.A., Southwest Texas; Ph.D., Texas.
- 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.
- VERNON DOYLE WADE, Instructor in Electrical Engineering, 1949.  
B.S. in E.E., Texas Tech.
- \* WILSON BRUHL WARD, Instructor in Speech, 1948.  
B.S., M.A., Sam Houston.
- GEORGE FREDERICK WARN, Assistant Professor of Geology, 1948, 1949.  
A.B., Hanover; M.S., Northwestern.
- JAMES ARTHUR WATSON, JR., Assistant Professor of Chemistry, 1948.  
B.A., Texas; Ph.D., Louisiana.
- \*\* BILLIE STEVE WEAKE, Instructor in Photography, 1951.  
B.S., West Texas.
- RICHARD CLAUDE WEART, Assistant Professor of Geology, 1950.  
B.A., Cornell; M.S., Syracuse; Ph.D., Illinois.
- \*\* DeWITT WEAVER, Director of Athletics and Head Football Coach, 1951.  
B.S. in Education, Tennessee.
- MARGARET WATSON WEEKS, Professor of Foods and Nutrition, Head Department of Home Management, and Dean of Home Economics, 1925.  
B.S., M.S., Columbia.
- GRACE PLEASANT WELLBORN, Instructor in English, 1947.  
B.A., M.A., Hardin-Simmons; B.S., Howard Payne.
- MARY ALMA WELLS, Instructor in English, 1946.  
B.A., Howard Payne; M.A., Texas Tech.
- JAMES P. WELSH, Master Sergeant, U. S. Air Force, Instructor in Air Science and Tactics, 1950.

- JOHN WOOLMAN WHARTON, Assistant Professor of Business Law, 1950.  
A.B., Pennsylvania; LL.B., Harvard.
- 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.
- WILLARD WHITE, Colonel, Corps of Engineers, U. S. Army, Professor of Military Science and Tactics, 1949.  
B.S., Louisiana.
- WILLIAM E. WHITTINGTON, JR., Assistant Professor of Accounting and Finance, 1947.  
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.
- FLOYD LEWIS WILLIAMS, Associate Professor of Mechanical Engineering, 1942, 1949.  
B.S. in M.E., Texas Tech; M.S. in M.E., Oklahoma.
- HERMAN FRANK WILLIAMS, Assistant Professor of Agricultural Engineering, 1946, 1949.  
B.S., Oklahoma A.&M.
- JUDDIE JOHNSON WILLINGHAM, Professor and Head Department of Dairy Manufactures, 1948, 1949.  
B.S., Texas A.&M.; M.S., Ph.D., Iowa State.
- DONALD PATRICK WILSEY, Technical Sergeant, U. S. Air Force, Instructor in Air Science and Tactics, 1949.
- RUTH DONALD WILSON, Instructor in English, 1946.  
B.A., Texas Tech.; M.A., Oklahoma.
- TERRY ERLE WILSON, Part-time Instructor in Music, 1950.  
L.L.B., Texas.
- HORACE EUGENE WOODWARD, JR., Assistant Professor of Mathematics, 1937, 1946.  
B.A., M.A., Texas Tech.
- GEORGIA ELLEN WRIGHT, Assistant Professor of Clothing and Textiles, 1947, 1948.  
B.S., M.S., Texas.
- WARREN WATSON YOCUM, Professor of Horticulture, 1937, 1943.  
B.S., Northeast Missouri; M.A., Missouri; Ph.D., Nebraska.
- ARTHUR WESLEY YOUNG, Professor of Agronomy and Head Department of Plant Industry, 1935, 1938.  
B.S., M.S., Ph.D., Iowa State.

## STAFFS IN SPECIAL DEPARTMENTS

## Student Health Service

- EMBREE RECTOR ROSE, B.A., M.A., M.D., Director of Health Service.  
1947.
- FRED PAUL KALLINA, B.S., M.D., College Physician, 1948.
- MARGIE HELMECKE, R.N.
- LOIS REEVES, R.N.
- ERLENE BLAKNEY, R.N.
- JUANELL JOHNSON, R.N.
- MARY BOTKIN, R.N.
- FLORECE CRAWLEY, R.N.
- RUBY HOWELL, R.N.
- MARIE ROOM, R.N.
- BETTY COLLINGS, Medical Technologist.
- JOYCE E. DRAKE, Secretary and Laboratory Technician.

## 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.
- SARAH E. TAYLOR, Assistant Circulation Librarian, 1950.  
B.S., North Texas.
- PAULINE BAIN BRITTAIN, Head Cataloguer, 1947, 1949.  
B.A., Tulane; B.S. in L.S., Louisiana.
- CHRISTINA LANDRAM, Assistant Cataloguer, 1950.  
B.A., B.S. in L.S., T.S.C.W.
- KATHERINE WHITE HARRANT, Assistant Cataloguer, 1950.  
B.A., Tennessee; B.S. in L.S., Illinois.
- FERRELLINE TUCKER, Documents and Serials Librarian, 1942, 1949.  
B.A., Texas Tech; B.S. in L.S., California.
- BEVERLY HARRIS, Reserve Librarian, 1950.  
B.S., North Texas.
- MARY CATHERINE LAUDERDALE, Order Librarian, 1948.  
B.A., Baylor; B.S. in L.S., Columbia.
- SIBYL PIRTLE MORRISON, Reference Librarian, 1947.  
B.S., Texas Tech.; B.S. in L.S., California.
- KATHERINE BRIDGES, Assistant Reference Librarian, 1949.  
B.A., Texas; B.S. in L.S., Louisiana.

## Cotton Research Staff

- LYLE E. HESSLER, Research Associate.
- JACK D. TOWERY, Research Engineer.
- B. K. POWER, Textile Technologist.

## Other Employees

- ARCHITECT AND CONSTRUCTION SUPERVISOR, Walter Russell Hedrick, 1943.
- AUDITOR, John Ehle Bowden, 1946.
- ASSISTANT AUDITOR, Virginia Tiner Snelling, 1931, 1947.  
B.A., Texas Tech.
- BOOKSTORE MANAGER, William Conner Cole, 1927.  
B.A., Texas.

**BUILDINGS AND GROUNDS SUPERINTENDENT, George Burgess**  
Long, 1942, 1944.

B.A., Texas Tech.

**CASHIER, Flossie Burkholder Brown, 1933, 1937.**

B.A., Texas Tech.

**CASHIER, COLLECTING AND ROOM RESERVATIONS, DORMITORIES, Hubert Lee Burgess, 1934, 1948.**

**EDITOR OF COLLEGE BULLETINS AND DIRECTOR OF PUBLIC INFORMATION, Frederick Jay, 1950.**

B.A., Oklahoma.

**FARMS SUPERINTENDENT, William H. Rodgers, 1943.**

**PLACEMENT SERVICE DIRECTOR, Jean Ayers Jenkins, 1935, 1947.**

B.A., Texas Tech.

**PURCHASING AGENT, Seth Thomas Cummings, 1927.**

**RECREATION HALL DIRECTOR, Troy Alonzo Enis, 1948.**

B.S. in Ed., Texas.

**VETERANS CO-ORDINATOR, Hugh Allen Anderson, 1939, 1947.**

B.A., M.A., Hardin-Simmons.

## Applied Music Staff

**CECIL CONAWAY MESKIMEN, B.A., Piano.**

**ESTELLE GEORGE, B. Mus., Piano.**

**MAMIE I. NEAL, B.A., Pipe Organ.**

**ELTON PLOWMAN, B.A., Voice.**

**EMMA SLATER SCOGGIN, B. Mus., Voice.**

**FRANCIS WESTBROOK SHAFTER, B.S., Piano and Voice.**

**IMOGENE WEBSTER, B.S., Piano and Organ.**

## Biblical Literature

(Available to students but not paid from college funds)

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

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

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

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

## Museum Staff

**W. C. HOLDEN, Director, 1949.**

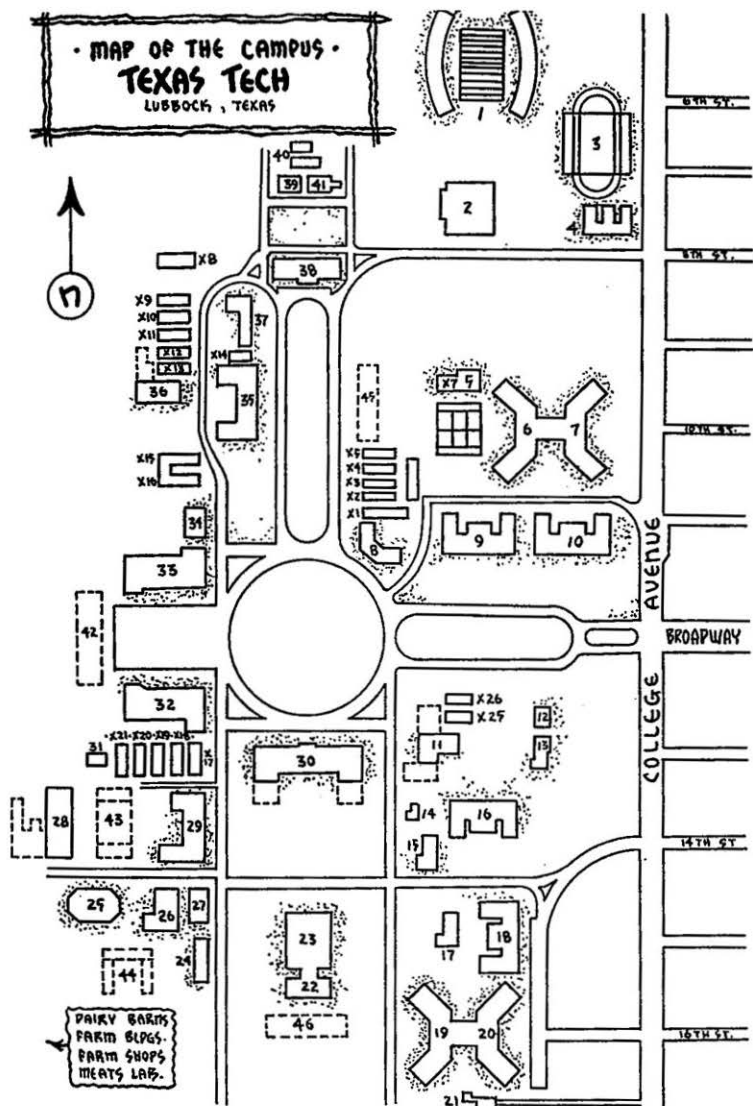
**INA BACON, Secretary, 1950.**

**PATRICIA ALLGOOD, Preparator, 1950.**

**ALICE HIX PARSLEY, Secretarial Assistant, 1950.**



# MAP OF THE CAMPUS TEXAS TECH LUBBOCK, TEXAS



## LEGEND

Ad. Bldg. ....	30	Elec. Engr. Lab. ....	X14	Nursery .....	14
Ad. Bldg. ....	29	Engr. Bldg. ....	35	Pet. Engr. Bldg. ....	36
Ag. Engr. Shop .....	28	Engr. Bldg. (New) .....	45	Power Plant .....	39
Ag. Engr. (New) .....	43	Extension Bldg. ....	27	Practice Stadium .....	3
Air and Military .....		Greenhouse .....	31	President's Home .....	21
Science Bldgs. 37, X9, X10		Greenhouses (New) .....	44	Press Bldg. ....	34
Arch. Labs. ....	X1, X2	Gym .....	2	Rec. Hall .....	23
Band Bldg. ....	5	Home Ec. Annexes. X25, X26		Science Bldg. (New) .....	42
Bookstore .....	15	Home Ec. Bldg. ....	11	Science Labs. ....	X18, X19
Cafeteria .....	22	Home Management House.13		Sneed Hall .....	10
Casa Linda .....	12	Infirmery .....	X16	Speech Bldg. ....	26
Chem. Bldg. ....	32	Jones Stadium .....	1	Stock Judging Pavilion .....	25
Chem. Labs. X20, X21, X17		Library .....	33	Storage Bldgs. ....	40
Classroom Annexes. X3, X13		Mech. Engr. Shops .....	41	Textile Engr. Bldg. ....	38
Clay Research .....	X8	Men's Dorm III .....	7	Veteran's Guild. Cen. ....	24
Dispensary .....	X15	Men's Dorm IV .....	6	Vet. Science Bldg. (New) .....	28
Doak Hall .....	16	Museum .....	8	West Hall .....	9
Drane Hall .....	18	Music Bldg. (New) .....	46	Women's Dorm III .....	20
Dorm Office .....	17	Naval Reserve Center ....	4	Women's Dorm IV .....	19

## 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 Manufactures  
 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, Greek, Latin, Portuguese, Spanish)  
 Geology (Geography)  
 Government  
 History, Anthropology and Sociology  
 Journalism  
 Mathematics (Astronomy)  
 Music and Band  
 Physical and Health Education  
 Physics  
 Pre-professional courses in Medicine, Dentistry, Pharmacy, Law  
 Psychology  
 Speech  
 Also courses in Biblical Literature

#### Business Administration

Accounting and Finance  
 Business Education and Secretarial Administration  
 Economics  
 Management  
 Marketing

#### Engineering

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

#### Home Economics

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

#### Graduate

Degrees Offered:  
 Doctor of Philosophy  
 Doctor of Education  
 Master of Arts  
 Master of Business Administration  
 Master of Education  
 Professional Degrees in Engineering  
 Master of Science  
 Master of Science in Home Economics

#### Air and Military Science and Tactics (ROTC)

Basic and Advanced  
 Air Force  
 Engineering  
 Infantry  
 Signal Corps

#### Extension

Correspondence Courses  
 Extension Classes  
 Lectures  
 Motion Pictures

## 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 and 400 miles northwest of the state capital. The elevation is 3,200 feet above sea level.

The city and suburbs have a permanent population of approximately 72,000. Excellent churches, schools, hotels, and shopping centers are available. Two railway systems, an interstate bus line, 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 institution was authorized to establish a coeducational college on a senior class.

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

### 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 82,-766 cataloged volumes, 17,751 periodicals, and 247,647 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 an area 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 11 professionally trained li-

brarians and 14 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.

In March 1948, the English Department established a fund for a library in memory of Lucile Gill, for many years a member of the English faculty. The scope of the plan was enlarged to admit contributions from students, former students, faculty members and friends. Miss Gill's family donated her personal library, consisting of 400 discriminatingly chosen books. The collection is a part of the library and administered by the library staff. The room chosen for it is on the first floor of the Library.

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 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 1909-40 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.

### Student Health Service

The college Infirmary, a 20-bed unit, provides an accommodation 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 examina-

tions, 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 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 recommend competent doctors and specialists to those students who are in need of special care and who are unacquainted with the physicians in Lubbock.

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

It is the aim of the health service to screen out all students who have communicable diseases and to control such diseases on the campus. Students may be required to have a chest X-ray and skin tests before registration. The college requires that all students with communicable diseases be isolated until the danger of transmission has passed. Students are expected to obey the laws of the sanitary code of the city and state, and the College

Physician may recommend the dismissal of any student who refuses medical advice or who willfully exposes his associates to a contagious disease.

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

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

## 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.

## 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 in money 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.

## The College Bookstore

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

## The Placement Service

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

Candidates for degrees, both undergraduate and graduate, will be expected to complete personnel information forms and present two glossy photographs (2 by 3 inches) for filing with the Placement Office prior to receipt of degrees.

Employers, representing schools or business and industry, should file requests with the Placement Office for needed personnel. All details and coverage offered may be received from the Director, The Placement Service, Room 206, Administration Building.

## Student Handbook

The *Student Handbook*, published annually, gives exact information on matters related to student life. Customs and traditions at Texas Tech, particulars on student housing, dormitory regulations, student services, student recognition, student self-government, eligibility requirements, regulations on hazing, the student constitution, and general aspects of student life are discussed in this publication. The *Student Handbook* is an authoritative publication of the college and complements the *General Catalog* in giving detailed information on college life at Texas Tech.

## ADMISSION

### Application and Credentials

The Registrar is the Director of Admissions and has charge of all matters pertaining to admission into any division of the college. Each new student is required to file an application for admission on a blank which may be secured from the Admissions Office. In addition, he must have his credentials (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 September 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. Failure on the part of the freshman student to participate in the pre-registration guidance and testing program will result in delay in registration.

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

## Uniform Requirements for Admission

*Admission by High School Certificate.* Graduation from an accredited high school with a minimum of 15 units is required for admission. No credit may be obtained without graduation. The following units are the uniform minimum requirements for admission to any division.

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



ferred from one subject group or from vocational subjects).

Total ..... 15

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

An applicant for admission to the Division of Agriculture, Arts and Sciences, Business Administration, or Home Economics who is able to present a certificate of high school graduation with 15 units which do not fit the pattern as outlined above, may be admitted with conditions. Such a student may be required to do additional work in college to make up for the subject matter shortage in high school preparation. A condition in high school English will not be permitted. A conditioned student may remove these conditions by making a grade of "C" in the first 30 semester hours of his chosen curriculum. If this grade average is not made, the student must remove the conditions: (1) by correspondence work taken in the Division of Extension; or (2) by transferring work done in college to high school credit. In such case, 4 semester hours of college credit will be regarded as equivalent to one unit of high school work.

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

*Applicants of Low Rank.* As a rule students who do poor work in high school likewise do poor work in college. Therefore, a student ranking in the lower quarter of his high school graduating class is strongly urged to complete an additional year of high school work with high quality grades before applying for admission to college. If, however, he and his parents still wish

him to enter, he may be admitted with a reduced load and placed under special observation of the dean of his division.

## 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 2 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 Students.* 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 Graduate Division may direct the applicant in the choice of undergraduate levelling courses.

*Admission of Mature Students on Condition.* 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 College Guidance 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 work will absolve all admission requirements for that curriculum.

Specific conditions in mathematics and physics for students in the Division of Engineering must be removed as indicated previously.

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

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.

## 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 provision.

*\*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.

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

*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
10 semester hours	-	21.50
9 semester hours	-	19.50
8 semester hours	-	17.50
7 semester hours	-	15.50
6 semester hours	-	13.50
5 semester hours	-	11.50
4 semester hours	-	9.50
3 semester hours	-	7.50

*Registration Fee for 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.

\*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 legal residence of the person to whom custody is granted by the court until the

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 right to legal 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 assessed a penalty not to exceed \$5.

*Registration Fee for Evening Program.* For each 3 or less semester credit hour course the registration fee is \$10, plus any

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 parent 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 legal 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 first citizenship papers have been issued to the alien.
8. Members of the Army, Navy, or Marine Corps of the United States who are stationed in Texas on active military duty shall be permitted to enroll their children by paying the tuition fees and charges provided for resident students without regard to the length of time such member of the Armed Service shall have been stationed on active duty within the state. This provision shall extend only during active military service in Texas; and upon such member of the armed services being transferred outside the State of Texas, his children shall be classified as to residence under Section One (1) of these regulations. Any student claiming the privileges of this section shall submit at each registration a statement by the commanding officer of the post or station at which his parent is on active duty verifying the fact of his parent's 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.

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

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

*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 for Architecture 239, 2310, 3216, 3217, 4311, 4312	\$ 5.00
Model Fee for Architecture 327, 423, 424, 426, 427, 4210, 4211	\$ 5.00
Course Fees:	
Physical Education for Men 012, 013, 014, 3206	\$10.00
Physical Education for Men 0111, 0113	\$ 7.50
Physical Education for Women 2112	\$10.00
Education 3315	\$ 3.00

\* See paragraph General Property Deposit



Testing Fee for Management 110	\$ 4.00
Service Fee:	
Accounting 441, 442	\$ 4.00
Secretarial Administration 111, 121, 122, 321, 421	\$ 4.00
Testing Material and Test Scoring, Education 131	\$ 2.00

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

For each one of the following courses in applied music:

*Class Instruction*

Applied Music 113, 114, 117, 118, 213, 214, 217, 218, 313, 314, 413, 414	\$10.00
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*Private Instruction*

Applied Music 115, 116, 215, 216	\$22.50
Applied Music 125, 135, 126, 136, 225, 235, 226, 236, 325, 345, 326, 346, 425, 445, 426, 446, 4215, 4415, 4216, 4416	\$45.00

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

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

Journalism 3312, Basic Photography	\$15.00
Journalism 3313, Press Photography	15.00
Journalism 3314, Advanced Press Photography	20.00
Journalism 3315, Advanced Press Photography	20.00

*Special Report Fee in Education 5311, Research Problems.* The research reports prepared by students in this course are compiled into a volume for publication following the conclusion of the course. Each student desiring to do so, subject to approval of his report, may have it included by payment of \$10 for the first 25 pages and 50 cents for each additional page.

*Graduation Fee.* Graduating students will be charged a Graduation Fee of \$5 for each degree granted.

*Refund of Fees.* Any student withdrawing officially during either semester will receive a refund on registration, health 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, health and activity fees paid, and during the second week 20 per cent. A student who withdraws during the third week and thereafter of either term will receive no refund.

Refund of tuition and fees will be made when the college is at fault.

No refund of tuition or fees will 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.

### *Summary Of Registration Expenses*

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

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

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

### **Fall Semester**

Registration Fee .....	\$ 25.00
Health and Activity Fee .....	15.00
General Property Deposit (new student) .....	7.00
Books and Incidentals (approximate average) .....	40.00
First payment of room and board in the college dormitory .....	28.00
<b>TOTAL (estimated) .....</b>	<b>\$115.00</b>



## Spring Semester

Registration Fee .....	\$ 25.00
Health and Activity Fee .....	15.00
General Property Deposit (new student) .....	7.00
Books and Incidentals (approximate average) .....	25.00
First payment of room and board in the college dormitory...	60.00
<b>TOTAL (estimated) .....</b>	<b>\$132.00</b>

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

\* For fees, see nonresident registration.

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

Registration Fee .....	\$ 25.00	\$ 25.00
Health and Activity Fee .....	15.00	15.00
General Property Deposit .....	7.00	
Books and Incidentals .....	40.00	25.00
Room and Board in College Dormitory .....	253.50	238.00
<b>TOTAL (estimate) .....</b>	<b>\$340.50</b>	<b>\$303.00</b>

Texas Technological College requires a student to live in one of the college's eight dormitories which have a total capacity of 2,800. 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 the 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 1951-52 year.

Charges for room and board in college dormitories will be \$491.50 per nine-month period for the regular double rooms occupied by two students. The payments will be as follows:

September	\$28.00	February	\$60.00
October	60.00	March	60.00
November	60.00	April	60.00
December	45.50	May	58.00
January	60.00		

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.* Applications for dormitory reservations will be made to the Office of Dormitory Reservations. 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 August 15 for the Fall Semester, January 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.

*Flight Training.* The charges for Economics 233, Aviation, are based upon a maximum of 50 hours of ground instruction at 70 cents per hour, 20 hours dual flight at \$11 per hour, and 25 hours solo flight at \$8 per hour. Complete cost of the course is \$455 plus books and supplies, which may be purchased from the College Bookstore. Each student must pay the Business Office \$255 at the beginning of the course and \$200 at completion of one-half of the requirements. A prorated refund will be made for unused hours upon withdrawal or for hours less than the maximum numbers quoted above upon completion of the course.

The charges for Economics 234, Advanced Aviation, are based upon a maximum of 40 hours of ground school instruction

at 70 cents per hour, a maximum of 25 hours dual flight at \$11 per hour, and a maximum of 10 hours solo flight at \$8 per hour. Complete cost for the course is \$383 plus books and supplies, which may be purchased from the College Bookstore. Each student must pay the Business Office \$200 at the beginning of the course and \$183 at the completion of one-half of the requirements. A prorated refund will be made for unused hours upon withdrawal or for hours less than the maximum numbers quoted above upon completion of the course.

*Exemption From Fees By Honorable Discharge From The Armed Forces.* Men and women who have been legal residents of Texas for a period of not less than 12 months immediately preceding registration in the college and who hold an honorable discharge from the Armed Forces during the Spanish American War, World War I, and World War II are by State law exempt from the payment of all fees, except library, laboratory, or similar deposits and fees or charges for room and board. Provisions of this act shall apply to the benefit of all nurses, members of the Women's Army Auxiliary Corps, and Women's Auxiliary Volunteer Emergency Service. The benefits and provisions of this act shall also apply and inure to the benefit of the children of members of the United States Armed Forces where such members of the Armed Forces were killed in action or died while in the service during World War II. 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 38 years 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.

## RECOGNITION OF 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 are administered by the College through its Faculty Committee on Scholarships and Awards with the assistance of other designated faculty members or organizations. Correspondence concerning a particular fellowship, scholarship, or award should be addressed as directed in each case.

### Fellowships And 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 transferrable. 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-sup-

ported 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.

*Dunlap Stores Scholarships:* The Dunlap Department Store of Lubbock has given to the college a sum of money to be used for scholarships for one high-ranking graduate of each high school in Lubbock, Crosby, Floyd, Hale, Lamb, Hockley, Terry, Lynn and Garza counties. Applications should be addressed 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 may be used for payment of tuition of veterans of World War I, or the sons or daughters of such veterans, provided need of assistance can be established, and provided enlistment occurred prior to May 11, 1918, or, if later, led to service overseas prior to November 11, 1918.

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

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

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

*Texas Technological College Foreign Student 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 renewed. Applications for these scholarships must

be made each year. These scholarships may be used for tuition only.

Applications should be made to the Dean of Student Life.

*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 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 the second semester of the first year in residence, and during each semester thereafter to receive the scholarship in the semester immediately following.

For further information or to make application for a scholarship, write to the Dean of Student Life, Chairman of the Latin-American-United States Possessions Scholarship Committee.

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

*Robert Glenn Rapp Memorial Scholarships.* The Anflo Foundation has established 10 scholarships of \$1000 each in memory of the late Robert Glenn Rapp of Oklahoma City, Oklahoma, for students of junior and senior standing majoring in Petroleum Engineering and closely related fields. Five scholarships are available to junior students and five to senior students who have at least a 2.00 grade average. The stipend is payable over a nine-month period.

The scholarships are awarded on a yearly basis, and summer employment is available for junior students who have held a scholarship. A junior student who has held a scholarship may apply for a second scholarship during his senior year provided he has fulfilled the requirements of summer employment as set forth in the conditions governing the scholarship. Any senior stu-



dent who has not previously held the scholarship, and who has at least a 2.00 grade average is eligible to apply. Applications and correspondence concerning these scholarships should be addressed to the Dean of Engineering.

*Clarence Malone Soil and Water Conservation Scholarship.* Mr. John McKee, president of the Continental Bank and Trust Company, in honor of Mr. Clarence Malone of Houston, in 1947, gave the college the sum of \$500 for promoting the study of soil conservation. The scholarship extends over a period of two years and will be paid on a monthly basis. The sum of \$250 is available for 1951-52. It is open to junior, senior and graduate students. Applications should be made to the Dean of Agriculture.

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

*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.

*The Texas Cottonseed Crushers' Graduate Fellowship.* This research fellowship was established in 1937, and is awarded to a graduate student majoring in animal husbandry. For 1949-50 it amounted to \$600, and for 1950-51 to \$1200. Applications should be addressed to the Head of the Department of Animal Husbandry.

*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.

*The Borden Company Foundation Scholarship in Agriculture.* The Borden Company Foundation, in a desire to stimulate and recognize scholastic achievement by undergraduate students of agriculture, has established an annual scholarship of \$300. The award is to be made in the fall to the senior student of agriculture

who has achieved the highest average grade in all college work preceding the senior year. Eligibility for consideration requires the successful completion of two or more dairy subjects. This award may be withheld if the year's conditions are inappropriate. Correspondence concerning this scholarship should be addressed to the Dean of Agriculture.

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

(1) To the freshman student majoring in animal husbandry or dairy manufactures who completes a minimum of 17 semester hours in the fall semester with the highest scholastic average; (2) the sophomore student majoring in animal husbandry or dairy manufactures having the highest scholastic average; (3) the junior student majoring in animal husbandry with a dairy husbandry option having the highest scholastic average; (4) the senior student majoring in animal husbandry with a dairy husbandry option having the highest scholastic average. The scholarships are awarded in the fall for the long semester, except the freshman which is awarded about March 1. The awards may be withheld whenever conditions are inappropriate.

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

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

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

*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.

*The Borden Company Foundation Scholarship in Home Eco-*



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

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

*Roscoe Wilson Memorial Scholarship in Foreign Languages.* A stipend of \$30 a month for nine months each year from the estate of the late Roscoe Wilson, 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.

*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. Applications should be made to the Head of the Department of Government.

*Lubbock-Crosby County Medical Society Pre-Medical Scholarships.* The Lubbock-Crosby County Medical Society has made available two annual scholarships of \$200.00 each to outstanding pre-medical 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 Pre-medical Adviser.

*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, The Society for the Preservation and Encouragement of Barber-Shop Quartet Singing in America, and St. Paul's Episcopal Church of Lubbock. For further information, inquire of the Head

of the Department of Music.

*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.

*C. N. Hilton Scholarships.* Mr. C. N. Hilton, President of Hilton Hotels, Incorporated, has made available to the students in business administration four scholarships of \$100 each, to be awarded annually to the freshman, sophomore, junior, and senior applicant in that division with the highest scholastic average. The award will be made to the regularly enrolled student in the sophomore, junior, and senior classes who made the highest scholastic average during the two previous long-term semesters. The graduating senior with the highest scholastic average during his last long-term semesters will receive the award. 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.

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

*The Lubbock Chapter of the National Secretaries Association Scholarship.* The sum of \$50 will be awarded to the outstanding junior girl majoring in secretarial administration during the 1951-52 school year. Correspondence concerning this award should be addressed to the Head of the Department of Secretarial Administration.

*District 2 4-H Girls Scholarship.* The Home Demonstration Club women of District 2, Farm Bureaus, and other interested individuals and firms in cooperation with the Extension Service of the Agricultural and Mechanical College of Texas award an annual scholarship 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.

Application should be made to the District Agent in charge of home demonstration work, Room 107 Agriculture Building, Texas Technological College.

## Awards

The following awards are offered annually:

*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.

*Wilbur C. Hawk Memorial 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 second semester. This award is given by the Globe-News Publishing Company, Amarillo, Texas.

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

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

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

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

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

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

*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.

*The Dairy Manufactures Club* annually awards individual gold medals to the members of the senior dairy products judging teams who participate in the international collegiate dairy prod-

ucts judging contest. Awards are also made by the Dairy Manufacturers Club to high ranking individuals in the annual collegiate dairy products judging contest which is held on the campus each year.

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

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

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

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

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

*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.

*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.

## Loan Funds

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

## Loan Funds Administered by the College

*Freshman Loan Fund* is a fund available to students of the college who have need of short-time small loans. It is available to both young men and young women of the college, and while it is primarily for the use of freshmen students, it is also available to

students of other classifications. Applications to this loan fund made possible through the proceeds from the sale of freshman caps by the Hemphill-Wells Company, should be made to the 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 Business Manager.

*Will C. Hogg Loan Fund* of \$25,000 was made available to the college by the will of the late Will C. Hogg of Houston, Texas. It is administered by the Board of Directors appointed in accordance with the directions of the will of Mr. Hogg. The fund is available to upperclassmen only. Application should be made to the Business Manager.

*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 Business Manager.

*Twentieth Century Club Loan Fund.* Loans are made either to men or to women with preference being given to upper classmen. Applications should be made to the Business Manager.

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

## Loan Funds Not Administered by the College

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

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

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

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

*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 Professor C. C. Perryman.

*Anne Johnston Ford Student Loan Fund.* The Nancy Anderson Chapter of the Daughters of the American Revolution has a small fund available to junior and senior students who meet the requirements, preferably women students. Applications should be made to Mrs. J. B. Logan, 2803 Twenty-first Street, Lubbock, Texas.

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

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

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

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

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

## 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.

## Opportunities for Self-Help

Many students attending Texas Technological College find it possible to supplement their funds with earnings from part-time employment. The college offers students in need of part-time employment assistance in finding employment through the office of the Dean of Student Life. In addition to offering assistance in finding employment, the college is pleased to work out problems relative to scheduling, to the apportioning of scholastic load to employment, and in other matters which become a part of a constructive plan for part-time employment for college students. Participation in the ROTC program entitles Advanced Course (junior and senior) students to receive a subsistence allowance of 90 cents a day paid monthly. (This amount subject to change.)

## STUDENT LIFE

JAMES G. ALLEN, *Dean of Student Life*

MRS. MARGARET G. TWYMAN, *Dean of Women*

MISS MARION THOMPSON, *Assistant Dean of Women*

MISS NANCY NALL, *Assistant Dean of Women*

LEWIS N. JONES, *Assistant Dean of Student Life*

The office of the Dean of Student Life is charged by the college with the responsibility of seeing to the welfare of the student in the many phases of college life which extend beyond the classroom and the laboratory. It gives its services to the student body particularly in such practical matters as housing, part-time employment, loans, extra-curricular activities, and recognized organizations. It offers assistance through counseling and guidance in all problems which present themselves to the student other than academic. Through conference, staff members are in a position to refer the student to the many agencies on the campus available to him for assistance.

The office of the dean of student life is made up of five staff members: Dean of Student Life, Dean of Women; two positions of Assistant Dean of Women, and Assistant to the Dean of Student Life.

The dormitory supervisory system as a projection of and directed by the staff of the dean of student life is made up of professional counselors who with the aid of a staff of graduate students in the field of counseling and guidance and carefully selected undergraduate students carry on a friendly and constructive program of counseling in the college dormitories.



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 seek to make possible the student's maximum opportunity for academic achievement.

## 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 summer session and making such 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 team, 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, who is regularly registered, may compete in intercol-

\* The average grade is determined by multiplying the grade points by the number of hours in each subject as shown by the grades; the total of all grade points is then divided by the total of all the hours in which the student has received grades of A, B, C, D, and F and including repeatedly each re-registration in the same course with a grade of F in the total. A transfer student may establish eligibility by having a C average on all courses at the mid-semester of his first semester in residence.



legiate athletics. Participation in intercollegiate athletics is governed by the athletic conference rules followed by the college and administered by the Athletic Council. No student shall make a public appearance in an intercollegiate athletic activity unless he has been certified by the Faculty Committee of the Athletic Council. The responsibility for securing this certification shall rest with the student concerned and with the Faculty Committee of the Athletic Council.

## Student Activities

Texas Technological College offers its student body a large and well-rounded program of student activities sufficiently varied to allow for the expression of all types of 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 more successful and happier. Under the direction of faculty sponsors and through student leadership these activities are geared to the best development of the individual student both as a leader and as a member of group functioning together democratically.

## Publications

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

## Artist 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 1950-51 Rise Stevens, Yehudi Menuhin, Christopher Lynch, Robert Shaw Chorale, Philharmonic piano quartet, San Antonio Symphony, and Louis Roney and Carolyn Long were presented to the student body. The student health and activity fee entitles the student to attend Artists Course numbers.

## Willson Lectures

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

## **Recreation Hall Program**

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

## **Religious Emphasis Weeks**

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

## **Debate**

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

## **Varsity Show**

Each spring the Student Council sponsors an all-student musical review. The income from this production is regularly set aside for the Student Union Fund.

## **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.

The Student Council allocates the funds it receives from the activities fee to worthy student enterprises and organizations, supervises elections, is represented on the Artists Course Committee, the Athletic Council, the Campus-Planning Committee, the Discipline Committee for Men, the Discipline Committee for Women, the Student Life and Recreation Committee, and the Student Publications Committee. The Student Council sponsors and directs and supervises deserving student activities in the administration of student affairs.

## **Recognition Service**

Recognition Service each spring honors those students who are in the upper three percent of their class within their division during the preceding two regular semesters.

Students being recognized for the first time receive individual

honors; those recognized for the second time, class honors; those recognized for the third time, divisional honors; and those recognized for the fourth time, college honors. Students recognized with college honors are given a gold key by the college.

Student organizations two-thirds of whose membership make 2.00 or better averages during these semesters are also honored on this occasion.

### **Intramural Program**

Under the supervision of the Director of Physical Education, a program of intramural sports is planned for both men and women.

### **All-Western Days**

Each spring the Block and Bridle Club and the Texas Tech Rodeo Association sponsor All-Western Days. On this weekend, both student body and faculty are invited to dress "western." The proceeds from the rodeo performances, student produced and open to the public, support a scholarship in the department of animal husbandry and subsidize the activities of the Rodeo Association.

### **Musical Organizations**

All musical organizations are open to any student officially enrolled in the College and who meet 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 Men's Glee Club, and the Concert Band. Other musical groups include the Girls' Glee Club, the Festival Chorus, the "B" Band, and the Lubbock Symphony Orchestra. Each ensemble allows 1 semester-hour credit per semester. Each group performs a broad repertoire and makes a number of public performances annually.

### **Band**

(See Music Ensemble)

### **Engineers' Show—Home Economics Open House**

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

### **Clubs and Societies**

Recognition of student clubs and societies and the plan under which they function is the assignment of the Student Organiza-

tions Committee, a 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 College Social 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. Such organizations group themselves in the classifications of honorary and professional, divisional and departmental, social, religious, service, and common interest.

The recognition of a club or society on Texas Technological College campus is based on the assumption of the Student Organizations Committee that such an organization satisfies a student need for professional, scholarship, social, religious, service, or common interest expression consistent with the best college achievement.

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

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

**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 1.5-grade point average in all subjects taken and no less than 2.0 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 (Scholarship)  
Alpha Lambda Delta (Scholarship—Freshman Women)  
Kappa Mu Epsilon (Mathematics)  
Phi Eta Sigma (Scholarship—Freshman Men)  
Phi Upsilon Omicron (Home Economics Scholarship)  
Pi Epsilon Tau (Honorary Petroleum Engineering Fraternity)  
Pi Sigma Alpha (Government)  
Sigma Delta Pi (Spanish)  
Sigma Gamma Epsilon (Geology)  
Sigma Tau Delta (English)  
Tau Beta Pi (Engineering Scholarship)  
Theta Sigma Phi (Women's Journalism)

**II. DEPARTMENTAL, DIVISIONAL 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 or divisional 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 Dairy Science Association (Student Branch)  
 American Institute of Chemical Engineers (Student Branch)  
 American Institute of Electrical Engineers (Student Branch)  
 American Institute of Industrial Engineers (Student Branch)  
 American Institute of Mining and Metallurgical Engineers (Student Branch)  
 American Society of Agronomy (Student Branch)  
 American Society of Civil Engineers (Student Branch)  
 Arnold Society of Air Cadets (Air Force R.O.T.C.)  
 Biology Club  
 Block and Bridle (Agriculture)  
 Capa Y Espada (Spanish)  
 Cercle Francals (French)  
 Dairy Manufacturers Club  
 Delta Sigma Pi (Business Administration)  
 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)  
 Liederkranz (German)  
 Phi Gamma Nu (Business Administration Women)  
 Phi Psi (Textile Engineering)  
 Physics Club  
 Plant Industry Club  
 Pre-law Club  
 Pre-Med Club  
 Press Club  
 Society of American Military Engineers  
 Sociology Club  
 Sock and Buskin  
 Tau Beta Sigma (Women's Band)  
 Tech Accounting Society  
 Tech Institute of Finance  
 Tech Management Association  
 Tech Military Association  
 Texas Tech Army Signals Association  
 Texas Tech Honorary Agriculture Club  
 Textile Engineering Society  
 Women's Physical Education Major-Minor Club

**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.

Adelphi  
 Alpha Phi Omega (Men's Service Organization)  
 Association of Women Students  
 Baptist Student Union Council  
 Book Reviewers Club  
 Canterbury Club  
 Casa Linda Club  
 Centaur  
 Circle Eight (Square Dance)  
 College Club  
 Cosmopolitan (Foreign Students)  
 D.F.D.  
 Double T Association (Athletic Letter Men)  
 Flying T's  
 Forum  
 Gamma Delta (Lutheran)  
 Junior Council  
 Kemas  
 Ko-Shari  
 Las Chaparritas  
 Las Vivirachas  
 Lens and Shutter  
 Los Camaradas  
 Lutheran Student Fellowship  
 Men's Dormitory Associations  
     West Hall Association  
     Sneed Hall Association  
     Men's Dormitory No. 3 Association  
     Men's Dormitory No. 4 Association

Doak Hall Association  
Newman Club  
Red Cross College Unit  
Saddle Tramps  
Sans Souci  
Silver Key  
Socli  
Student Religious Council  
Tech Broadcasting Club  
Texas Tech Chamber of Commerce  
Texas Tech 4-H Club  
Texas Tech Radio Club  
Texas Tech Rodeo Association  
Wesley Students  
Westminister Fellowship  
Women's Dormitory Associations  
    Drane Hall Association  
    Women's Dormitory No. 3 Association  
    Women's Dormitory No. 4 Association  
Women's Recreational Association  
Wranglers

## Hazing

The policy of Texas Technological College is clearly determined against hazing in all of its various 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 in charge of matters pertaining to the student's academic work and program.

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

### Special Academic Regulations

Matters requiring the dean's approval include the following:

Absence from class.

Honorable dismissal.

Withdrawal from college.

Scholarship requirements.

Scholarship reports.

Scholarship probation.

Change in schedule.

Dropping and adding courses.

Approval of registration and assignment to classes.

Student load.

Curriculum requirements.

Guidance programs and assignment to advisers.

Graduation requirements and candidacy for degree.

### Absence From Classes

The process of education should provide for all students practical, everyday opportunities for self-management. Responsibility for class attendance is one of the most important and regularly recurring of such opportunities.

Absence regulations, especially for upperclassmen, are based upon the principle of reward for merit on the one hand and definite accountability for delinquencies on the other. For freshmen and sophomores they are more detailed, but are built upon the same principle.

#### *Regulations Applying to All Students*

1. The instructor will keep a daily record of all absences by all students. Absences are counted from the first day of class meeting. Late registration therefore should be avoided. A final absence report giving the total number of absences for the semester will be made at the end of the semester in every course for each student.

2. Each absence on the two days preceding or the two days following any school holiday counts double and thereby adds two absences to the total for the semester.
3. Certain types of absences are excusable if the student is scholastically eligible. Included are absences on field trips, with debating teams, judging teams, inter-collegiate athletic teams, or other organizations which leave the college on approved off-campus trips, provided the coach or sponsor has filed application for approval one week before the date with the Dean of Student Life, for trips that include students from more than one division, and with the academic dean for trips that include students from a single division. Each student making the trip must receive from his academic dean and present to the sponsor his slip of individual approval for the trip.
4. A student who permits as many as 18 absences to accumulate as a total in all courses during a semester faces the possibility of being required to complete one extra credit hour for graduation. In determining whether such a penalty is to be assessed, the academic dean will take into account the number of absences, the reasons given therefor, and the general grade average being made by the student.
5. Persistent unexcused absence from class may result in the student's being dropped from the rolls of the college at the request of his dean. When dropped for such reason, the rules pertaining to suspension from college shall apply.

#### *For Freshmen and Sophomores*

*Absences Due to Personal Illness or Illness or Death in the Family.* Freshmen and sophomores will be required to make application for permission to make up work missed because of personal illness or illness or death in the family at the office of the academic dean. The dean will issue an "Excused Absence Record" card to the student if the application is approved. The student will take this card to the teacher who will sign it as recognition of notice that the absence has been officially excused. The student will then return the signed card to the dean's office not later than one week after the last day of the excused absence period.

Freshmen and sophomores 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, will have this card signed by the teacher, and will return the signed card to the dean's office not later than one week after it was issued by the dean.

#### *For Juniors and Seniors*

Whereas freshmen and sophomores clear absences for illness



and other personal reasons through the office of the academic dean, juniors and seniors follow a direct student-teacher contact pattern. Upperclassmen are responsible for reporting the reason for absence direct to the teacher of the class missed. The teacher is responsible for deciding upon the acceptability of the reason given. The quality of work being done by the student has a marked bearing upon this decision. One absence on the part of a student with a D or F record in the course is considered to be more serious than several absences on the part of an A student.

Juniors and seniors 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, will have this card signed by the teacher, and will return the signed card to the dean's office not later than a week after it was issued by the dean.

### **Adding a Course**

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

### **Dropping a Course**

A student may drop a course only with the consent of his dean. If the course is dropped within five weeks of the beginning of either semester, the grade of 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.'

A student who persistently absents himself from class may be dropped from college by the Registrar on recommendation of the dean. 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.

### **Changing the Section of a Course**

After completion of his registration a student may change from one section of a course to another only with the approval of the dean of the division and the head of the department concerned. The request for this action is not granted if made later than five weeks after date of registration in either semester, or after a comparable length of time in either summer term. Section changes must be attended to in person and not by mail or by a friend. Change in registration cards made in duplicate

(made in triplicate for veterans) should be obtained from the dean's office. No change is official until all of the procedure is completed.

## Classification of Students

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

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

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

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

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

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

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

## Semester Hour

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

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

## Number of Semester Hours Allowed

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

A student who has part-time employment is required to supply his academic dean with information on his job at regis-

tration, 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.

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

## Auditing Courses

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

*Visiting the Course.* The first method, that of visiting the course, is open to persons not regularly enrolled in the college and consists of the privilege of hearing or observing only, and not of handing in papers, taking part in class discussions, in laboratory or field work, or of receiving credit for the course. This permission is not granted during the summer session or for extension classes. A visitor's permit to attend any class may be denied to any person in case the class is already overcrowded.

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

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

## Grades

The grades used, with their interpretation, are: A, Excellent; B, Good; C, Fair; D, Inferior but passing; 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 cards and on grade sheets and are filed with the Registrar. The Registrar reports all grades to the student's parent or guardian, to the student and to the student's dean. All students regularly enrolled in any given course must receive a grade at the end of the semester. No grade may be given to a student not regularly enrolled in a course during the semester covered. No grade may be corrected or changed without inquiry as to the reason and necessity for the change, except 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 Incomplete

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

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

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

When an Inc. stands for one year without action, it becomes F, except that at mid-semester before graduation, any grade of

Inc. then standing without action becomes F. The foregoing does not apply to grade for thesis.

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

## Grade of 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 will be entered on the final grade sheet.

A student who withdraws from a course or from the college after five weeks from the beginning of the semester, receives a grade of WP if his work is passing and a grade of WF if failing.

A course may not be dropped after the fifth week unless recommended by the dean to reduce the student's course load. Even then the grade is to be WP or WF according to the quality of work being done.

## Grade of F

The grade of F is given when a student fails in a course, also when the student withdraws from the course in a manner prescribed by college regulations after five weeks from the beginning of either semester and is not then passing in the course.

## Grade Points

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

No grade points are required or allowed for credit from other institutions. A student who has the number of semester credit hours required for graduation, but not the corresponding number of grade points, may satisfy the requirements by completing additional courses until the grade-point requirements have been met. Courses used to meet these requirements must have the approval of the student's dean. In the case of a student transfer-

ring credits from other institutions, the number of credit hours in this college required for graduation is the required total in his curriculum less the transferred hours accepted in that curriculum; the number of grade points required is the same as the number of credit hours required in this college in his curriculum.

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

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

## Physical Education Required

Physical education 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. Military science, the basic course, may be taken in place of physical education by any qualified male student. Once entered upon, the satisfactory completion of this basic course, two years, becomes a requirement for graduation, unless specifically excused by the Department of Military Science and Tactics.
3. Veterans of World War II may receive credit for this required work on time spent in military service. See Credit for Education Achievements During Military Service.
4. All students must enroll in Physical Education. Those students who have a doctor's recommendation for limited physical education, must enroll in Physical Education 011 (Adaptive Sports).

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 as 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*

##### 1. *During the long session*

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 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.

##### 2. *During the summer session*

The requirements are the same as those for the long session except that the minimum number of hours which must be passed is 8 instead of 9.

##### 3. 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 an approximately 12-semester-hour total load 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. *This Probationary 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 inter-collegiate 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 unless prevented by illness. (See section on "Eligibility for Extra-curricular 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 Tech 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*

<i>If the Student Is in His:</i>	<i>He Must Pass in 9 Hours and Make a Minimum of:</i>
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*

The requirements are the same as for the long session except that the minimum number of hours passed is 8 instead of 9.

For purposes 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 long-session 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.



## 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. This action shall be taken not later than 20 days after the end of the semester in which any of the following deficiencies develops.

1. *Six Hour Rule*—A regular student who fails to pass 6 semester hours of residence work in any semester or 4 semester hours in a 12-week summer session will not be permitted to re-enter until after the lapse of one semester.
2. *Failing to Remove Scholarship Probation*—A student who is on scholarship probation during a given semester and fails to remove it according to section C above shall be dropped for a period of one semester.
3. *Repeated Probationary Status*—Should a student who has been on probation and has removed it again make a record which places him on probation, he shall be dropped for the following semester.

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

## Mid-Semester Reports

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

## Withdrawal From College

A student who finds it necessary to withdraw from the college before the close of the semester should apply to the dean of the division in which he is registered for permission to withdraw with honorable dismissal. A student under 21 years of age should first consult his parents and should bring with him a written statement showing that he has the permission of his parents to withdraw. If the dean is convinced that withdrawal is necessary, the student will be given honorable dismissal from the college, and his parents will be notified. Such withdrawal protects the student's record in case he desires to return to the institution or transfer to another institution at some future time. The grades recorded are given in accordance with the grade requirements in the preceding paragraphs, and the grades, whether WP or WF, will be based on the student's standing on the last day of attendance 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.

## Transfers 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.

## Eligibility for Extra-Curricular Activities

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

Any undergraduate student not on scholarship or disciplinary probation who is regularly registered for 12 or more semester credit hours is eligible to become a candidate for or to hold student office, or may represent the college in any extra-curricular activity, provided such student has a grade-point average of at least 1.00 for both the whole of his college work 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 summer session and making such grades as will bring his average for the preceding semester and the summer term or terms together to 1.00.

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\* The average grade is determined by multiplying the grade points by the number of hours in each subject as shown by the grades; the total of all grade points is then divided by the total of all the hours in which the student has received grades of A, B, C, D, and F and including repeatedly each re-registration in the same course with a grade of F in the total. A transfer student may establish eligibility by having a C average on all courses at the mid-semester of his first semester in residence.

## REQUIREMENTS FOR GRADUATION

### Undergraduate Degrees

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

1. The minimum actual residence required is 30 semester hours in residence 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 or minor fields.

2. Effective for all students entering after Sept. 1, 1950, a grade-point average of at least 1.00 will be required on all courses completed in residence and/or in correspondence work. Work completed in a division of this college separate from the one in which the degree is conferred will be considered in the same manner as work transferred from another college except for those courses actually used in meeting the requirements for the degree. In calculating this grade-point average each registration in a course with grades of F and WF will be included.

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 announcement or its equivalent 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 catalogs and announcements issued from time to time. At the option of the head of the department concerned, no grade lower than C in the major subject will be accepted for satisfaction of requirements for graduation. This requirement is to apply to all divisions of the college.

Students who enter state-supported colleges in Texas after Sept. 1, 1937, 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.

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

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.

8. 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.

9. 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 at least one week before the date of commencement, with the exception of emergency cases.

## 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 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 either the *Division of Graduate Studies* in this catalog or the separate *Graduate Bulletin*.

## 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.

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

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

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

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

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

*Trips and Judging Teams.* To enable students to secure a better conception of the agricultural industry, the Division of



Agriculture recommends and fosters trips of inspection and inter-collegiate judging contests for advanced students. These trips are not required, and the college does not pay the expenses of the students. In the case of judging teams, staff members coach and train the teams outside of regular class classes, supplementing class instruction.

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

All agricultural students follow a definite course of study in the first two college years. This is to allow the student to become familiar with the courses of instruction and to decide fully about his qualifications before selecting a specific major. The uniform requirements include survey courses in the various departments of the Division of Agriculture, a series of orientation lectures, and work in biology, chemistry, English, and mathematics. Students who are found to be notably deficient in the fundamentals of oral and written English are required to remove such deficiency before proceeding with work of the junior year.

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

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

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

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



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

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

## CURRICULA IN THE DIVISION OF AGRICULTURE

### BACHELOR OF SCIENCE IN AGRICULTURE

Uniform Freshman and Sophomore Years for All Students in Agriculture

#### Freshman Year

First Semester	Credit	Second Semester	Credit
A. H. 131—General .....	3	D. M. 131—Prin. of Dairying .....	3
Agron. 131—Crop Production .....	3	Hort. 131—Plant Propagation .....	3
Biol. 133—Botany .....	3	Biol. 134—Zoology .....	3
Chem. 141—Gen. Chem. ....	4	Chem. 142—Gen. Chem. ....	4
Eng. 131—Composition .....	3	Eng. 132—Composition .....	3
P.E., Band, or M.S. ....	1-2	P.E., Band, or M.S. ....	1-2
	<hr/> 17-18		<hr/> 17-18

#### Sophomore Year

First Semester	Credit	Second Semester	Credit
Ag. Eco. 235—Fundamentals .....	3	P. H. 231—Farm Poultry .....	3
Agron. 241—Soils .....	4	Ag. Eco. 236—Mkt. Ag. Products .....	3
Bact. 231 .....	3	Math 230—Agricultural .....	3
Chem. 341—Organic .....	4	Eng. 234—Correct Usage .....	3
A. H. 231—Breeds .....	3	Hort. 231—Veg. Gardening .....	3
P.E., Band, or M.S. ....	1	D. M. 222—Dairy Industries .....	2
	<hr/> 18	P.E., Band, or M.S. ....	1
			<hr/> 18

### BACHELOR OF SCIENCE IN AGRICULTURE

#### AGRICULTURAL ECONOMICS MAJOR

For Uniform Freshman and Sophomore Years See Above

#### Junior Year

First Semester	Credit	Second Semester	Credit
Ag. Eco. 323—Advanced .....	2	Ag. Eco. 322—Mkt. Ag. Products .....	2
Ag. Eco. 331—Statistics .....	3	Speech 338—Bus. and Professional .....	3
Ag. Eco. 333—Cooperatives .....	3	Agron. 341—Prin. of Genetics .....	4
Agron. 331—Forage Crops .....	3	A. H. 331—Prin. of Feeding .....	3
Ag. Eco. 333—Land Appraisal .....	3	Electives .....	5
Electives .....	3		<hr/> 17
	<hr/> 17		

## Senior Year

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

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

## CURRICULUM FOR THE DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE

### AGRICULTURAL EDUCATION MAJOR (Vocational Agriculture Teacher Training)

For Uniform Freshman and Sophomore Years See Above

## Junior Year

First Semester	Credit	Second Semester	Credit
Ag. Eco. 331—Statistics .....	3	Ag. Engr. 322—Farm Shop .....	2
Ag. Engr. 321—Farm Shop .....	2	Agron. 331—Forage Crops .....	3
A. H. 331—Prin. of Feeding .....	3	Agron. 341—Prin. of Genetics .....	4
A. H. 322—Farm Meats .....	2	Vet. 330—General Sci. ....	3
Hort. 339—Plant Insects .....	3	Electives .....	5
Ag. Engr. 323—Farm Machinery .....	2		17
Electives .....	3		
	18		

## Senior Year

First Semester	Credit	Second Semester	Credit
Ag. Ed 424—Org. & Admin. ....	2	Ag. Eco. 433—Farm Mgt. ....	3
Ag. Ed. 425—F.F.A. ....	2	Agron. 422—Soil Mgt. ....	3
Ag. Ed. 431—Methods .....	3	Ag. Engr. 411—Soil Mgt. Lab. ....	1
Ag. Ed. 432—Methods .....	3	Agron. 441—Plant Produc. ....	4
Ag. Ed. 461—Prac. Teaching (6 weeks) .....	6	A. H. 441—Livestock Produc. ....	4
	16	Electives .....	3
			17

Note: First and second semesters are interchangeable. Approximately 50 percent of the senior students qualifying to teach vocational agriculture will take their Agricultural Education work the first semester and the other 50 percent will take it the second semester.

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

### BACHELOR OF SCIENCE IN AGRICULTURE AGRICULTURAL ENGINEERING MAJOR

For Uniform Freshman and Sophomore Years See Above

## Junior Year

First Semester	Credit	Second Semester	Credit
Agron. 332—Grain Crops .....	3	Agron. 331—Forage Crops .....	3
Ag. Engr. 321—Farm Shop .....	2	Ag. Engr. 332—Farm Power .....	3
Ag. Engr. 331—Farm Power .....	3	Ag. Engr. 322—Farm Shop .....	2
Phys. 131—Elements .....	3	Agron. 341—Prin. of Genetics .....	4
Ag. Engr. 323—Farm Machinery .....	2	*Electives .....	6
*Electives .....	5		18
	18		

## Senior Year

First Semester	Credit	Second Semester	Credit
Agron. 422—Soil Mgt. ....	2	Agron. 421—Cotton and Fiber Crops ....	2
Ag. Engr. 411—Soil Mgt. Lab. ....	1	Agron. 423—Soil Mgt. ....	2
Ag. Engr. 431—Farm Buildings ....	3	Ag. Engr. 412—Soil Mgt. Lab. ....	1
Hort. 339—Plant Insects ....	3	Ag. Engr. 410—Seminar ....	1
Govt. 230 ....	3	Spch. 338—Bus. & Professional ....	3
*Electives ....	4	*Electives ....	7
	16		16

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

\* Electives: Ten semester hours of electives must be selected from the following courses. Agricultural Engineering 433, 434, Engineering Drawing 223, Math 131, 132, 231, 232, Physics 132, Civil Engineering 231, 232, 337, 338. The remaining elective hours may be taken from such other fields of study as are approved by the head of the department. At least six hours must be taken in a subject to be eligible for elective credit. A minimum of freshman and sophomore courses will be accepted as electives.

## BACHELOR OF SCIENCE IN AGRICULTURE

## AGRONOMY MAJOR

For Uniform Freshman and Sophomore Years See Above

## Junior Year

First Semester	Credit	Second Semester	Credit
A.H., 331—Prin. of Feeding ....	3	Hort. 339—Plant Insects ....	3
Agron. 331—Forage Crops ....	3	Agron. 341—Prin. of Genetics ....	4
		Hort. 3310—Plant Functions ....	3

## RANGE MANAGEMENT OPTION

Bot. 232—Taxonomy ....	3	Agron. 333—Range Plants ....	3
Bio. 333—Plant Bio-ecology ....	3	Vet. 330—General Science ....	3
Electives ....	6		16
	18		

## CROPS OPTION

Ag. Engr. 323—Farm Machinery ....	2	Agron. 323—Crop Judging ....	2
Agron. 332—Grain Crops ....	3	*Electives ....	4
*Electives ....	7		16
	18		

## SOILS OPTION

Ag. Engr. 323—Farm Machinery ....	2	Agron. 323—Crop Judging ....	2
*Electives ....	10	*Electives ....	4
	18		16

## Senior Year

First Semester	Credit	Second Semester	Credit
Agron. 422—Soil Mgt. ....	2	Agron. 434—Soil Conservation ....	3
Ag. Eco. 433—Farm Mgt. ....	3	Agron. 410—Seminar ....	1
Govt. 230 ....	3	Agron. 431—Plant Breeding ....	3

## RANGE MANAGEMENT OPTION

Agron. 437—Range Mgt. ....	3	A. H. 424—Beef Cattle Production ....	2
Agron. 435—Soil Genesis ....	3	A. H. 426—Sheep and Wool Production ..	2
Ag. Engr. 432—Land Map & Measuring ..	3	A. H. 438—Range Mgt. ....	3
	17	Agron. 4310—Adv. Range Mgt. ....	3
			17

## CROPS OPTION

Text. Engr. 234—Cotton Classing ....	3	Agron. 421—Cotton and Fiber Crops ....	2
Ag. Engr. 411—Soil Mgt. Lab. ....	1	Agron. 423—Soil Mgt. ....	2
*Electives ....	5	Ag. Engr. 412—Soil Mgt. Lab. ....	1
	17	*Electives ....	5
			17

## SOILS OPTION

Agron. 435—Soil Genesis .....	3	Agron. 423—Soil Mgt. ....	2
Agron. 439—Soil Microbiology .....	3	Agron. 436—Soil Chemistry .....	3
Ag. Engr. 411—Soil Mgt. Lab. ....	1	Ag. Engr. 412—Soil Mgt. Lab. ....	1
*Electives .....	3	Electives .....	3

18

14

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

\* See footnote preceding page.

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

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

## BACHELOR OF SCIENCE IN AGRICULTURE

## ANIMAL HUSBANDRY MAJOR

For Uniform Freshman and Sophomore Years See Above

## Junior Year

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

## ANIMAL INDUSTRY OPTION

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

## DAIRY HUSBANDRY OPTION

A. H. 324—Dairy Breeds .....	2	A. H. 323—Adv. Dairy Cattle Judg. ....	2
D. M. 341—Market Milk .....	4	D. M. 323—Judging Dairy Prod. ....	2
	18	Electives .....	2
			18

## POULTRY HUSBANDRY OPTION

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

## RANGE MANAGEMENT OPTION

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

## Senior Year

First Semester	Credit	Second Semester	Credit
A. H. 422—Animal Breeding .....	2	Ag. Eco. 433—Farm Mgt. ....	3
Gov. 230 .....	3		

## ANIMAL INDUSTRY OPTION

Ag. Eco. 431—Livestock Mktg. ....	3	A. H. 411—Seminar .....	1
A. H. 421—Purebred Herds & Flocks ..	2	A. H. 423—Nutrition .....	2
A. H. 427—Swine Produc. ....	2	A. H. 424—Beef Cattle Produc. ....	2
Electives .....	5	A. H. 426—Sheep & Wool Produc. ....	2
	17	Electives .....	7
			17

## DAIRY HUSBANDRY OPTION

A. H. 428—Dairy Cattle Production .....	2	A. H. 411—Seminar .....	1
A. H. 427—Swine Production .....	2	A. H. 412—Dairy Cattle Breeding .....	1
Electives .....	8	A. H. 429—Adv. Dairy Cattle Prod. ....	2
	17	D. M. 335—Dairy Bact. ....	3
		A. H. 423—Nutrition .....	2
		Electives .....	5
			17

## POULTRY HUSBANDRY OPTION

P. H. 422—Turkey Production .....	2	P. H. 411—Seminar .....	1
P. H. 423—Market Eggs .....	2	P. H. 421—Poultry Produc. ....	2
A. H. 428—Dairy Cattle Production .....	2	A. H. 423—Nutrition .....	2
Electives .....	6	Electives .....	9
	17		17

## RANGE MANAGEMENT OPTION

Ag. Engr. 432—Land Map. & Meas. ....	3	A. H. 411—Seminar .....	1
Agron. 437—Range Mgt. ....	3	A. H. 424—Beef Cattle Produc. ....	2
Agron. 435—Soil Genesis .....	3	A. H. 426—Sheep & Wool Produc. ....	2
Electives .....	3	A. H. 438—Range Mgt. ....	3
	17	Agron. 434—Soil Conservation .....	3
		Agron. 4310—Adv. Range Mgt. ....	3
			17

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

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

## BACHELOR OF SCIENCE IN AGRICULTURE

## DAIRY MANUFACTURES MAJOR

For Uniform Freshman and Sophomore Years See Above

## Junior Year

First Semester	Credit	Second Semester	Credit
D. M. 338—Testing Dairy Products .....	3	D. M. 335—Dairy Bact. ....	3
D. M. 328—Judging Dairy Products .....	2	D. M. 337—Dairy Plant Equipment .....	3
D. M. 341—Market Milk .....	4	D. M. 334—Fund. of Dairy Science .....	3
Ag. Eco. 331—Statistics .....	3	A. H. 331—Prin. of Feeding .....	3
Sph. 338—Bus. & Professional .....	3	Agron. 341—Prin. of Genetics .....	4
*Electives .....	2	D. M. 412—Starters & Cult. Milk .....	1
	17		17

## Senior Year

First Semester	Credit	Second Semester	Credit
D. M. 431—Cheesemaking .....	3	D. M. 411—Seminar .....	1
D. M. 434—Buttermaking .....	3	D. M. 433—Ice Cream Making .....	3
D. M. 437—Mgt. & Merch. ....	3	D. M. 422—Cond. & Powdr. Milk .....	2
Govt. 230—American Government .....	3	D. M. 435—Dairy & Food Insp. ....	3
*Electives .....	5	Ag. Eco. 438—Mkt. Dairy Produc. ....	3
	17	*Electives .....	5
			17

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

# BACHELOR OF SCIENCE IN AGRICULTURE

## HORTICULTURE AND PARK MANAGEMENT MAJOR

For Uniform Freshman and Sophomore Years See Above

### Junior Year

First Semester	Credit	Second Semester	Credit
Hort. 333—Fruit Culture .....	3	Agron. 341—Prin. of Genetics .....	4
Hort. 339—Plant Insects .....	3	Agron. 331—Forage Crops .....	3
<b>GENERAL HORTICULTURE OPTION</b>			
Hort. 331—Trees and Shrubs .....	3	Hort. 332—Annuals and Perennials .....	3
*Electives .....	9	Hort. 322—Landscape Appreciation .....	2
	18	*Electives .....	4
			16

### POMOLOGY OPTION

*Electives .....	12	Hort. 321—Beekeeping .....	2
	18	Hort. 322—Landscape Appreciation .....	2
		*Electives .....	5
			16

### PARK MANAGEMENT AND FLORICULTURE OPTION

Hort. 331—Trees and Shrubs .....	3	Hort. 332—Annuals and Perennials .....	3
Hort. 334—Floriculture .....	3	Hort. 335—Floriculture .....	3
Arch. 121—Freehand Dr. ....	2	Engr. Drg. 131—Engr. Drawing .....	3
Electives .....	2	Arch. 121—Freehand Dr. ....	2
	16		18

### Senior Year

First Semester	Credit	Second Semester	Credit
Ag. Eco. 433—Farm Mgt. ....	3	Agron. 423—Soil Mgt. ....	2
Ag. Engr. 411—Soil Mgt. Lab. ....	1	Ag. Engr. 412—Soil Mgt. Lab. ....	1
Govt. 230 .....	3	Hort. 410—Seminar .....	1
		Agron. 431—Adv. Plant Breeding .....	3
		Hort. 3310—Plant Functions .....	3

### GENERAL HORTICULTURE OPTION

*Electives .....	11	*Electives .....	6
	18		16

### POMOLOGY OPTION

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

### PARK MANAGEMENT AND FLORICULTURE OPTION

Hort. 336—Landscape Design .....	3	Hort. 337—Landscape Design .....	3
Hort. 422—Park Design .....	2	Hort. 322—Landscape Appreciation .....	2
*Electives .....	5	Hort. 423—Park Design .....	2
	17		17

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

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

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

## DIVISION OF ARTS AND SCIENCES

R. C. GOODWIN, *Dean*

The Division of Arts and Sciences has three chief functions:

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

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

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

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

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

### Degrees and Degree Requirements

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

Unless specifically indicated to the contrary in a particular curriculum, all entering freshmen students in this division will pursue the established freshman year set forth immediately below. The courses beyond the freshman year may vary according to the degree sought and are described in the curricula established for these degrees.

#### *Prescribed Freshman Curriculum:*

1. English composition .....	6
2. Math, foreign language, science or history .....	18
3. Electives, if not included under 2 above .....	6
4. Phy. ed., band or mil. sci. ....	2-4
Total for both semesters of freshman year .....	32-34 hours

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

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

*The Bachelor of Arts Degree.* The curriculum established for the Degree of Bachelor of Arts is designed specifically to fulfill the aims of liberal education through a well-rounded study of the humanities, the physical, 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 in terms of semester hours, are as follows:

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

*Order and Choice of Work.* All entering freshmen will fol-

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

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

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



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

Not more than 42 semester hours in one subject may be counted in the requirement for the Bachelor of Arts Degree. Not more than 12 hours in Biblical history and literature may be counted; not more than 8 hours in applied music and/or music ensemble, except for students offering music as a major or minor. A maximum of 24 semester hours of electives in the technical or professional subjects of agriculture, commerce, education, engineering, and home economics may be offered for the Degree of Bachelor of Arts. Courses in shorthand and typewriting may not, however, be offered for this degree.

Students majoring in subjects other than education may qualify for a teacher's certificate by enrolling for the requisite amount of education required for the various certificates.

### Pre-Professional Courses

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

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

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

*Freshman Year:* The prescribed freshman curriculum should be followed but should include History 133-4 and Government 131-2. The course in the freshman year will vary somewhat de-

pending upon whether or not the student intends to complete a degree before going to law school.

*Sophomore Year:* English 237-8, History 231-2, Government 232, and Economics 231-2 should be taken. If a foreign language was begun in the freshman year, it should be continued. The student should consult with his adviser concerning other courses.

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

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

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

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

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

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

*Studies Preparatory to Medicine and Dentistry.* Colleges of medicine and dentistry require an applicant to present 15 units of approved work and a certificate of graduation from an accredited high school. 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 pre-medical requirements. For pre-dentistry students certain modifications may be advisable.

*Freshman Year:* The established freshman curriculum should include Chemistry 141-2 and Biology 133-4. If necessary, Math.

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—Qual. Anal. ....	3	Chem. 232—Inorganic Chem. ....	3
Zool. 234—Invert. Morph. ....	3	Zool. 241—Comp. Vert. Anat. ....	4
*Phys. 141—Gen. Physics ....	4	*Phys. 142—Gen. Physics ....	4
Eng. 237—Types of Lit. ....	3	Eng. 238—Types of Lit. ....	3
For. Lang. ....	3	For. Lang. ....	3
P.E., M.S., or Band ....	1	P.E., M.S., or Band ....	1
	17		18

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

### Junior Year

First Semester	Credit	Second Semester	Credit
Zool. 331—Animal Histology ....	3	Zool. 332—Comp. Vert. Embry. ....	3
or		or	
Bact. 331—Prin. of Bact. ....	3	Bact. 332—Prin. of Bact. ....	3
Chem. 353—Organic Chem. ....	5	Chem. 354—Organic Chem. ....	5
Chem. 331—Quan. Anal. ....	3	Chem. 332—Quan. Anal. ....	3
Govt. 230—Amer. Govt. ....	3	Govt. 231—Amer. Govt. ....	3
Electives ....	3	Electives ....	3
	17		17

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

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

The program outlined above is not designed to meet the minimum requirements of any medical school, but it is planned to

fit the student for the successful study of medicine. Each student is charged with the responsibility for knowing any special requirements of the medical school which he plans to attend and should consult with the pre-medical adviser 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.

## BACHELOR OF ARTS

### ECONOMICS MAJOR\*

For Prescribed Freshman Year See Above Page

#### Sophomore Year

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

#### Junior Year

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

#### Senior Year

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

## BACHELOR OF ARTS

### JOURNALISM MAJOR

#### Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 237—Types of Lit. ....	3	Eng. 238—Types of Lit. ....	3
Govt. 230—Amer. Govt. ....	3	Govt. 231—Amer. Govt. ....	3
Jour. 231—Reporting ....	3	Jour. 232—Reporting ....	3
Science ....	3	Science, cont. ....	3
For. Lang. begun Fr. Yr. ....	3	For. Lang. cont. ....	3
P.E., M.S., or Band ....	1	P.E., M.S., or Band ....	1
	<hr/> 16		<hr/> 16

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

## Junior Year

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

## Senior Year

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

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

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

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.

Specific curricula in the various major fields are shown below. In general a minimum of 72 hours must be completed in the Department of Biology, Chemistry, Geology, Mathematics, and Physics with at least 6 hours in each department, though majors in physics and mathematics are required to complete work in only three of the science departments other than the major. Geology majors may substitute engineering drawing and 8 hours of mathematics above the required work in that department for the two years of foreign language, provided such substitution has the approval of the Head of the Department of Geology.

Freshmen will follow the curriculum for the established freshman year with the specific recommendations as shown under the respective majors. Thereafter the student will follow the pre-

scribed curriculum of the major of his choice as set forth below. Any and all electives allowed must receive the prior approval of the head of the major department.

## BACHELOR OF SCIENCE

### BOTANY MAJOR

#### Freshman and Sophomore Years

Biology 133—Bot. ....3	Biology 134—Zool. ....3
Chemistry, Geology, or Physics (beginning course) .....6	Chemistry, Geology, or Physics (beginning course) .....6
Math. 130 or 121-122 .....3 or 4	Math. 131 .....3
English 131—Comp. ....3	English 132—Comp. ....3
Eng. 237—Types of Lit. ....3	English 238—Types of Lit. ....3
Foreign Language .....6	Foreign Language .....6
Botany 231—Plant Groups .....3	Botany 232—Taxonomy .....3
Zoology 234—Invert. Morph. ....3	Zoology 241—Vert. Anat. ....4
P.E., Band, or M.S. ....2-3	P.E., Band, or M.S. ....2-3
32-34	33-34

#### Junior and Senior Years

Botany 331—Plant Physiology .....3	Botany 339—Plant Anatomy .....3
Botany (junior or senior) .....3	Botany (junior or senior) .....3
Bact., Biol., or Bot. (junior or senior) .....6	Bact., Biol., or Bot. (junior or senior) .....6
Chemistry, Geology, or Physics (beginning course) .....3	Chemistry, Geology, or Physics (beginning course) .....3
Approved science electives .....9	Approved science electives .....6
Economics .....3	Economics .....3
Approved electives .....2	Government 231 .....3
Government 230 .....3	Approved electives .....6
Botany 411—Seminar .....1	
33	33

## BACHELOR OF SCIENCE

### ZOOLOGY MAJOR

#### Freshman and Sophomore Years

Biology 134—Zoology .....3	Biology 133—Botany .....3
Chemistry, Geology, or Physics (beginning course) .....6	Chemistry, Geology, or Physics (beginning course) .....6
Math 130 or 121-122 .....3 or 4	Math. 131 .....3
English 131—Comp. ....3	English 132—Comp. ....3
English 237—Types of Lit. ....3	English 238—Types of Lit. ....3
Foreign Language .....6	Foreign Language .....6
Zoology 234—Invert. Morph. ....3	Zoology 241—Vert. Anat. ....4
Botany 231—Plant Groups .....3	Botany 232—Taxonomy .....3
P.E., Band, or M.S. ....2-3	P.E., Band, or M.S. ....2-3
32-34	33-34

#### Junior and Senior Years

Zool. 331—An. Histology, Zool. 334—Entomology .....3-6	Zoology 332—Embryology, Zoology 333—Parasitol .....3-6
Zoology (junior or senior) .....0-3	Zoology (junior or senior) .....0-3
Bact., Biol., or Zool. (junior or senior) .....6	Bact., Biol., or Zool. (junior or senior) .....6
Chemistry, Geology, or Physics (beginning course) .....3	Chemistry, Geology, or Physics (beginning course) .....3
Approved science electives .....9	Approved science electives .....6
Economics .....3	Economics .....3
Government 230 .....3	Government 231 .....3
Approved electives .....2	Approved electives .....6
Zoology 411—Seminar .....1	
33	33

## BACHELOR OF SCIENCE

### CHEMISTRY MAJOR

The Prescribed Freshman Year (See page 89) should include 6 semester hours in a science other than chemistry, preferably physics. Those students who have had sufficient training in high school should take mathematics 121-2, 131, and 132. Many students will not have had the necessary training to do this. They should confer with the Head of the Department of Chemistry and Chemical Engineering in making their schedules.

#### Sophomore Year

First Semester	Credit	Second Semester	Credit
Chem. 231—Qual. Anal. ....	3	Chem. 232—Inorg. Chem. ....	3
Science elective .....	3	Science elective .....	3
Germ. 131 .....	3	Germ. 132 .....	3
*Math. 231—Diff. and Integ. ....	3	Math. 232—Diff. and Integ. ....	3
Calc. ....	3	Calc. ....	3
Chem. 331—Quan. Anal. ....	3	Chem. 332—Quan. Anal. ....	3
P.E., M.S., or Band .....	1	P.E., M.S., or Band .....	1
	16		16

#### Junior Year

First Semester	Credit	Second Semester	Credit
Chem. 353—Org. Chem. ....	5	Chem. 354—Org. Chem. ....	5
Science elective .....	3	Science elective .....	3
Germ. 233 .....	3	Germ. 234 .....	3
Chem. 441—Physical Chem. ....	4	Chem. 442—Physical Chem. ....	4
Govt. 230—Am. Govt. ....	3	Govt. 231—Am. Govt. ....	3
	18		18

#### Senior Year

First Semester	Credit	Second Semester	Credit
Chem. 411—Seminar .....	1	Chem. 412—Seminar .....	1
Economics .....	3	Economics .....	3
Eng. 237—Types of Lit. ....	3	Eng. 238—Types of Lit. ....	3
Senior Chem. ....	3	Senior Chem. ....	3
Science elective .....	3	Science elective or Math .....	3
**Science or Math. elective .....	3		
	16		16

\* If Math. 121-2, 131 and 132 were taken during the freshman year, Math. 231-2 may be taken in the sophomore year. If Math. 130 and 131 were taken in the freshman year it is advisable for the student to take Math. 132 in the summer, either in residence or by correspondence, in order that Math. 231-2 may be taken during the sophomore year.

\*\* This elective must be chosen to make Math, or one of the sciences a minor.

## BACHELOR OF SCIENCE

### MATHEMATICS MAJOR

For Prescribed Freshman Year See Page 89

#### Sophomore Year

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

## Junior and Senior Years

First Semester	Credit	Second Semester	Credit
Math.* Numbers over 200 .....	12	Math. Numbers over 200 .....	12
Govt. 230—Amer. Govt. ....	3	Govt. 231—Amer. Govt. ....	3
Eco. 231—Prin. of Eco. ....	3	Eco. 232—Prin. of Eco. ....	3
Science .....	9	Science .....	9
Approved Electives .....	5	Approved Electives .....	5
	<u>32</u>		<u>32</u>

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

## BACHELOR OF SCIENCE

## PETROLEUM GEOLOGY MAJOR

## Freshman Year

First Semester	Credit	Second Semester	Credit
Geol. 131—Gen. Geol. ....	3	Geol. 132—Gen. Geol. ....	3
Chem. 141—Gen. Chem. ....	4	Chem. 142—Gen. Chem. ....	4
For. Lang. 131		For. Lang. 132	
or		or	
Eng. Dr. 131—Drawing .....	3	Eng. Dr. 121—Drawing .....	2
Math. 130—Algebra .....	3	Math. 131—Trig. ....	3
Eng. 131—Composition .....	3	Eng. 132—Composition .....	3
P. E., M. S., or Band .....	1-2	P. E., M. S., or Band .....	1
	<u>17-18</u>		<u>16-17</u>

## Sophomore Year

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

## SUMMER

Geol. 363—Field Geology.....6

## Junior Year

First Semester	Credit	Second Semester	Credit
Geol. 333—Petrog. & Petrol. ....	3	Geol. 334—Petrog. & Petrol. ....	3
Geol. 335—Paleo. ....	3	Geol. 336—Paleo. ....	3
Eco. 231—Prin. of Eco.		Eco. 232—Prin. of Eco.	
or		or	
Eco. 235—Prin. of Eco. ....	3*	Eco. Geog. 233 .....	3*
Biol. 133—Botany		Biol. 134—Zoology	
or		or	
Phys. 131—Gen. Phys. ....	3	Phys. 132—Gen. Phys. ....	3
Elective or		Elective or	
Math. 261—Diff. Calculus .....	3	Math. 262—Int. Calculus .....	3
	<u>15</u>		<u>15</u>



## Senior Year

First Semester	Credit	Second Semester	Credit
Geol. 433—Struct. Geol. ....	3	Geol. 434—Pet. Geol. ....	3
Geol. 435—Index Fossils		Geol. 436—Micropaleo.	
or		or	
Geol. 437—Sedimen.		Geol. 438—Sedimen.	
or		or	
Geol. 4314—Strat. ....	3	Geol. 4315—Strat. ....	3
Science Elective ....	3	Science Elective ....	3
General Elective ....	3	General Elective ....	3
Govt. 230 ....	3	Govt. 231 ....	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	Second Semester	Credit
Eng. 131—Composition ....	3	Eng. 132—Composition ....	3
Math. 121—Algebra ....	2	Math. 122—Algebra ....	2
Math 131—Trig. ....	3	Math. 132—Analytics ....	3
Physics 131—Elem. Physics ....	3	Physics 132—Elem. Physics ....	3
Chem. 141—Gen. Chem. ....	4	Chem. 142—Gen. Chem. ....	4
P.E., M.S., or Band ....	1-2	P.E., M.S., or Band ....	1-2
	16-17		16-17

## Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 237—Types of Lit. ....	3	Eng. 238—Types of Lit. ....	3
Math 251—Calculus ....	5	Math. 331—Calc. appl. ....	3
Physics 235—Engr. Phys. ....	3	Physics 236—Engr. Phys. ....	3
Geol. 131—Gen. Geol. ....	3	Physics 216—Phys. Meas. ....	1
Physics 215—Phys. Meas. ....	1	P.E., M.S., or Band ....	1
P.E., M.S., or Band ....	1	Geol. 132—Gen. Geol. ....	3
	16	Elective ....	3
			17

## Junior Year

First Semester	Credit	Second Semester	Credit
Germ. 131—Begin. Course		Germ. 132—Begin. Course	
or		or	
French 131—Begin. Course ....	3	French 132—Begin. Course ....	3
Govt. 230—Amer. Govt. ....	3	Govt. 231—Amer. Govt. ....	3
Physics 331—Light ....	3	Physics 332—Heat ....	3
Physics 333—Elect. and Mag. ....	3	Physics 334—Elect. and Mag. ....	3
Physics 337—Mod. Phys. ....	3	Physics 338—Mod. Phys. ....	3
	15		15

## Senior Year

First Semester	Credit	Second Semester	Credit
Eco. 231—Prin. of Eco. ....	3	Eco. 232—Prin. of Eco. ....	3
Math. 434—Adv. Calc. ....	3	Physics 435—Mechanics ....	3
Math. 321—Diff. Equat. ....	2	Math 435—Adv. Calc. ....	3
Physics 411 or 413—Seminar ....	1	Physics 412 or 414—Seminar ....	1
Physics 423—Elect., Meas. ....	2	Physics 424—Elect. Meas. ....	2
German 233—Sci. Germ.		German 234—Sci. Germ.	
or		or	
French 231—Gramm. Read. ....	3	French 232—Gramm. Read. ....	3
Electives ....	3	Elective ....	3
	17		18

## The Degree 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 36 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. 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 semester for the four undergraduate years which will be experienced by the pre-service 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 between courses leading toward the field of elementary education and courses leading toward the field of 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. Due to the fact that 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 pre-service 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.

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 in the above.

### BACHELOR OF SCIENCE IN EDUCATION ELEMENTARY PROGRAM

#### Freshman Year

First Semester	Credit	Second Semester	Credit
Ed. 130—Foundations of Educ. ....	3	Ed. 131—Personal Growth in Educ. ....	3
Eng. 131—Eng. Composition ....	3	Eng. 132—Eng. Composition ....	3
Zool. 135—Human Anat. & Physiol. ....	3	Zool. 136—Human Anat. & Physiol. ....	3
Hist. 231—Eco. & Pol. Hist. of U.S. ....	3	Hist. 232—Eco. & Pol. Hist. of U.S. ....	3
Math 135—Math. in Gen. Educ. ....	3	Govt. 230—Amer. Govt., Org. ....	3
P.E., Band, or M.S. ....	1-2	P.E., Band, or M.S. ....	1-2
	<hr/> 16-17		<hr/> 16-17

#### Sophomore Year

First Semester	Credit	Second Semester	Credit
Ed. 230—Educ. Psy. ....	3	Ed. 231—Educ. Soc. ....	3
Eng. 237—Types of Lit. ....	3	Eng. 238—Types of Lit. ....	3
Govt. 231—Amer. Govt., Functions ....	3	Spch. 239—Dev. Spch. Comp. ....	3
Chem. 131—General Chem. ....		for Teachers ....	3
or		Chem. 132—General Chem. ....	
Phys. 131—Elem. of College Phys. ....		or	
or		Phys. 132—Elem. of College Phys. ....	
Geol. 131—General Geol. ....	3	or	
Music 231—Fundamentals of Music for		Geol. 132—General Geol. ....	3
Elem. Classroom Teachers ....	3	Music 232—Elem. Music Prin., Practices,	
P.E., Band, or M.S. ....	1	and Materials ....	3
	<hr/> 16	P.E., Band, or M.S. ....	1
			<hr/> 16

#### Junior Year

First Semester	Credit	Second Semester	Credit
Ed. 330—Prin. of Modern Educ. ....	3	Ed. 333—Curric. Dev. in Elem Educ. ....	3
Psy. 331—Child Psy. ....	3	Ed. 335—Elem. Educ. Meth. ....	3
P. E. 230—Meth. & Materials in Health		P.E. 233—Meth. & Materials in P.E. ....	
Ed. in Elem. & Sec. Schools ....	3	in Elem. School ....	3
Arch. 337—Art in Elem. Educ. ....	3	Arch. 338—Art in Elem. Educ. ....	3
Elective ....	3	Ch. D. 431—Dev. of Learning in	
	<hr/> 15	Young Children ....	3
			<hr/> 15

#### Senior Year

First Semester	Credit	Second Semester	Credit
Ed. 431—St. Obser. & Teach. in		Ed. 433—Curric. Practicum in	
Elem. School ....	3	Elem. Ed. ....	3
Ed. 430—Hist. & Phil. of Educ. ....	3	Ed. 435—Ed. Evaluation ....	3
Rur. Soc. 432—Rural Soc. ....	3	Anthro. 232—Cultural Anthro. ....	3
Eco. 237—Eco. Geog. ....	3	Fam. Rel. 433—Family Relations	
Electives ....	6	or	
	<hr/> 18	Soc. 332—Marriage ....	3
		Elective ....	3
			<hr/> 15
		Total Semester Hours ....	127

### 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, a 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	English Composition.....	3	*	*
Eng. 132	English Composition.....	3	*	*
Eng. 237	Types & Masterpieces of Literature.....	3	*	*
Eng. 238	Types & Masterpieces of Literature.....	3	*	*
Spch. 239	Developing Speech Competence for Teachers.....	3	*	**

### BASIC SOCIAL SCIENCES

Hist. 231	Eco. and Political History of the U.S.....	3	*	*
Hist. 232	Eco. and Political History of the U.S.....	3	*	*
Govt. 230	American Government, Organization.....	3	*	*
Govt. 231	American Government, Functions.....	3	*	*
Rur. Soc. 432	Rural Sociology.....	3	*	**
Anthro. 232	Cultural Anthropology.....	3	*	**
Eco. 237	Economic Geography.....	3	*	**
Fam. Rel. 433	Family Relations	3		
or				
Soc. 332	Marriage.....	3	*	**

### BASIC SCIENCE ARTS

Zool. 135	Human Anatomy and Physiology.....	3	*	
Zool. 136	Human Anatomy and Physiology.....	3	*	
Chem. 131	General Chemistry			
or				
Phys. 131	Elements of College Physics.....	3	*	
or				
Geol. 131	General Geology			
Chem. 132	General Chemistry			
or				
Phys. 132	Elements of College Physics.....	3	*	
or				
Geol. 132	General Geology			
Math. 135	Mathematics in General Education.....	3	*	
Ch.D. 431	Dev. of Learning in Young Children.....	3	*	
Mathematics	.....	6		
and				
Science	.....	6		
or				
Laboratory Science.....		12		

### FINE AND PRACTICAL ARTS

Arch. 337	Art in Elementary Education.....	3	*	
Arch. 333	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 HEALTHFUL LIVING

P. E.	Freshman Physical Education.....	2	*	*
P. E.	Sophomore Physical Education.....	2	*	*
P. E. 230	Meth. & Materials in Health Education in Elementary & Secondary Schools.....	3	*	
P. E. 233	Methods and Materials in P.E. in Elem. School.....	3	*	

\* Required

\*\* Recommended

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 Education 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.

## BACHELOR OF SCIENCE IN EDUCATION

### SECONDARY PROGRAM

#### Freshman Year

First Semester	Credit	Second Semester	Credit
Ed. 130—Foundations of Educ. ....	3	Ed. 131—Personal Growth in Educ. ....	3
Eng. 131—Eng. Composition ....	3	Eng. 132—Eng. Composition ....	3
*Math. ....	3	*Math. ....	3
Hist. 231—Eco. & Pol. Hist. of U. S. ....	3	Hist. 232—Eco. & Pol. Hist. of U. S. ....	3
*Science ....	3	*Science ....	3
P.E., Band, or M.S. ....	1-2	P.E., Band, or M.S. ....	1-2
	16-17		16-17

#### Sophomore Year

First Semester	Credit	Second Semester	Credit
Ed. 230—Educ. Psy. ....	3	Ed. 231—Educ. Soc. ....	3
Eng. 237—Types of Lit. ....	3	Eng. 238—Types of Lit. ....	3
Govt. 230—Amer. Govt., Org. ....	3	Govt. 231—Amer. Govt., Functions ....	3
Teaching Major ....	3	Teaching Major ....	6
Teaching Minor ....	3	P.E., Band, or M.S. ....	1
P.E., Band, or M.S. ....	1		
	16		16

#### Junior Year

First Semester	Credit	Second Semester	Credit
Ed. 330—Prin. of Modern Educ. ....	3	Ed. 334—Curric. Dev. in Sec. Educ. ....	3
Psy. 335—Adol. Psy. ....	3	EEEd. 336—Sec. Educ. Meth. ....	3
P.E. ....	3	P.E. ....	3
Teaching Major ....	3	Teaching Major ....	3
Teaching Minor ....	3	Teaching Minor ....	3
Elective ....	3		
	18		15

#### Senior Year

First Semester	Credit	Second Semester	Credit
Ed. 432—St. Obser. & Teach. in Sec. School ....	3	Ed. 434—Curric. Practicum in Sec. Ed. ....	3
Ed. 430—Hist. of Phil. of Educ. ....	3	Ed. 435—Educ. Evaluation ....	3
Teaching Major ....	6	Teaching Major ....	3
Teaching Minor ....	3	Teaching Minor ....	6
	15		15
Total Semester Hours .....127			

\* Secondary majors may take 12 semester hours of laboratory science, or 6 semester hours of mathematics and 6 semester hours of science.

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, including health and physical education, music and band. With the approval of the deans concerned, teaching majors and minors may also be taken in other divisions of the college. Ordinarily, the teaching major calls for completion of a minimum of 24 semester hours and the teaching minor a minimum of 18 semester hours. Certain more general teaching majors and minors are available, such as social science, general science, and foreign language. Such majors and minors ordinarily call for completion of a minimum of 30 and 24 semester hours respectively. The 30 hours 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 for the teaching minor include 12 hours in one subject or general area, 6 hours above the basic course, and 6 hours in each of two other subjects or general areas. Special requirements are made for public school music and band majors, as outlined elsewhere in this catalog in the music major curricula. 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. Pre-service teachers desiring to secure certificates in accordance with all legal requirements should confer with the Head of the Department of Education. The Department of Education is regarded as the liaison agency of the college in relation to the Texas Education Agency.

Both elementary and secondary school teachers are required to have specified course work in student observation and teaching and the curriculum practicum. 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.

## **BACHELOR OF SCIENCE IN EDUCATION**

### **PUBLIC SCHOOL MUSIC MAJOR**

#### **Junior Year**

The Bachelor of Music, Music Education Major (Vocal) is

offered to entering freshmen and transferring sophomores desiring to major in Music Education.

First Semester	Credit
Ap. Mus. 325—Prin. Inst. ....	2
Mus. Lit. 431—Hist. of Music ....	3
Mus. Ed. 327—Choral Meth. & Tech. ....	2
Mus. Ed. 337—Elem. Sch. Tchng. & Supvsn. of Music ....	3
Psy. 230—Intro. to Psy. ....	3
Teaching Minor .....	3
	<hr/> 16

Second Semester	Credit
Ap. Mus. 326—Prin. Inst. ....	2
Mus. Lit. 432—Hist. of Music ....	3
Mus. Ed. 328—Instrumental Conduc. ....	2
Mus. Ed. 338—Sec. Sch. Tchng. & Supvsn. of Music ....	3
Psy. 333—Meas. in Ed. ....	3
or	
3 Psy. 431—Mental Testing .....	3
Teaching Minor .....	3
	<hr/> 16

### Senior Year

First Semester	Credit
Ap. Mus. 425—Prin. Inst. ....	2
Mus. Ed. 336—Sec. Insts. & Materials ..	3
Music Ensemble .....	1
Teaching Minor .....	3
Ed. 330—Prin. of Modern Ed. ....	3
or	
Ed. 430—Hist. & Phil. of Ed. ....	3
Psy. 335—Psy. of Adol. ....	3
or	
Psy. 331—Child Psy. ....	3
	<hr/> 15

Second Semester	Credit
Ap. Mus. 426—Prin. Inst. ....	2
Mus. Ed. 339—Sec. Inst. & Meth. ....	3
Music Ensemble .....	1
Ed. 431—Student Obs. & Tchng. (Elem) ....	3
or	
Ed. 432—Student Obs. & Tchng. (Sec) ..	3
Teaching Minor .....	6
	<hr/> 15

The Bachelor of Music, Music Education Major (Instrumental) is offered to entering freshmen and transferring sophomores desiring to major in Music Education.

## BACHELOR OF SCIENCE IN EDUCATION

### BAND MUSIC MAJOR

#### Junior Year

First Semester	Credit
Ap. Mus. 325—Band .....	2
Mus. Ed. 327—Choral Meth. & Tech. ....	2
Psy. 230—Intro to Psy. ....	3
Teaching Minor .....	6
Electives in Social Science .....	3
	<hr/> 16

Second Semester	Credit
Ap. Mus. 326—Band .....	2
Mus. Ed. 328—Instrumental Conduc. ....	2
Psy. 333—Meas. in Ed. ....	3
or	
Psy. 431—Mental Testing .....	3
Teaching Minor .....	3
Electives in Social Science .....	3
	<hr/> 13

#### Senior Year

First Semester	Credit
Ap. Mus. 425—Band .....	2
Mus. Ed. 336—Sec. Insts. & Materials ..	3
Mus. Ed. 421—Band Conduct. & Meth. ....	2
Ed. 330—Prin. of Modern Ed. ....	3
or	
Ed. 430—Hist. & Phil. of Ed. ....	3
Psy. 335—Psy. of Adol. ....	3
or	
Psy. 331—Child Psy. ....	3
Teaching Minor .....	3
	<hr/> 16

Second Semester	Credit
Ap. Mus. 426—Band .....	2
Mus. Ed. 422—Band Conduc. & Meth. ....	2
Mus. Ed. 339—Sec. Insts. & Meth. ....	3
Ed. 431—Student Obs. & Tchng. (Elem) ....	3
or	
Ed. 432—Student Obs. & Tchng. (Sec) ..	3
Teaching Minor .....	6
	<hr/> 16

## 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 ex-



pects to teach or direct vocal or instrumental music in the public schools, or for the student who desires concentration in performance and studio teaching.

All entering freshmen will follow the freshman program designed for music education (instrumental or vocal) majors. Entering freshmen music majors should have studied previously and should have attained technical proficiency 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 such courses until the deficiency is made up. Students following a plan for a major in music education will study the principal instrument for six semesters. Students following a plan for a major in voice or piano will study the principal instrument for eight semesters. Additional fees for applied music are shown under *Expenses*. One semester-hour courses in applied music may be applied 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.

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.

All students majoring in music are required to participate each year (with or without credit) in the Festival Chorus. Attendance of 75 per cent of the student recitals, faculty recitals, and Tech Artist 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. Foreign Language Diction (for vocal plan) .....3
6. Degree major; applied music, music literature, music education, music theory, and music ensemble (band, chorus, orchestra), but not including freshman and sophomore physical education, band, or military science, to total from 122 to 128 semester hours, dependent upon major.
7. Band, military science, or physical education .....4-6

Unless specifically shown to the contrary, all requirements pertaining to the Bachelor of Arts degree apply also to the Bachelor of Music.

## BACHELOR OF MUSIC

### MUSIC EDUCATION MAJOR (VOCAL\*)

#### Freshman Year

First Semester	Credit	Second Semester	Credit
Ap. Mus. 125—Prin. Inst. **	2	Ap. Mus. 126—Prin. Inst.	2
Ap. Mus. 113—Percussion	1	Ap. Mus. 114—Percussion	1
Ap. Mus. 117-1—Class Voice		Ap. Mus. 118-1—Class Voice	
or		or	
Ap. Mus. 117-2—Class Piano	1	Ap. Mus. 118-2—Class Piano	1
Ap. Mus. 112—Diction	1	Italian 113—Diction	1
Mus. Lit. 121—Intro. to Mus. Lit.	2	Mus. Lit. 122—Intro. to Mus. Lit.	2
Mus. Th. 147—Elem. Theory	4	Mus. Th. 148—Elem. Theory	4
Eng. 131—Comp.	3	Eng. 132—Comp.	3
Ensemble	1	Ensemble	1
Band, P.E., or M.S.	1-2	Band, P.E., or M.S.	1-2
	<b>16-17</b>		<b>16-17</b>

#### Sophomore Year

First Semester	Credit	Second Semester	Credit
Ap. Mus. 225—Prin. Inst.	2	Ap. Mus. 214—Strings	1
Ap. Mus. 213—Strings	1	Ap. Mus. 226—Prin. Inst.	2
Ap. Mus. 217-1—Class Voice		Ap. Mus. 218-1—Class Voice	
or		or	
Ap. Mus. 217-2—Class Piano	1	Ap. Mus. 218-2—Class Piano	1
Mus. Th. 247—Intermed. Theory	4	Mus. Th. 248—Intermed. Theory	4
German 113—Diction	1	French 113—Diction	1
Eng. 237—Types of Literature	3	Eng. 238—Types of Literature	3
Ed. 230—Ed. Psy.	3	Ed. 231—Ed. Soc.	3
Ensemble	1	Ensemble	1
Band, P.E., or M.S.	1-2	Band, P.E., or M.S.	1-2
	<b>17-18</b>		<b>17-18</b>

#### Junior Year

First Semester	Credit	Second Semester	Credit
Ap. Mus. 325—Prin. Inst.	2	Ap. Mus. 326—Prin. Inst.	2
Ap. Mus. 313—Brass	1	Ap. Mus. 314—Brass	1
Mus. Ed. 327—Choral Conduc.	2	Mus. Ed. 328—Inst. Conduc.	2
Mus. Ed. 337—Elem. Methods	3	Mus. Ed. 338—Secondary Meth.	3
Mus. Th. 322—Form and Comp.	2	Mus. Th. 323—Form and Comp.	2
Govt. 230—Amer. Govt.	3	Govt. 231—Amer. Govt.	3
Psy. 331—Child Psy.		Ed. 333—Curr. Dev. in Elem. Ed.	
or		or	
Psy. 335—Adol. Psy.	3	Ed. 334—Curr. Dev. in Sec. Ed.	3
Ensemble	1	Ensemble	1
	<b>17</b>		<b>17</b>

## Senior Year

First Semester	Credit	Second Semester	Credit
Ap. Mus. 413—Woodwinds .....	1	Ap. Mus. 414—Woodwinds .....	1
Mus. Lit. 431—Hist. of Music .....	3	Mus. Lit. 432—Hist. of Music .....	3
Mus. Th. 427—Instrumentation .....	2	Mus. Th. 428—Instrumentation .....	2
Ed. 431—Student Teaching (Elem.) .....		Ed. 433—Practicum in Elem. Ed. ....	
or		or	
Ed. 432—Student Teaching (Sec.) .....	3	Ed. 434—Practicum in Sec. Ed. ....	3
Academic Electives .....	6	Academic Electives .....	6
Ensemble .....	1	Ensemble .....	1
	16		16

\* If the principal instrument is voice, the student will include Applied Music 117-2; 118-2; 217-2; 218-2. If the principal instrument is piano, the student will include Applied Music 117-1; 118-1; 217-1; 218-1; and will not be required to include Applied Music 112; Italian 113; German 113; or French 113. Students substituting band for physical education will include Ensemble 010 or 011.

\*\* Students desiring to major in piano or voice will enroll for Applied Music 135, 136.

## BACHELOR OF MUSIC

## MUSIC EDUCATION MAJOR (INSTRUMENTAL\*)

## Freshman Year

First Semester	Credit	Second Semester	Credit
Ap. Mus. 125—Prin. Inst. ....	2	Ap. Mus. 126—Prin. Inst. ....	2
Ap. Mus. 113—Percussion .....	1	Ap. Mus. 114—Percussion .....	1
Ap. Mus. 117-1—Class Voice .....	1	Ap. Mus. 118-1—Class Voice .....	1
Ap. Mus. 117-2—Class Piano .....	1	Ap. Mus. 118-2—Class Piano .....	1
Mus. Lit. 121—Intro. to Mus. Lit. ....	2	Mus. Lit. 122—Intro. to Mus. Lit. ....	2
Mus. Th. 147—Elem. Theory .....	4	Mus. Th. 148—Elem. Theory .....	4
Eng. 131—Composition .....	3	Eng. 132—Composition .....	3
Ensemble .....	1	Ensemble .....	1
Band, P.E., or M.S. ....	1-2	Band, P.E., or M.S. ....	1-2
	16-17		16-17

## Sophomore Year

First Semester	Credit	Second Semester	Credit
Ap. Mus. 225—Prin. Inst. ....	2	Ap. Mus. 226—Prin. Instr. ....	2
Ap. Mus. 213—Strings .....	1	Ap. Mus. 214—Strings .....	1
Ap. Mus. 217-1—Class Voice .....	1	Ap. Mus. 218-1—Class Voice .....	1
Ap. Mus. 217-2—Class Piano .....	1	Ap. Mus. 218-2—Class Piano .....	1
Mus. Th. 247—Intermed. Theory .....	4	Mus. Th. 248—Intermed. Theory .....	4
Eng. 237—Types of Literature .....	3	Eng. 238—Types of Literature .....	3
Ed. 230—Ed. Psy. ....	3	Ed. 231—Ed. Soc. ....	3
Ensemble .....	1	Ensemble .....	1
Band, P.E., or M.S. ....	1-2	Band, P.E., or M.S. ....	1-2
	17-18		17-18

## Junior Year

First Semester	Credit	Second Semester	Credit
Ap. Mus. 325—Prin. Inst. ....	2	Ap. Mus. 326—Prin. Inst. ....	2
Ap. Mus. 313—Brass .....	1	Ap. Mus. 314—Brass .....	1
Mus. Ed. 327—Choral Conduc. ....	2	Mus. Ed. 328—Inst. Conduc. ....	2
Mus. Ed. 336—Sec. Insts. & Materials ..	3	Mus. Ed. 339—Sec. Insts. & Meth. ....	3
Mus. Th. 322—Form and Comp. ....	2	Mus. Th. 323—Form and Comp. ....	2
Govt. 230—Amer. Govt. ....	3	Govt. 231—Amer. Govt. ....	3
Psy. 331—Child Psy. ....		Ed. 333—Curr. Dev. in Elem. Ed. ....	
or		or	
Psy. 335—Adol. Psy. ....	3	Ed. 334—Curr. Dev. in Sec. Ed. ....	3
Ensemble .....	1	Ensemble .....	1
	17		17

For Prescribed Senior Year See "Bachelor of Music, Music Education Major (Vocal)".

\* Students substituting band for physical education will include Ensemble 010 or 011.

## BACHELOR OF MUSIC

### PIANO OR VOICE MAJORS\*

For Prescribed Freshman Year See "Bachelor of Music, Music Education Major (Vocal)".

#### Sophomore Year

First Semester	Credit	Second Semester	Credit
Ap. Mus. 235—Piano or Voice .....	3	Ap. Mus. 236—Piano or Voice .....	3
Ap. Mus. 217-1—Class Voice		Ap. Mus. 218-1—Class Voice	
or		or	
Ap. Mus. 217-2—Class Piano .....	1	Ap. Mus. 218-2—Class Piano .....	1
Mus. Th. 247—Intermed. Theory .....	4	Mus. Th. 248—Intermed. Theory .....	4
German 113—Diction .....	1	French 113—Diction .....	1
Eng. 237—Types of Lit. ....	3	Eng. 238—Types of Lit. ....	3
Govt. 230—Amer. Govt. ....	3	Govt. 231—Amer. Govt. ....	3
Ensemble .....	1	Ensemble .....	1
Band, P.E., or M.S. ....	1-2	Band, P.E., or M.S. ....	1-2
	17-18		17-18

#### Junior Year

First Semester	Credit	Second Semester	Credit
Ap. Mus. 345—Piano or Voice .....	4	Ap. Mus. 346—Piano or Voice .....	4
Mus. Lit. 330—Vocal Repertoire		Mus. Lit. 331—Vocal Repertoire	
or		or	
Mus. Lit. 332—Piano Repertoire .....	3	Mus. Lit. 333—Piano Repertoire .....	3
Mus. Ed. 327—Choral Conduc. ....	2	Mus. Ed. 328—Instrumental Conduc. ....	2
Mus. Th. 322—Form and Comp. ....	2	Mus. Th. 323—Form and Comp. ....	2
Ensemble .....	1	Ensemble .....	1
Academic Electives .....	3	Academic Electives .....	3
	15		15

#### Senior Year

First Semester	Credit	Second Semester	Credit
Ap. Mus. 445—Piano or Voice .....	4	Ap. Mus. 446—Piano or Voice .....	4
Mus. Lit. 431—Hist. of Music .....	3	Mus. Lit. 432—Hist. of Music .....	3
Mus. Ed. 433—Voice Pedagogy		Mus. Ed. 434—Voice Pedagogy	
or		or	
Mus. Ed. 437—Piano Pedagogy .....	3	Mus. Ed. 438—Piano Pedagogy .....	3
Mus. Th. 427—Instrumentation .....	2	Mus. Th. 428—Instrumentation .....	2
Ensemble .....	1	Ensemble .....	1
Academic Electives .....	3	Academic Electives .....	3
	16		16

\* Students majoring in Piano will not be required to include Applied Music 112, Italian 113, French 113, German 113, Music Literature 330, 331, Music Education 433, 434. Students majoring in Voice will not be required to include Music Literature 332, 333, Music Education 437, 438.

## 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 long before been available to students under the administration of the Division of Arts and Sciences.

Texas Tech is located geographically in the heart of the South Plains Area, historically a new empire of business, industrial, and agricultural activities. Lubbock is the heart of this new empire and is probably the fastest growing city of its size in Texas. The city is large enough and sufficiently diversified in its activities to provide students with opportunities to observe the operations of nearly all types of business and to provide the student opportunities for practical experience in his chosen field of preparation through part-time employment. In Lubbock there are 248 different types of business and industrial organizations.

The city is noted as a wholesale trade and financial center with 227 wholesale and 202 financial firms. The increasing industrialization is evidenced by 120 manufacturing companies. There are 1,600 retail and service establishments, and 54 transportation, communications, and other utility firms have offices in the city.

The Division of Business Administration has four primary objectives:

*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.

*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.

*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.

*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, and Master of Science.

*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, Retailing, or Secretarial Administration.
2. Additional courses approved by the major adviser 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 four hours of freshman and sophomore subjects in the combined areas of Physical Education, Military Science, and Band may apply toward the degree.

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 Science.* These degrees are awarded upon the completion of the various prescribed programs administered under the regulations of the Division of Graduate Studies. The student should consult the catalog section for the Division of Graduate Studies.

## Selection of a Major

It is recommended that the student not attempt to decide upon his major concentration 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 advisers 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 adviser from that particular field. The student should notify the Dean's office of his choice.

## CURRICULA IN THE DIVISION OF

### BUSINESS ADMINISTRATION

#### DEGREES BACHELOR OF BUSINESS ADMINISTRATION AND

#### BACHELOR OF SCIENCE

##### Uniform Freshman Year

First Semester	Credit	Second Semester	Credit
English 131—Composition .....	3	English 132—Composition .....	3
Mathematics 137—Com. Algebra .....	3	Mathematics 138—Math. of Finance .....	3
Science .....	3	Science .....	3
History .....	3	History .....	3
P.E.—113* .....	1	P.E.—114* .....	1
Management 110—Careers in Business .....	1	or	
Elective .....	2-3	Management 110—Careers in Business .....	1
		Elective .....	2-3
	16-17		16-17

\*Military Science or Band may be substituted. A maximum of four hours of credit in freshman and sophomore courses in these combined areas may apply toward the degree.

## BACHELOR OF BUSINESS ADMINISTRATION ACCOUNTING MAJOR

For Uniform Freshman Year See Above

### Sophomore Year

First Semester	Credit	Second Semester	Credit
Economics 231—Principles .....	3	Economics 232—Principles .....	3
Accounting 244—Elementary Acct. ....	4	Accounting 245—Elementary Acct. ....	4
Government 230—Amer. Govt. ....	3	Government 231—American Govt. ....	3
English 237—Types of Literature .....	3	English 238—Types of Literature .....	3
P.E.—213* .....	1	P.E.—214* .....	1
Elective .....	2-3	Elective .....	2-3
	16-17		16-17

\*See footnote under Uniform Freshman Year.

### Junior Year

First Semester	Credit	Second Semester	Credit
Acct. 334—Intermediate .....	3	Acct. 335—Intermediate .....	3
Acct. 336—Principles of Cost .....	3	Speech 338—Business Speech .....	3
Fin. 331—Corporation Finance .....	3	Mkt. 332—Principles .....	3
Fin. 338—Business Law .....	3	Fin. 339—Business Law .....	3
Sec. Ad. 333—Bus. Correspondence ....	3	Mkt. 336—Business Statistics .....	3
	15		15

### Senior Year

First Semester	Credit	Second Semester	Credit
Acct. 434—Advanced Acct. ....	3	Acct. 435—Advanced Acct. ....	3
Acct. 437—Auditing .....	3	Eco. 438—Research .....	3
Elective Accounting .....	3	Mgt. 331—Industrial Mgt. ....	3
Electives .....	6	Elective Accounting .....	3
	15	Electives .....	3
			15

Hours required for graduation—127.

## BACHELOR OF BUSINESS ADMINISTRATION ADVERTISING MAJOR

### Freshman Year

In addition to those courses listed under Uniform Freshman Year above, the student should also register for Architecture 121 and 122, Freehand Drawing.

### Sophomore Year

First Semester	Credit	Second Semester	Credit
Economics 231—Principles of Economics .3		Economics 232—Principles of Economics .3	
Accounting 244—Elementary Accounting .4		Accounting 245—Elementary Accounting .4	
Government 230—American Government .3		Government 231—American Government .3	
English 237—Types of Literature .....	3	English 238—Types of Literature .....	3
Economics 237—Economic Geography ...3		Marketing 332—Principles of Marketing .3	
P.E. 213* .....	1	P.E. 214* .....	1
	17		17

\*See footnote under Uniform Freshman Year.

### Junior Year

First Semester	Credit	Second Semester	Credit
Marketing 336—Business Statistics .....	3	Marketing 333—Marketing Problems ....	3
Marketing 339—Prin. of Salesmanship ...3		Finance 339—Business Law .....	3
Marketing 334—Prin. of Advertising .....	3	Marketing 421—Advertising Copy .....	2
Psychology 230—Intro. to Psychology ...3		Marketing 335—Prin. of Retailing .....	3
Finance 338—Business Law .....	3	Marketing 438—Display .....	3
Elective .....	1-2	Marketing 321—Public Relations .....	2
	16-17		16

## Senior Year

First Semester	Credit	Second Semester	Credit
Finance 331—Corporation Finance .....	3	Marketing 4318—Mech. Produc. of Adv. ..	3
Speech 338—Bus. and Professional Spch. ..	3	Sec. Ad. 333—Business Correspondence ..	3
Marketing 4317—Advertising Layout .....	3	Journalism 3319—Radio Adv. and	
Marketing 439—Sales Administration .....	3	Cont. Writing .....	3
Journalism 330—Typography .....	3	Marketing 4319—Advertising Internship ..	3
Elective .....	1-2	Mgt. 331—Industrial Management .....	3
		Elective .....	1-2
	16-17		16-17

## BACHELOR OF BUSINESS ADMINISTRATION

## BUSINESS TEACHING MAJOR

## Freshman Year

In addition to those courses listed under Uniform Freshman Year above, the student should also register for the following: Secretarial Administration 111 and 121, if he has not had typewriting; Secretarial Administration 121 and/or 122, if he has had typewriting in high school; Secretarial Administration 131 and 132 if he has had typewriting and has not had shorthand.

## Sophomore Year

First Semester	Credit	Second Semester	Credit
Economics 231—Principles .....	3	Economics 232—Principles .....	3
Accounting 244—Elementary Acct. ....	4	Accounting 245—Elementary Acct. ....	4
Government 230—Amer. Govt. ....	3	Government 231—American Govt. ....	3
English 237—Types of Literature .....	3	English 238—Types of Literature .....	3
P.E.—213* .....	1	P.E.—214* .....	1
Sec. Ad. 235—Inter. Shorthand .....	3	Sec. Ad. 236—Advanced Shorthand .....	3
	17		17

\*See footnote under Uniform Freshman Year.

## Junior Year

First Semester	Credit	Second Semester	Credit
Ed. 234—Prin. of Sec. Ed. ....	3	Ed. 235—High School Methods .....	3
Sec. Ad. 333—Bus. Correspondence .....	3	Speech 338—Business Speech .....	3
Mkt. 332—Prin. of Mkt. ....	3	Mkt. 336—Business Statistics .....	3
Fin. 338—Business Law .....	3	Sec. Ad. 321—Office Machines .....	2
Sec. Ad. 338—Filing Proced. & Prac. ..	3	Fin. 339—Business Law .....	3
	15	Elective .....	2
			16

## Senior Year

First Semester	Credit	Second Semester	Credit
Ed. 231—Educ. Psychology .....	3	Ed. 3316—Prac. Teaching .....	3
Sec. Ad. 421—Voice Writing & Duplic. ..	2	Bus. Ed. 422-3—Meth. of Teaching ..	4
Mkt. 339—Salesmanship .....	3	Bus. Subj. ....	4
Eco. 438—Research .....	3	Fin. 331—Corporation Finance .....	3
Mgt. 331—Ind. Mgt. ....	3	Sec. Ad. 337—Report Writing .....	3
Elective .....	2	Elective .....	3
	16		16

Hours required for graduation—127.



**BACHELOR OF BUSINESS ADMINISTRATION  
OR  
BACHELOR OF SCIENCE  
ECONOMICS MAJOR**

For Uniform Freshman Year See Above

**Sophomore Year**

First Semester	Credit	Second Semester	Credit
Eco. 231—Prin. of Eco. ....	3	Eco. 232—Prin. of Eco. ....	3
Acct. 244—Elem. Acct. ....	4	Acct. 245—Intro. to Acct. ....	4
Govt. 230—Amer. Govt. ....	3	Govt. 231—Amer. Govt. ....	3
Eng. 237—Types of Literature ....	3	Eng. 238—Types of Literature ....	3
Eco. 237—Eco. Geography ....	3	P.E. 214* ....	1
P.E. 213* ....	1	Elective ....	2-3
	<u>17</u>		<u>16-17</u>

\*See footnote under Uniform Freshman Year.

**Junior Year**

First Semester	Credit	Second Semester	Credit
Eco. 332—Pub. Util. ....	3	Eco. 334—Taxation ....	3
Eco. 333—Pub. Expend. ....	3	Fin. 331—Corporation Finance ....	3
Eco. 3312—Labor ....	3	Spch. 338—Bus. Speech ....	3
Mkt. 332—Prin. of Marketing ....	3	Mkt. 336—Business Statistics ....	3
Fin. 338—Business Law ....	3	Fin. 339—Business Law ....	3
	<u>15</u>		<u>15</u>

**Senior Year**

First Semester	Credit	Second Semester	Credit
Eco. 331—Intermediate Eco. ....	3	Eco. 433—Internatl. Eco. Relations ....	3
Eco. 338—International Trade ....	3	Eco. 436—Development of Doctrines ....	3
Eco. 438—Research ....	3	Mkt. 435—Bus. Cycle & Forecasts ....	3
Eco. 437—Current Eco. Problems ....	3	Eco. 4310—Advanced Principles ....	3
Sec. Ad. 333—Business Correspondence ....	3	Mgt. 331—Industrial Management ....	3
	<u>15</u>		<u>15</u>

Hours required for graduation—127.

**BACHELOR OF BUSINESS ADMINISTRATION  
FINANCE MAJOR**

For Uniform Freshman Year See Above

**Sophomore Year**

First Semester	Credit	Second Semester	Credit
Economics 231—Principles ....	3	Economics 232—Principles ....	3
Accounting 244—Elementary Acct. ....	4	Accounting 245—Elementary Acct. ....	4
Government 230—American Govt. ....	3	English 238—Types of Literature ....	3
English 237—Types of Literature ....	3	Government 231—American Govt. ....	3
P.E.—213* ....	1	P.E.—214* ....	1
Finance 231—Personal Finance ....	3	Elective ....	2-3
	<u>17</u>		<u>16-17</u>

\*See footnote under Uniform Freshman Year.

**Junior Year**

First Semester	Credit	Second Semester	Credit
Fin. 331—Corporation Finance ....	3	Fin. 337—Prop. & Cas. Insurance ....	3
Fin. 333—Banking ....	3	Fin. 334—Credits and Collections ....	3
Mkt. 336—Business Statistics ....	3	Fin. 339—Business Law ....	3
Fin. 336—Life Insurance ....	3	Mkt. 332—Principles ....	3
Fin. 338—Business Law ....	3	Electives ....	3
	<u>15</u>		<u>15</u>

## Senior Year

First Semester	Credit	Second Semester	Credit
Fin. 431—Federal Reserve System .....	3	Fin. 433—Adv. Corp. Problems .....	3
Sec. Ad. 333—Business Correspondence .....	3	Fin. 434—Investments .....	3
Speech 338—Business Speech .....	3	Eco. 438—Research .....	3
Mgt. 331—Industrial Mgt. ....	3	Electives .....	6
Elective .....	3		
	15		15

\*See footnote under Uniform Freshman Year.

**BACHELOR OF BUSINESS ADMINISTRATION  
OR  
BACHELOR OF SCIENCE  
INTERNATIONAL TRADE MAJOR**

For Uniform Freshman Year See Above

## Sophomore Year

First Semester	Credit	Second Semester	Credit
Eco. 231—Prin. of Eco. ....	3	Eco. 232—Prin. of Eco. ....	3
Acct. 244—Elem. Acct. ....	4	Acct. 245—Intro. to Acct. ....	4
Eng. 237—Types of Literature .....	3	Govt. 231—Amer. Govt. ....	3
Govt. 230—Amer. Govt. ....	3	Eng. 238—Types of Literature .....	3
Eco. 237—Eco. Geography .....	3	P.E. 214* .....	1
P.E. 213* .....	1	Elective .....	2-3
	17		16-17

\*See footnote under Uniform Freshman Year.

## Junior Year

First Semester	Credit	Second Semester	Credit
Eco. 335—Transportation .....	3	Eco. 337—Eco. Systems .....	3
Eco. 338—Foreign Trade .....	3	Eco. 339—Latin Amer. and the U.S. ....	3
Fin. 338—Business Law .....	3	Fin. 339—Business Law .....	3
Mkt. 332—Principles .....	3	Govt. 336—Amer. Diplomacy .....	3
Mkt. 336—Business Statistics .....	3	Speech 338—Business Speech .....	3
	15		15

## Senior Year

First Semester	Credit	Second Semester	Credit
Eco. 433—Inter. Trade Relations .....	3	Eco. 432—For. Mkt. Surveys .....	3
Eco. 437—Current Eco. Problems .....	3	Govt. 436—International Law .....	3
Eco. 434—Air Transportation .....	3	Sec. Ad. 333—Business Correspondence .....	3
Govt. 435—Internat. Organization .....	3	Fin. 331—Corporation Finance .....	3
Govt. 437—Polit. Geography .....	3	Mgt. 331—Industrial Management .....	3
	15		15

Hours required for graduation—127.

**BACHELOR OF BUSINESS ADMINISTRATION  
MANAGEMENT MAJOR**

For Uniform Freshman Year See Above

## Sophomore Year

First Semester	Credit	Second Semester	Credit
Eco. 231—Prin. of Eco. ....	3	Eco. 232—Prin. of Eco. ....	3
Acct. 244—Elem. Acct. ....	4	Acct. 245—Intro. to Acct. ....	4
Govt. 230—Amer. Govt. ....	3	Govt. 231—Amer. Govt. ....	3
Eng. 237—Types of Lit. ....	3	Eng. 238—Types of Lit. ....	3
Pay. 230—Intro. to Pay. ....	3	Mgt. 231—Bus. Org. & Mgt. ....	3
P.E. 213* .....	1	P.E. 214* .....	1
	17		17

\*See footnote under Uniform Freshman Year.

## PERSONNEL MANAGEMENT OPTION

## Junior Year

First Semester	Credit	Second Semester	Credit
Mgt. 331—Indus. Mgt. ....	3	Mgt. 334—Personnel Mgt. ....	3
Mgt. 333—Labor Problems ....	3	Mkt. 336—Bus. Stat. ....	3
Mkt. 332—Prin. of Mkt. ....	3	Sect. 337—Report Writing ....	3
Fin. 331—Corp. Fin. ....	3	Psy. 330—Psy. of Bus. & Ind. ....	3
Fin. 338—Bus. Law ....	3	Fin. 339—Bus. Law ....	3
	15		15

## Senior Year

First Semester	Credit	Second Semester	Credit
Mgt. 431—Office Mgt. ....	3	Mgt. 432—Adv. Personnel Mgt. ....	3
Mgt. 433—Labor Relations ....	3	Mgt. 439—Personnel Tests & Rating Scales ....	3
Mgt. 434—Job. Eval. & Wage Admin. ....	3	I. E. 331—Time & Motion Study ....	3
Mgt. 438—Interv., Select., & Counseling Employees ....	3	Psy. 439—Indus. Pay. ....	3
Speech 338—Bus. Speech ....	3	Elective ....	3
	15		15

Hours required for graduation—127.

## INDUSTRIAL MANAGEMENT OPTION

## Junior Year

First Semester	Credit	Second Semester	Credit
Mgt. 331—Indus. Mgt. ....	3	Mgt. 332—Mgt. Small Bus. Ent. ....	3
Mgt. 333—Labor Problems ....	3	Mgt. 334—Personnel Mgt. ....	3
Mkt. 332—Prin. of Mkt. ....	3	Sect. 337—Report Writing ....	3
Fin. 331—Corp. Fin. ....	3	Mkt. 336—Bus. Stat. ....	3
Fin. 338—Bus. Law ....	3	Fin. 339—Bus. Law ....	3
	15		15

## Senior Year

First Semester	Credit	Second Semester	Credit
Mgt. 335—Purchasing ....	3	Mgt. 435—Employee Supv. ....	3
Mgt. 431—Office Mgt. ....	3	Mgt. 4310—Indus. Mgt. Prob. ....	3
Psy. 330—Psy. of Bus. & Ind. ....	3	Acct. 336—Prin. of Cost Acct. ....	3
Speech 338—Bus. Speech ....	3	Electives ....	6
Elective ....	3		
	15		15

Hours required for graduation—127.

## TRAFFIC MANAGEMENT OPTION

## Junior Year

First Semester	Credit	Second Semester	Credit
Mgt. 331—Indus. Mgt. ....	3	Mgt. 334—Personnel Mgt. ....	3
Mgt. 333—Labor Problems ....	3	Mgt. 335—Purchasing ....	3
Mkt. 332—Prin. of Mkt. ....	3	Mkt. 336—Bus. Stat. ....	3
Eco. 335—Trans. Prin. & Prac. ....	3	Eco. 434—Air Transportation ....	3
Fin. 338—Bus. Law ....	3	Fin. 339—Bus. Law ....	3
	15		15

## Senior Year

First Semester	Credit	Second Semester	Credit
Mgt. 435—Employee Supv. ....	3	Mgt. 336—Indus. Traffic Mgt. ....	3
Sect. 337—Report Writing ....	3	Mgt. 4310—Indus. Mgt. Prob. ....	3
Eco. 435—Trans. Eco. ....	3	Fin. 331—Corp. Fin. ....	3
Speech 338—Bus. Speech ....	3	Electives ....	6
Elective ....	3		
	15		15

Hours required for graduation—127.

# BACHELOR OF BUSINESS ADMINISTRATION MARKETING MAJOR

For Uniform Freshman Year See Above

## Sophomore Year

First Semester	Credit	Second Semester	Credit
Eco. 231—Prin. of Eco. ....	3	Eco. 232—Prin. of Eco. ....	3
Acct. 244—Elem. Acct. ....	4	Acct. 245—Elem. Acct. ....	4
Govt. 230—Amer. Govt. ....	3	Govt. 231—Amer. Govt. ....	3
English 237—Types of Literature ....	3	Eng. 238—Types of Literature ....	3
Eco. 237—Eco. Geography ....	3	Elective .....	2-3
P.E. 213* .....	1	P.E. 214* .....	1
	17		16-17

\*See footnote under Uniform Freshman Year.

## Junior Year

First Semester	Credit	Second Semester	Credit
Mkt. 332—Prin. of Mkt. ....	3	Mkt. 335—Prin. of Retailing ....	3
Mkt. 336—Business Statistics ....	3	Mkt. 337—Intermediate Bus. Stat. ....	3
Mkt. 339—Prin. of Salesmanship ....	3	Pay. 338—Pay. Applied to Bus. ....	3
Pay. 230—Intro. to Psy. ....	3	Fin. 339—Bus. Law ....	3
Fin. 338—Bus. Law ....	3	Mkt. 333—Probs. in Mkt. ....	3
	15		15

## Senior Year

First Semester	Credit	Second Semester	Credit
Mkt. 334—Prin. of Advertising ....	3	Mkt. 435—Bus. Cycles & Forecasts ....	3
Fin. 331—Corp. Finance ....	3	Eco. 438—Research ....	3
Eco. 335—Transportation Eco. ....	3	Sec. Ad. 333—Bus. Corres. ....	3
Eco. 338—Foreign Trade ....	3	Speech 338—Bus. Speech ....	3
Mgt. 331—Industrial Mgt. ....	3	Electives .....	3
	15		15

Hours required for graduation—127.

# BACHELOR OF BUSINESS ADMINISTRATION

## OFFICE MANAGEMENT MAJOR

For Uniform Freshman Year See Above

## Sophomore Year

First Semester	Credit	Second Semester	Credit
Eco. 231—Prin. of Eco. ....	3	Eco. 232—Prin. of Eco. ....	3
Acct. 244—Elem. Acct. ....	4	Acct. 245—Intro. to Acct. ....	4
Govt. 230—Amer. Govt. ....	3	Govt. 231—Amer. Govt. ....	3
Eng. 237—Types of Literature ....	3	Eng. 238—Types of Literature ....	3
Elective .....	3	Eect. 122—Advanced Typewriting ....	2
P.E. 213* .....	1	P.E. 214* .....	1
	17		16

\*See footnote under Uniform Freshman Year.

## Junior Year

First Semester	Credit	Second Semester	Credit
Mgt. 331—Indus. Mgt. ....	3	Mgt. 334—Personnel Mgt. ....	3
Sect. 321—Office Machines ....	2	Sect. 332—Sect. Practice ....	3
Sect. 331—Sect. Practice ....	3	Sect. 333—Bus. Corres. ....	3
Mkt. 338—Bus. Stat. ....	3	Mkt. 332—Prin. of Mkt. ....	3
Fin. 338—Bus. Law ....	3	Fin. 339—Bus. Law ....	3
Sect. 310—Bus. Comportment ....	1		
	15		15

**Senior Year**

First Semester	Credit	Second Semester	Credit
Mgt. 431—Office Mgt. ....	3	Mgt. 436—Prob. in Office Mgt. ....	3
Mgt. 435—Employee Supv. ....	3	Sect. 338—Filing Procedure & Prac. ....	3
Speech 338—Bus. Speech ....	3	Sect. 421—Voice Writing & Dup. ....	2
Fin. 334—Credits & Collec. ....	3	Sect. 433—Sect. Problems & Prac. ....	3
Sect. 337—Report Writing ....	3	Fin. 331—Corporation Finance ....	3
		Elective .....	1
	15		15

Hours required for graduation—127.

**BACHELOR OF BUSINESS ADMINISTRATION****PRE-LAW MAJOR****Freshman Year**

Follow the Business Administration Uniform Freshman Year. For the history requirement, History 133-134 is specified.

**Sophomore Year**

First Semester	Credit	Second Semester	Credit
Eco. 231—Principles ....	3	Eco. 232—Principles ....	3
Acct. 244—Elementary ....	4	Acct. 244—Elementary ....	4
Govt. 230—American ....	3	Govt. 231—American ....	3
Eng. 237—Types of Literature ....	3	Eng. 238—Types of Literature ....	3
History 231—U.S. Eco. and Polit. ....	3	History 232—U.S. Eco. and Polit. ....	3
P.E.—213* .....	1	P.E.—214* .....	1
	17		17

\*See footnote under Uniform Freshman Year.

**Junior Year**

First Semester	Credit	Second Semester	Credit
Fin. 331—Corporation ....	3	Mkt. 332—Principles ....	3
Sec. Ad. 333—Business Corres. ....	3	Mkt. 336—Business Statistics ....	3
Psy. 230—Introduction ....	3	Eco. 438—Research in Eco. and Bus. ....	3
Mgt. 331—Industrial Mgt. ....	3	Speech 338—Business and Profes. ....	3
Electives in Business Admin.* .....	3-5	Electives in Business Admin.* .....	3-5
	15-17		15-17

\*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.

The student must complete 96 semester hours before entering law school to qualify for this degree program.

**Senior Year**

The completion of all of the requirements for a law degree from any school of law recognized by this College will substitute for the senior year of study.

**BACHELOR OF SCIENCE****PUBLIC ADMINISTRATION MAJOR**

For Uniform Freshman Year See Above

**Sophomore Year**

First Semester	Credit	Second Semester	Credit
Eco. 231—Prin. of Eco. ....	3	Eco. 232—Prin. of Eco. ....	3
Acct. 244—Elem. Acct. ....	4	Acct. 245—Elem. Acct. ....	4
Govt. 230—Amer. Govt. ....	3	Govt. 231—Amer. Govt. ....	3
Eng. 237—Types of Literature ....	3	Eng. 238—Types of Literature ....	3
Eco. 237—Eco. Geography ....	3	P.E. 214* .....	1
P.E. 213* .....	1	Elective .....	2-3
	17		16-17

\*See footnote under Uniform Freshman Year.

## Junior Year

First Semester	Credit	Second Semester	Credit
Eco. 332—Public Utilities .....	3	Eco. 333—Public Expenditures .....	3
Eco. 335—Transportation .....	3	Mkt. 336—Business Stat. ....	3
Fin. 331—Corporation Finance .....	3	Mkt. 332—Principles .....	3
Fin. 338—Bus. Law .....	3	Fin. 339—Business Law .....	3
Speech 338—Bus. Speech .....	3	Sec. Ad. 333—Business Correspondence ..	3
	15		15

## Senior Year

First Semester	Credit	Second Semester	Credit
Eco. 331—Intermediate Eco. Prin. ....	3	Eco. 4310—Advanced Principles .....	3
Eco. 334—Taxation .....	3	Mkt. 435—Bus. Cycles and Forecasts ..	3
Eco. 438—Research .....	3	Acct. 432—Governmental .....	3
Mgt. 331—Industrial Management .....	3	Electives, Eco., and Govt. ....	6
Electives, Eco., and Govt. ....	3		
	15		15

Hours required for graduation—127.

## BACHELOR OF BUSINESS ADMINISTRATION

## RETAILING MAJOR

## Freshman Year

For Uniform Freshman Year See Above

First Semester	Credit	Second Semester	Credit
Eco. 231—Principles of Eco. ....	3	Eco. 232—Principles of Eco. ....	3
Acct. 244—Elementary Acct. ....	4	Acct. 245—Elementary Acct. ....	4
Govt. 230—American Govt. ....	3	Govt. 231—American Govt. ....	3
Eng. 237—Types of Literature .....	3	Eng. 238—Types of Literature .....	3
Eco. 237—Economic Geography .....	3	Mkt. 332—Principles of Mkt. ....	3
P.E. 213* .....	1	P.E. 214* .....	1
	17		17

\*See footnote under Uniform Freshman Year.

## Junior Year

First Semester	Credit	Second Semester	Credit
Mkt. 336—Business Statistics .....	3	Mkt. 335—Principles of Retailing .....	3
Mkt. 339—Principles of Salesmanship ..	3	Psy. 330—Psy. in Bus. and Industry ..	3
Mkt. 334—Principles of Advertising ..	3	Mkt. 333—Mkt. Problems .....	3
Psy. 230—Introduction to Psy. ....	3	Finance 339—Business Law .....	3
Finance 338—Business Law .....	3	Cloth. & Tex. 336—Merchandising ..	3
Elective .....	1-2	Home Furnishings .....	3
		Elective .....	1-2
	16-17		16-17

## Senior Year

First Semester	Credit	Second Semester	Credit
Spch. 338—Bus. and Professional Spch. ..	3	Mkt. 438—Display .....	3
Mkt. 4310—Trends in Retailing Sys. ....	3	Mkt. 4315—Retail Buying .....	3
Mkt. 439—Sales Administration .....	3	Sec. Ad. 333—Business Corres. ....	3
Cloth. & Tex. 436—Tex. Merch. ....	3	Mgt. 331—Industrial Mgt. ....	3
Fin. 331—Corporation Finance .....	3	Fin. 334—Credits and Collections .....	3
Elective .....	1-2	Elective .....	1-2
	16-17		16-17

Hours required for graduation 127.

**BACHELOR OF BUSINESS ADMINISTRATION  
SECRETARIAL ADMINISTRATION MAJOR**

**Freshman Year**

In addition to those courses listed under Uniform Freshman Year above, the student should also register for the following: Secretarial Administration 111 and 121, if he has not had typewriting; Secretarial Administration 121 and/or 122, if he has had typewriting in high school; Secretarial Administration 131 and 132 if he has had typewriting and has not had shorthand.

**Sophomore Year**

First Semester	Credit	Second Semester	Credit
Economics 231—Principles .....	3	Eco. 232—Principles .....	3
Accounting 244—Elementary Acct. ....	4	Accounting 245—Elementary Acct. ....	4
Government 230—Amer. Govt. ....	3	Government 231—Amer. Govt. ....	3
English 237—Types of Literature .....	3	English 238—Types of Literature .....	3
Sec. Ad. 235—Inter. Shorthand .....	3	Sec. Ad. 236—Adv. Shorthand .....	3
P.E. 213* .....	1	P.E. 214* .....	1
	<hr/> 17		<hr/> 17

\*See footnote under Uniform Freshman Year.

**Junior Year**

First Semester	Credit	Second Semester	Credit
Sec. Ad. 321—Office Machines .....	2	Sec. Ad. 332—Sect. Prac. ....	3
Sec. Ad. 331—Sect. Prac. ....	3	Mkt. 336—Bus. Stat. ....	3
Sec. Ad. 333—Bus. Corres. ....	3	Fin. 339—Bus. Law ....	3
Fin. 338—Bus. Law ....	3	Spch. 338—Bus. Speech ....	3
Sec. Ad. 338—Filing Proced. & Prac. ....	3	Mgt. 331—Ind. Mgt. ....	3
Sec. Ad. 310—Bus. Comportment .....	1	Elective .....	1
	<hr/> 15		<hr/> 16

**Senior Year**

First Semester	Credit	Second Semester	Credit
Acct. 441—Machine Acct. ....	4	Sec. Ad. 421—Voice Writ. & Duplic. ....	2
Eco. 438—Research .....	3	Sec. Ad. 433—Sect. Prob. & Prac. ....	3
Mgt. 431—Office Management .....	3	Fin. 331—Corporation Finance .....	3
Electives .....	5	Electives .....	7
	<hr/> 15		<hr/> 15

Hours required for graduation—127.

## DIVISION OF ENGINEERING

DYSART E. HOLCOMB, *Dean*

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

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

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

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

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

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



Engineering training is recognized as desirable preparation for a commercial career. From 60 to 70 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 have had an engineering education have found their way into nearly every type of vocation. A few of the vocations which the engineering graduate may reasonably expect to enter upon graduation, or after a period of practical experience, have been indicated in the beginning of the departmental descriptions. Attention is called to the fact that in a civilization such as ours, where one is constantly in contact with the results of our modern industrial development, no type of education is more suitable than that leading to an engineering degree.

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

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

Physically qualified engineering students desiring to do so may take work in military science. All students are eligible for the Air Force and Infantry units.

Those students following an academic course leading to an engineering, technical, or scientific degree are especially suited for the Air Force Armament Option. 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 acquire a reading knowledge of German before graduation.

*Professional Degrees.* An engineering graduate of Texas

Technological College may become a candidate for a professional degree, of which the following are available: Chemical Engineer, Civil Engineer, Electrical Engineer, Petroleum Engineer, Industrial Engineer, Mechanical Engineer, Textile Engineer.

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

For further details see the Division of Graduate Studies.

## CURRICULA IN DIVISION OF ENGINEERING

### Uniform Freshman Year

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

First Semester	Credit	Second Semester	Credit
E. Dr. 131—Engr. Drawing .....	3	Ed. Dr. 121—Engr. Drawing .....	2
Math 121—Alg. ....	2	Math. 122—Alg. ....	2
Math 131—Trig. ....	3	Math 132—Anal. ....	3
Eng. 131—Comp. ....	3	Eng. 132—Comp. ....	3
Chem. 141—Gen. Chem. ....	3	Chem. 142—Gen. Chem. ....	3
P.E., or Band .....	1	Govt. 230—Amer. Govt. ....	3
M.S. ....	2	P.E., or Band .....	1
E. Or. 111—Orient .....	1	M.S. ....	2
	17-18		18-19

## BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

For Uniform Freshman Year See Above

### Sophomore Year

First Semester	Credit	Second Semester	Credit
Chem. 231—Qual. Anal. ....	3	Chem. 232—Inorg. Chem. ....	3
Chem. 331—Quant. Anal. ....	3	Chem. 332—Quan. Anal. ....	3
Math. 251—Calc. ....	5	Ch. E. 244—Intro. to Ch. E. ....	4
Phys. 235—Engr. Phys. ....	3	Phys. 236—Engr. Phys. ....	3
Phys. 216—Phys. Meas. ....	1	Phys. 216—Phys. Meas. ....	1
Eng. 233—Tech. Writing ....	3	C. E. 331—Statics ....	3
P.E., M.S., or Band .....	1	P.E., M.S., or Band .....	1
	19		18

### Junior Year

First Semester	Credit	Second Semester	Credit
Chem. 353—Org. Chem. ....	5	Chem. 354—Org. Chem. ....	5
Chem. 441—Phys. Chem. ....	4	Chem. 442—Phys. Chem. ....	4
Ch. E. 331—Prin. of Ch. E. ....	3	Ch. E. 332—Prin. of Ch. E. ....	3
Chem. 411—Chem. Seminar ....	1	Chem. 412—Chem. Seminar ....	1
E. E. 426—Elem. of E. E. ....	2	E. E. 427—Elem. of E. E. ....	2
E. E. 412—E. E. Lab. ....	1	E. E. 413—E. E. Lab. ....	1
I. E. 332—Mgt.-Prod. Plan. & Cont. ....	3	C. E. 333—Strength of Maters. ....	3
	19		19

### Senior Year

First Semester	Credit	Ch. E. 432—Chem. Tech. ....	3
Ch. E. 431—Chem. Tech. ....	3	Ch. E. 434—Ch. E. Thermo. ....	3
Ch. E. 433—Ch. E. Thermo. ....	3	Ch. E. 426—Unit Op. Lab. ....	2
Ch. E. 425—Unit Op. Lab. ....	2	Ch. E. 430—Ch. E. Pt. Des. ....	3
Ch. E. 437—Adv. Ch. E. ....	3	Speech 338—Bus. and Prof. Speech ....	3
Ch. E. 435—Instrumentation ....	3	Electives .....	3
Electives .....	3		
Second Semester	Credit		17

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

Electives: Choices from the following are suggested, M. E. 335, M. E. 337, Chem. 434, Chem. 438, Chem. 439, Ch. E. 438, and P. E. 330. Advanced military science 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.

**BACHELOR OF SCIENCE IN CIVIL ENGINEERING**

For Uniform Freshman Year See Above

**Sophomore Year**

First Semester	Credit	Second Semester	Credit
C.E. 231—Plane Surveying	3	C.E. 232—Plane Surveying	3
Math. 251—Calc.	5	C.E. 331—Statics	3
Phys. 235—Engr. Phys.	3	Math. 331—Calc. Applic.	3
Phys. 215—Phys. Meas.	1	Phys. 216—Phys. Meas.	1
Geol. 233—Geol. for Engineers	3	Phys. 236—Engr. Phys.	3
Eco. 235—Prin.	3	Eng. 233—Tech. Writing	3
P.E., M.S., or Band	1	P.E., M.S., or Band	1
	19		17

**Junior Year**

First Semester	Credit	Second Semester	Credit
C.E. 320—Struct.	2	C.E. 333—Strength of Mater.	3
C.E. 332—Kinematics and Kinetics	3	C.E. 330—Struct.	3
C.E. 335—Highway Engr.	3	C.E. 336—Highway Engr.	3
C.E. 339—Fluid Mech.	3	C.E. 334—Surveying	3
C.E. 312—Fluid Mech. Lab.	1	M.E. 335—Heat Engines, or	
C.E. 3310—Munic. San.	3	C.E. 3311—Hydr. Mach.	3
M.E. 334—Elem. Thermo.	3	Spch. 338—Bus. and Prof. Spch.	3
C.E. 311—Highway Lab.	1		
	19		18

**Senior Year****OPTION A**

First Semester	Credit	Second Semester	Credit
C.E. 424—Mater.	2	C.E. 425—Mater.	2
C.E. 423—Eco. of Hwy. Design	2	C.E. 4312—Soil Mech. and Found.	3
C.E. 431—Rein. Conc.	3	C.E. 432—Rein. Conc.	3
C.E. 433—Struct.	3	C.E. 434—Struct.	3
E.E. 426—Elem. of E.E.	2	E.E. 427—Elem. of E.E.	2
E.E. 412—E.E. Lab.	1	E.E. 413—E.E. Lab.	1
C.E. 439—Law and Ethics	3	*Elective A.	3
*Elective A.	3		
	19		17

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

\* Elective A. Choices made from the following are suggested, but 6 credit hours of continuous material are required: C.E. 437-8; Acct. 244-5; Fin. 338-9; Span. 131-2; Hist. 131-2. Other courses may be chosen as Elective A subject to approval of head of department.

**OPTION B**

First Semester	Credit	Second Semester	Credit
C.E. 424—Mater.	2	C.E. 425—Mater.	2
C.E. 423—Eco. of Hwy. Design	2	C.E. 439—Law and Ethics	3
C.E. 431—Rein. Conc.	3	C.E. 4312—Soil and Mech. and Found.	3
C.E. 433—Struct.	3	C.E. 438—Sewerage	3
C.E. 437—Wat. Sup. and Treat.	3	C.E. 4314—Sewage Treatment	3
C.E. 4313—Wat. Purification	3	E.E. 427—Elem. of E.E.	2
E.E. 426—Elem. of E.E.	2	E.E. 413—E.E. Lab.	1
E.E. 412—E.E. Lab.	1		
	19		17

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

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

**BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING**

For Uniform Freshman Year See Above

**Sophomore Year**

First Semester	Credit	Second Semester	Credit
E.E. 231—Prin. of E.E.	3	E.E. 232—Prin. of E.E.	3
E.E. 221—E.E. Lab.	2	E.E. 222—E.E. Lab.	2
Math. 251—Calc.	5	Math. 331—Calc. Applic.	3
Phys. 235—Engr. Phys.	3	Phys. 236—Engr. Phys.	3
Phys. 215—Phys. Meas.	1	Phys. 216—Phys. Meas.	1
Eng. 233—Tech. Writing	3	C.E. 331—Statics	3
P.E., M.S., or Band	1	E.Dr. 221—Machine Dr.	2
	18	P.E., M.S., or Band	1
			18

## Junior Year

First Semester	Credit
E.E. 332—A.C. Circuits .....	3
E.E. 322—A.C. Circuits Lab. ....	2
C.E. 332—Kinematics & Kinetics ..	3
M.E. 334—Elem. Thermo. ....	3
M.E. 317—Heat Engr. Lab. ....	1
M.E. 313—Machine Shop .....	1
Math. 321—Diff. Equat. ....	2
Eco. 235—Prin. ....	3
	<hr/> 18

Second Semester	Credit
E.E. 334—Com. Circuits .....	3
E.E. 324—Communication Lab. ....	2
E.E. 325—Electronics .....	2
E.E. 323—Electronics Lab. ....	2
C.E. 333—Strength of Mater. ....	3
M.E. 314—Machine Shop .....	1
M.E. 335—Heat Engines .....	3
M.E. 318—Heat Engr. Lab. ....	1
	<hr/> 17

## Senior Year

First Semester	Credit
E.E. 4312—Elec. Mach. ....	3
E.E. 4310—Vacuum Tube Circuits ...	3
E.E. 4210—Vac. Tube Circuits Lab. ...	2
I.E. 332—Mgt. Prod. Plan. & Cont. ...	3

Second Semester	Credit
E.E. 4313—Elec. Mach. ....	3
C.E. 439—Law & Ethics in Engr. ....	3

## COMMUNICATIONS OPTION

First Semester	Credit
E.E. 4314—Com. Circuits .....	3
E.E. 4114—Com. Circuits Lab. ....	1
E.E. 4112—Elec. Mach. Lab. ....	1
Electives* .....	3
	<hr/> 19

Second Semester	Credit
E.E. 4311—Radio Engr. ....	3
E.E. 4211—Radio Engr. Lab. ....	2
E.E. 4113—Elec. Mach. Lab. ....	1
E.E. 4317—Instrumentation .....	3
E.E. 4217—Instrumentation Lab. ....	2
*Electives .....	2
	<hr/> 19

## POWER OPTION

First Semester	Credit
E.E. 432—Elec. Power Trans. ....	3
E.E. 4212—Elec. Mach. Lab. ....	2
C.E. 339—Fluid Mechanics .....	3
	<hr/> 19

Second Semester	Credit
E.E. 433—Elec. Power Trans. ....	3
E.E. 4213—Elec. Mach. Lab. ....	2
E.E. 429—Engr. Electronics .....	2
E.E. 4216—Engr. Electronics Lab. ....	2
C.E. 310—Testing Lab. ....	3
*Electives .....	3
	<hr/> 19

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

\* Subject to approval by Dean of Engineering and Head of Department. Advanced military science may be substituted for Eng. 233, provided a B average or better has been made in Eng. 131-2. Not more than 6 hours credit may be used for military science.

## BACHELOR OF SCIENCE IN INDUSTRIAL ENGINEERING

For Uniform Freshman Year See Above

## Sophomore Year

First Semester	Credit
E.Dr. 221—Mach. Drawing .....	2
Math. 251—Calc. ....	5
Phys. 235—Engr. Phys. ....	3
Phys. 215—Phys. Meas. ....	1
Psy. 234—First Course for Engrs. ....	3
C.E. 231—Plane Surveying .....	3
P.E., M.S., or Band .....	1
	<hr/> 18

Second Semester	Credit
E.Dr. 222—Des. Geom. ....	2
Math. 331—Calc. Applic. ....	3
Phys. 236—Engr. Phys. ....	3
Phys. 216—Phys. Meas. ....	1
C.E. 331—Statics .....	3
Acct. 231—Indus. Acct. for Engrs. ....	3
M.E. 221—Engr. Prob. ....	2
P.E., M.S., or Band .....	1
	<hr/> 18

## Junior Year

First Semester	Credit
I.E. 321—Personnel Admin. ....	2
I.E. 332—Mgt. ....	3
I.E. 333—Manuf. Meth. ....	3
Eco. 235—Prin. ....	3
M.E. 334—Elem. Thermo. ....	3
M.E. 313—Mach. Shop .....	1
Eng. 233—Tech. Writing .....	3
	<hr/> 18

Second Semester	Credit
I.E. 331—Time & Motion Study .....	3
I.E. 336—Tool Design .....	3
I.E. 337—Industrial Control .....	3
C.E. 333—Strength of Material .....	3
M.E. 316—Welding Prac. ....	1
M.E. 335—Heat Engines .....	3
Spch. 338—Bus. & Prof. Spch. ....	3
	<hr/> 19

## Senior Year

First Semester	Credit	Second Semester	Credit
I.E. 432—Indus. Plant Design .....	3	I.E. 411—Ind. Engr. Probs. ....	1
I.E. 436—Prin. of Engr. Eco. ....	3	I.E. 423—Purch. ....	2
M.E. 311—Pattern Shop .....	1	I.E. 433—Indus. Plant Design ....	3
M.E. 312—Foundry Prac. ....	1	I.E. 435—Indus. Safety Engr. ....	3
E.E. 438—Elem. of E.E. ....	3	E.E. 439—Elem. of E.E. ....	3
E.E. 412—E.E. Lab. ....	1	E.E. 413—E.E. Lab. ....	1
Fin. 338—Bus. Law .....	3	*Elective .....	3
*Elective .....	2		
	17		16

Hours required for graduation—141 and P.E., M.S., or Band.

\* Must be in one branch of engineering or business administration. recommended electives: Group A—M.E. 338, Math. 321, C.E. 439. Group B—C.E. 3310, C.E. 426, Fin. 339. Not more than 3 hours may be selected from Group B.

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

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

For Uniform Freshman Year See Above

## Sophomore Year

First Semester	Credit	Second Semester	Credit
M.E. 221—Engr. Prob. ....	2	M.E. 241—Mech. Dynamics ....	4
Math. 251—Calc. ....	5	Math. 331—Calc. Applic. ....	3
Phys. 235—Engr. Phys. ....	3	Phys. 236—Engr. Phys. ....	3
Phys. 215—Phys. Meas. ....	1	Phys. 216—Phys. Meas. ....	1
E.Dr. 221—Mach. Dr. ....	2	C.E. 331—Statics ....	3
Eco. 231—Prin. ....	3	Eco. 232—Prin. ....	3
P.E., M.S., or Band .....	1	P.E., M.S., or Band .....	1
	17		18

## Junior Year

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

## Senior Year

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

## AERONAUTICAL OPTION

## Senior Year

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

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

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

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

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

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

## BACHELOR OF SCIENCE IN PETROLEUM ENGINEERING

For Uniform Freshman Year See Above

### Sophomore Year

#### PRODUCTION OPTION

First Semester	Credit	Second Semester	Credit
Chem. 235—Hydrocarbons .....	3	Chem. 236—Analytical .....	3
Math. 251—Calc. ....	5	Eng. 233—Tech. Writing .....	3
Phys. 235—Engr. Phys. ....	3	Math. 331—Calc. Applic. ....	3
Phys. 215—Phys. Meas. ....	1	Phys. 236—Engr. Phys. ....	3
Geol. 131—Gen. ....	3	Phys. 216—Phys. Meas. ....	1
M.E. 221—Engr. Prob. ....	2	Geol. 132—Gen. ....	3
P.E., M.S., or Band .....	1	C.E. 331—Statics .....	3
		P.E., M.S., or Band .....	1
	18		20

### Junior Year

First Semester	Credit	Second Semester	Credit
Pet. E. 331—Dev. Meth. ....	3	Pet. E. 310—Drilling Fl. Lab. ....	1
Geol. 235—Advan. Gen. ....	3	Pet. E. 333—Prod. Meth. ....	3
C.E. 332—Kinematics & Kinetics ....	3	Geol. 236—Advan. Hist. ....	3
Chem. 336—Physical .....	3	Math. 321—Diff. Equat. ....	2
M.E. 338—Thermo. ....	3	C.E. 333—Strength of Mater. ....	3
M.E. 317—Heat Lab. ....	1	M.E. 339—Thermo. ....	3
C.E. 231—Plane Surveying .....	3	M.E. 318—Heat Lab. ....	1
		Eco. 235—Prin. ....	3
	19		19

### Senior Year

First Semester	Credit	Second Year	Credit
Pet. E. 410—Sem. ....	1	Pet. E. 411—Sem. ....	1
Pet. E. 412—Prod. Lab. ....	1	Pet. E. 436—Reservoir Engr. ....	3
Pet. E. 433—Advan. Prod. Engr. ....	3	Fin. 3310—Oil & Gas Law ....	3
E.E. 438—Elem. of E.E. ....	3	E.E. 439—Elem. of E.E. ....	3
E.E. 412—E.E. Lab. ....	1	E.E. 413—E.E. Lab. ....	1
M.E. 423—Int. Comb. Engines ....	2	M.E. 424—Int. Comb. Engines ....	2
Geol. 433—Struct. ....	3	Geol. 434—Pet. ....	3
C.E. 312—Fluid Mech. Lab. ....	1	Acct. 231—Acct. for Engrs. ....	3
C.E. 339—Fluid Mech. ....	3		
	18		19

Hours required for graduation—144 and P.E., or M.S., or Band.

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

#### NATURAL GAS OPTION

For Uniform Freshman Year See Above

### Sophomore Year

First Semester	Credit	Second Semester	Credit
Chem. 235—Hydrocarbons .....	3	Chem. 236—Analytical .....	3
Math. 251—Calc. ....	5	Eng. 233—Tech. Writing .....	3
Phys. 235—Engr. Phys. ....	3	Math. 331—Calc. Applic. ....	3
Phys. 215—Phys. Meas. ....	1	Phys. 236—Engr. Phys. ....	3
Geol. 131—Gen. ....	3	Phys. 216—Phys. Meas. ....	1
M.E. 221—Engr. Prob. ....	2	Geol. 132—Gen. ....	3
P.E., M.S., or Band .....	1	C.E. 331—Statics .....	3
		P.E., M.S., or Band .....	1
	18		20

## Junior Year

First Semester	Credit
Pet. E. 331—Dev. Meth. ....	3
Geol. 235—Advan. Gen. ....	3
C.E. 332—Kinematics & Kinetics ....	3
Chem. 336—Physical ....	3
M.E. 338—Thermo. ....	3
M.E. 317—Heat Lab. ....	1
C.E. 231—Plane Surveying ....	3

19

Second Semester	Credit
Pet. E. 310—Drilling Fl. Lab. ....	1
Pet. E. 333—Prod. Meth. ....	3
Geol. 236—Advan. Hist. ....	3
Math. 321—Diff. Equat. ....	2
C.E. 333—Strength of Mater. ....	3
M.E. 339—Thermo. ....	3
M.E. 318—Heat Lab. ....	1
Eco. 235—Prin. ....	3

19

## Senior Year

First Semester	Credit
Pet. E. 410—Sem. ....	1
Pet. E. 413—Nat. Gas Lab. ....	1
Pet. E. 434—Nat. Gas Engr. ....	3
E.E. 438—Elem. of E.E. ....	3
E.E. 412—E. E. Lab. ....	1
M.E. 423—Int. Comb. Engines ....	2
C.E. 339—Fluid Mech. ....	3
Geol. 433—Struct. ....	3
C.E. 312—Fluid Mech. Lab. ....	1

18

Second Semester	Credit
Pet. E. 411—Sem. ....	1
Pet. E. 435—Advan. Nat. Gas. Engr. ....	3
Fin. 3310—Oil & Gas Law ....	3
E.E. 439—Elem. of E.E. ....	3
E.E. 413—E.E. Lab. ....	1
M.E. 424—Int. Comb. Engines ....	2
Geol. 434—Pet. ....	3
Acct. 231—Acct. for Engrs. ....	3

19

Hours required for graduation—144 and P.E., or M.S., or Band.

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

## BACHELOR OF SCIENCE IN TEXTILE ENGINEERING

## ENGINEERING OPTION

## Uniform Freshman Year

## Sophomore Year

First Semester	Credit
T.E. 234—Cotton Class. & Mkt. ....	3
Math. 251—Calculus ....	5
Phys. 235—Engr. Physics ....	3
Phys. 215—Phys. Measurements ....	1
E. Dr. 221—Machine Drawing ....	2
M.E. 221—Engr. Problems ....	2
Eco. 231—Prin. of Economics ....	3
P.E., M.S., or Band ....	1

20

Second Semester	Credit
T.E. 235—Textile Fibers ....	3
T.E. 326—Wool ....	2
Phys. 236—Engr. Physics ....	3
Phys. 216—Phys. Measurements ....	1
C.E. 331—Statics ....	3
Spch. 338—Bus. Professional ....	3
**Eco. 232—Prin. of Economics ....	3
P.E., M.S., or Band ....	1

19

## Junior Year

First Semester	Credit
T. E. 331 Yarn Manufacture ....	3
T. E. 333 Bleaching & Dyeing ....	3
T. E. Fab. Design & Weaving ....	3
M. E. 334 Elem. Thermo. ....	3
M. E. 317 Heat Engines Lab. ....	1
C. E. 332 Kinematics & Kinetics ....	3
Chem. 341 Organic Chemistry ....	4

20

Second Semester	Credit
T. E. 332 Yarn Manufacture ....	3
T. E. 334 Bleaching & Dyeing ....	3
T. E. 336 Fab. Design & Weaving ....	3
M. E. 335 Heat Engines ....	3
M. E. 318 Heat Engr. Lab. ....	1
C. E. 333 Strength of Materials ....	3
I. E. 332 Mgt. Prod. Plan etc. ....	3

19

## Senior Year

First Semester	Credit
T.E. 437—Textile Costing ....	3
T.E. 421—Fab. Anal. Weaving & Jacquard Design ....	2
T.E. 433—Dyeing & Finishing ....	3
T.E. 435—Adv. Yarn Mfg. ....	3
E.E. 412—Elec. Engr. Lab. ....	1
E.E. 426—Elem. of E.E. ....	2
T.E.S. 411—T.E. Seminar ....	1
I.E. 421—Personnel Admin. ....	2
T. E. 420—Textile Testing ....	2

19

Second Semester	Credit
T.E. 438—Mill Organization ....	3
T.E. 422—Fab. Anal. Weaving & Jacquard Design ....	2
T.E. 434—Dyeing & Finishing ....	3
T.E. 436—Adv. Yarn Mfg. ....	3
E.E. 413—Elec. Engr. Lab. ....	1
E.E. 427—Elem. of E.E. ....	2
T.E.S. 412—T. E. Seminar ....	1
Eng. 233—Technical Writing ....	3

18

Hours required for graduation—146, and P.E., M.S., or Band.

\*\*Advanced Military Science may be substituted for Eco. 232 and Eng. 233.

**BACHELOR OF SCIENCE IN TEXTILE ENGINEERING****PRODUCTION OPTION****(Uniform Freshman Year)****Sophomore Year**

First Semester	Credit	Second Semester	Credit
Math. 231—Diff. & Int. Calc. ....	3	Math. 232—Diff. & Int. Calculus ....	3
Math. 238—Statistics ....	3	M.E. 221—M.E. Problems ....	2
Phys. 235—Engr. Physics ....	3	Phys. 236—Engr. Physics ....	3
Phys. 215—Phys. Measurements ....	1	Phys. 216—Phys. Measurements ....	1
T.E. 234—Cotton Class. & Mkt. ....	3	T.E. 326—Wool ....	2
Chem. 341—Organ. Chem. ....	4	T.E. 235—Textile Fibers ....	3
P.E., M.S., or Band ....	1	Eng. 233—Tech. Writing ....	3
		E. D. 221—Machine Drawing ....	2
		P.E., M.S., or Band ....	1
	<hr/> 18		<hr/> 20

**Junior Year**

First Semester	Credit	Second Semester	Credit
Speech. 338—Bus. & Prof. ....	3	T.E. 332—Yarn Mfg. ....	3
T.E. 331—Yarn Mfg. ....	3	T.E. 334—Bleaching & Dyeing ....	3
T.E. 333—Bleach. & Dye. ....	3	T.E. 336—Fab. Des., & Weaving ....	3
T.E. 335—Fab. Des., & Weav. ....	3	I.E. 332—Mgt. Prod. Plan., etc. ....	3
I.E. 321—Personnel Adm. ....	2	Mgt. 333—Labor Problems ....	3
Eco. 235—Prin. of Econ. ....	3	I.E. 331—Time & Motion Study ....	3
Fin. 338—Business Law ....	3		
	<hr/> 20		<hr/> 18

**Senior Year**

First Semester	Credit	Second Semester	Credit
T.E. 435—Adv. Yarn Mfg. ....	3	T.E. 436—Yarn Preparation ....	3
T.E. 421—Fab. Anal.; Weaving & Jac. Design ....	2	T.E. 422—Fab. Anal.; Weaving & Jacquard Design ....	2
T.E. 433—Dyeing & Finish. ....	3	T.E. 438—Mill Organization ....	3
T.E. 437—Textile Costing ....	3	T.E. 434—Dyeing & Finishing ....	3
T.E. 420—Textile Testing ....	2	T.E. 412—Seminar ....	1
T.E. 411—Seminar ....	1	I.E. 435—Indus. Safety Engr. ....	3
M.E. 313—Mach. Shop ....	1	*Electives ....	3
I.E. 436—Engr. Economics ....	3		
	<hr/> 18		<hr/> 18

\* Recommended Electives.

Phy. 230—Introd. to Psy.  
I.E. 423—Purchasing  
I.E. 411—Indus. Engr. Probs.

C.E. 439—Law & Ethics in Engr.  
Acct. 231—Indus. Acct. for Engrs.  
Fin. 339—Business Law  
Mgt. 433—Labor Relations

Other Electives subject to approval by head of department.

\*\* Advanced Military Science may be substituted for Eng. 233 and Speech 338.

Hours required for graduation 143 and P.E., M.S., or Band.

**BACHELOR OF SCIENCE IN TEXTILE ENGINEERING****CHEMISTRY AND DYEING OPTION****(Uniform Freshman Year)****Sophomore Year**

First Semester	Credit	Second Semester	Credit
T.E. 234—Cotton Classing and Marketing ....	3	Eco. 235—Fund. of Economics ....	3
Math. 251—Calculus ....	5	T.E. 235—Textile Fibers ....	3
Phys. 235—Engr. Physics ....	3	Phys. 236—Engr. Physics ....	3
Phys. 215—Phys. Measurements ....	1	Phys. 215—Phys. Measurements ....	1
Chem. 231—Qual. Analysis ....	3	Chem. 232—Inorganic Chem. ....	3
Chem. 331—Quant. Analysis ....	3	Chem. 332—Quant. Analysis ....	3
P.E., M.S., or Band ....	1	C.E. 331—Statics ....	3
		P.E., M.S., or Band ....	1
	<hr/> 18		<hr/> 20



## Junior Year

First Semester	Credit	Second Semester	Credit
T.E. 331—Yarn Mfg. ....	3	T.E. 332—Yarn Manufacturing ....	3
T.E. 333—Bleach. & Dyeing ....	3	T.E. 334—Bleach. & Dyeing ....	3
T.E. 335—Fab. Des. & Weav. ....	3	T.E. 336—Fab. Design & Weaving ....	3
Chem. 353—Organic Chem. ....	5	Chem. 354—Organic Chemistry ....	5
Eng. 233—Technical Writing ....	3	Chem. 336—Physical Chem. ....	3
C. E. 332—Kinematics & Kinetics ....	3	T.E. 326—Wool ....	2
	20		19

## Senior Year

First Semester	Credit	Second Semester	Credit
T.E. Textile Testing ....	2	T.E. 423—Adv. Color Matching ....	2
T.E. 421—Fab. Anal., Weaving & Jac. Design ....	2	T.E. 422—Fab. Anal., Weaving & Jacquard Design ....	3
T.E. 433—Dyeing & Finishing ....	3	T.E. 436—Yarn Preparation ....	3
T.E. 435—Adv. Yarn Mfg. ....	3	T.E. 434—Dyeing & Finishing ....	3
T.E. 437—Textile Costing ....	3	T.E. 438—Mill Organization ....	3
T.E. 411—Seminar ....	1	T.E. 412—Seminar ....	1
T.E. 436—Prin. of Engr. Eco. ....	3	Chem. 434—Organic Preparation ....	3
	17		17

Hours required for graduation: 143 and P.E., M.S., or Band.

\* Advanced Military Science may be substituted for Eng. 233.

## BACHELOR OF ARCHITECTURE

## DESIGN OR CONSTRUCTION OPTION

## Freshman Year

First Semester	Credit	Second Semester	Credit
Arch. 121—Freehand Drawing I. ....	2	Arch. 122—Freehand Drawing II. ....	2
Arch. 125—Shades & Shadows ....	2	Arch. 126—Perspective ....	2
Arch. 131—Introd. to Design ....	3	Arch. 132—Introd. to Design ....	3
Math. 121—Alg. ....	2	Math. 122—Alg. ....	2
Math. 131—Trig. ....	3	Math. 132—Anal. ....	3
E. Or. 111—Orientation ....	1	Eng. 132—Comp. ....	3
Eng. 131—Comp. ....	3	P.E., or Band ....	1
P.E., or Band ....	1	or	
M.S. ....	2	M.S. ....	2
	17-18		16-17

## CONSTRUCTION OPTION

For Uniform Freshman Year See Above

## Sophomore Year

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

## Junior Year

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

## Senior Year

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

## Fifth Year

First Semester	Credit	Second Semester	Credit
Arch. 435—Advan. Arch. Constr.	3	Arch. 436—City Planning	3
C.E. 433—Struc.	3	C.E. 443—Struc.	3
C.E. 424—Mater.	2	C.E. 425—Mater.	3
M.E. 438—Heat, Vent., & Air Condit.	3	M.E. 439—Heat, Vent., & Air Condit.	3
Approved Electives	4	Approved Electives	3
	15		14

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

## DESIGN OPTION

## Sophomore Year

First Semester	Credit	Second Semester	Credit
Arch. 231—Arch. Design II	3	Arch. 232—Arch. Design II	3
Arch. 221—Hist. of Ancient Arch.	2	Arch. 222—Hist. of Medieval Arch.	2
Arch. 224—Freehand Drawing III	2	Arch. 225—Freehand Drawing IV	2
English 237—Survey of Amer. Lit.	3	C.E.—Approved Elective	
A Foreign Language	3	A Foreign Language Continued	3
Physics 131—Elements of College	3	Physics 132—Elements of College Phy.	3
Physics	3	P.E., or M.S., or Band	1
P.E., or M.S., or Band	1		
	17		16

## Junior Year

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

## Senior Year

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

## Fifth Year

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

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

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

## BACHELOR OF ADVERTISING ART AND DESIGN

## Freshman Year

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

## Sophomore Year

First Semester	Credit	Second Semester	Credit
Arch. 131—Intro. to Design .....	3	Arch. 132—Intro. to Design .....	3
Arch. 221—Hist. Ancient Arch. ....	2	Arch. 222—Hist. Med. Arch. ....	2
Arch. 224—Freehand Drawing III .....	2	Arch. 225—Freehand Drawing IV .....	2
Allied Arts 235—Elem. of Comp. II .....	3	Allied Arts 236—Elem. of Comp. II .....	3
Eng. 237—Types of Lit. ....	3	Arch. 126—Perspective .....	2
A For. Lang., Fr., Span., or Germ. ....	3	A For. Lang., Fr., Span., or Germ. ....	3
P.E., or Band .....	1	P.E., or Band .....	1
or		or	
M.S. ....	2	M.S. ....	2
	17-18		16-17

## Junior Year

First Semester	Credit	Second Semester	Credit
Allied Arts 239—Pottery .....	3	Allied Arts 2310—Pottery .....	3
Arch. 320—Hist. of Orn. & Furn. ....	2	Arch. 324—Hist. of Sculpture .....	2
Arch. 321—Hist. E. Civ. & Art. ....	2	Arch. 327—Life Drawing I .....	2
Arch. 322—Hist. Ren. Arch. ....	2	Allied Arts 3211—Commerc. Illus. I .....	2
Arch. 326—Constr. Anat. ....	2	Spch. 338—Bus. & Prof. Spch. ....	3
Allied Arts 3210—Commerc. Illus. I .....	2	A For. Lang. begun Soph. Yr.	
A For. Lang., begun Soph. Yr.		or	
or		Eng. 3323—Masterpieces of Wild. Lit. ....	3
Eng. 238—Types of Lit. ....	3		
	16		18

## Senior Year

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

## Fifth Year

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

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

## DIVISION OF HOME ECONOMICS

MARGARET W. WEEKS, *Dean*

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

The functions of the division are:

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

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

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

*Undergraduate Degree.* The Degree Bachelor of Science in Home Economics is conferred upon students who satisfactorily complete one of the prescribed curricula in the Division of Home Economics as outlined on the following pages. The degree is given with majors in the Departments of Applied Arts, Child Development, Clothing and Textiles, Foods, Nutrition and Institutional Management, and Home Economics Education.

*Requirements for Graduation.* Completion of a curriculum leading to the degree usually requires four years. This time may be shortened by attending summer sessions.

Each student enrolled in the division will pursue during the first year the uniform freshman curriculum. The choice of the major is not made until the beginning of the sophomore year. This is done in order that the student, before choosing her professional field, may have the opportunity of becoming familiar with the courses of instruction and the possibilities available after graduation in the various fields of home economics. To provide guidance in the selection of her college major, every freshman student is required to schedule Home Economics Education 111—Introduction to Home Economics, which includes lectures and dis-

cussions on the opportunities available for home economics graduates.

The standard amount of work for a student registered in the Division of Home Economics is 16 or 17 semester hours each semester. More than 17 semester hours or less than 12 semester hours cannot be taken without securing the approval of the dean. A written petition is necessary to secure this approval.

Not more than 6 semester hours in Biblical history and literature or in music nor more than 3 semester hours in chorus can be counted toward degree requirements. Electives in any curriculum must be approved by the dean of the department in which the student seeks a degree and by the Dean of Home Economics.

*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 Certificates 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.

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 requirements may be increased on the recommendation of the head of the department concerned.

A Vocational Certificate of Approval is not in lieu of any state teacher's certificate but is in addition thereto.

*Teachers' Certificate.* Teachers' certificates may be secured by students registered in the Division of Home Economics provided a sufficient number of courses in education are included in the curriculum chosen. The courses in education may count as elective subjects.

*Master's Degree in Home Economics.* The Division of Home Economics offers a Master of Science Degree with majors in the Departments of Clothing and Textiles, Foods, Nutrition and Institutional Management and Home Economics Education. Minors are offered in these departments as well as in the Departments of Applied Arts and Child Development. A Master's Degree is also given in general home economics whereby certain advanced courses approved for graduate credit in several departments may be used to complete requirements.

For further information regarding graduate work, consult the Bulletin on Division of Graduate Studies.

## CURRICULA IN DIVISION OF HOME ECONOMICS

## BACHELOR OF SCIENCE IN HOME ECONOMICS

## Uniform Freshman Year\*

First Semester	Credit	Second Semester	Credit
Eng. 131—Comp. ....	3	Eng. 132—Comp. ....	3
Zool. 135—Anat., Phys., & Hyg. ....	3	Zool. 136—Anat., Phys., & Hyg. ....	3
A. Arts 131—Design ....	3	Child Dev. 131—Child Guid. ....	3
Cloth. 132—Cloth. Prob. ....	3	Foods 131—Prep. & Serv. ....	3
Math. 135—Com. Alg. ....	3	Elective ....	3
H.E. Ed. 111—Introduction H.E. ....	1	P.E. 112 ....	1
P.E. 111 ....	1		
	17		18

\* To be used with all curricula except Pre-Nursing.

## BACHELOR OF SCIENCE IN HOME ECONOMICS

## APPLIED ARTS MAJOR

For Uniform Freshman Year See Above

## Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 237—Typ. & Mast. ....	3	Eng. 238—Typ. & Mast. ....	3
Chem. 141—Gen. Chem. ....	4	Ed. 230—Prin. of Sec. Ed. ....	3
A. A. 133—Design ....	3	Chem. 146—Gen. Chem. ....	4
Cloth. 131—Basic Textil. ....	3	A. A. 231—Cos. Design ....	3
Foods 132—Elem. Food Prep. ....	3	A. A. 233—Textil. Design ....	3
P.E. ....	1	P.E. ....	1
	17		17

## Junior Year

First Semester	Credit	Second Semester	Credit
Eco. 231—Prin. of Eco. ....	3	Soc. 230—Intro. to Soc. ....	3
H. Mgt. 332—Home Mgt. ....	3	or	
A. A. 232—Crafts Design ....	3	Soc. 233—Social Prob. ....	3
Elective ....	3	Bact. 231—Bact. ....	3
Govt. 230—Amer. Govt. ....	3	Cloth. 232—Dressmaking ....	3
Psy. 331—Ch. Psy. ....	3	A. A. 331—Int. Design ....	3
or		Elective ....	3
Psy. 335—Adol. Psy. ....	3		
	18		15

## Senior Year

First Semester	Credit	Second Semester	Credit
Family Relations 433 ....	3	A. A. 434—Metalwork ....	3
Elec. in Foods & Nutr. ....	3	or	
A. A. 431—Wood ....	3	A. A. 435—Jewelry & Lapidary ....	3
*Electives ....	6	H.E. Ed. 331—Prin. of Tch. H.E. ....	3
		H.E. Ed. 411—H.E. Lect. ....	1
		A. A. 234—Minor Crafts ....	3
		**Electives ....	6
	15		16

\* Crafts option select Clothing 335 or Arch. 239.

\*\* Crafts option select Psy. 433 or 436. Other electives should be selected in conference with the head of the department in order that the student may be qualified for the particular type of employment which she desires upon graduation.

Hours required for graduation—131.

# BACHELOR OF SCIENCE IN HOME ECONOMICS

## CHILD DEVELOPEMENT AND FAMILY RELATIONS

For Uniform Freshman Year See Above

### Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 237—Types of Lit. ....	3	Eng. 238—Types of Lit. ....	3
Chem. 141—Gen. Chem. ....	4	Chem. 142—Gen. Chem. ....	4
Foods 132—Elem. Food Prep. ....	3	Cloth. 131—Basic Textiles ....	3
Ed. 230 ..... ..	3	Ch. D. 231—Dev. in Infancy ....	3
Govt. 230—Amer. Govt. ....	3	Ed. 330—Prin. of Mod. Ed. ....	3
P.E. .... ..	1	P.E. .... ..	1
	<hr/> 17		<hr/> 17

### Junior Year

First Semester	Credit	Second Semester	Credit
Eco. 231—Prin. of Eco. ....		Soc. 230—Intro. to Sociol. ....	3
or		Fam. Rel. 433—Fam. Rel. ....	3
Ag. Eco. 235—Fund of Eco. ....	3	Nutr. 334—Dietetics ....	3
Ch. D. 431—Dev. of Learn. ....	3	Psy. 331—Ch. Psy. ....	3
Foods 232—Meal Plan. and Serv. ....	3	H.E. Ed. 331—Prin. of Tch. H.E. ....	3
H. Mgt. 332—Home Mgt. ....	3	Electives .... ..	3
A.A. 233 —Textile Design ....	3		
	<hr/> 15		<hr/> 18

### Senior Year

First Semester	Credit	Second Semester	Credit
Psy. 433—Mental Hyg. ....	3	A.A. 331—Int. Design ....	3
Ed. 3310—Ch. Lit. ....	3	C. D. 435—Stud. Tch. in Nur. Sch. ....	3
Ch. D. 432—Nur. Sch. Ed. ....	3	H.E. Ed. 411—H.E. Lect. ....	1
H. Mgt. 432—Res. in H. Mgt. Hse. ....	3	H.E. 412—Sup. Obs. in H. Ec. ....	1
H.E. Ed. 431—Meth. of Tch. H.E. ....	3	H.E. Ed. 435—Meth. for Adult Lead. ....	3
	<hr/> 15	Electives .... ..	6
			<hr/> 17

Hours required for graduation—132.

# BACHELOR OF SCIENCE IN HOME ECONOMICS

## CLOTHING AND TEXTILES MAJOR

For Uniform Freshman Year See Above

### Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 237—Types of Lit. ....	3	Eng. 238—Types of Lit. ....	3
Cloth. 131—Basic Text. ....	3	Cloth. 232—Dressmaking ....	3
Hist. 131—Hist. of Civ. ....	3	Hist. 132—Hist. of Civ. ....	3
A.A. 231—Cost. Design ....	3	Chem. 142—Gen. Chem. ....	4
Chem. 141—Gen. Chem. ....	4	Foods 132—Elem. Ed. Prep. ....	3
P.E. .... ..	1	P.E. .... ..	1
	<hr/> 17		<hr/> 17

### Junior Year

First Semester	Credit	Second Semester	Credit
Elective .... ..	3	Elective .... ..	3
Cloth. Elec. .... ..	3	Cloth. 334 or 336 ....	3
Cloth. 333—Pattern Design ....	3	Nutr. Elective .... ..	3
A.A. 331—Int. Design ....	3	Eco. 232—Prin. of Eco. ....	3
Eco. 231—Prin. of Eco. ....	3	Soc. 230—Intro. to Soc. ....	
Ed. 230—Ed. Psy. .... ..	3	or	
	<hr/> 18	Soc. 233—Cur. Social Prob. ....	3
			<hr/> 15

## Senior Year

First Semester	Credit	Second Semester	Credit
A.A. Elec. ....	3	H.E. Ed. 411—H.E. Lect. ....	1
Elective ....	3	Elective ....	3
Cloth. Elec. ....	3	Cloth. Elec. ....	3
Cloth. 431—Textil. Eco. ....	3	Fam. Rel. or C.D. Elec. ....	3
H. Mgt. 332—H. Mgt. ....	3	Bact. 231—Bact. ....	3
		or	
		Chem. 341—Org. Chem. ....	
		Cloth. 332—Adv. Dress Design ....	3
	15		16

Hours required for graduation—131.

## BACHELOR OF SCIENCE IN HOME ECONOMICS

## FOODS AND NUTRITION MAJOR

For Uniform Freshman Year See Above

## Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 237—Types of Lit. ....	3	Eng. 238—Types of Lit. ....	3
Chem. 141—Gen. Chem. ....	4	Chem. 142 ....	4
Foods 132—Food Prep. ....	3	Foods 232 ....	3
Cloth. 131—Textiles ....	3	Ed. 230—Ed. Psy. ....	3
Electives ....	3	Gov. 230 ....	3
P.E.—Phys. Ed. for Women ....	1	P.E. ....	1
	17		17

## Junior Year

Eco. 231 ....	3	Soc. 230—Prin. Soc. ....	3
Nutr. 334 ....	3	or	
Chem. 341 ....	3	Soc. 233—Civ. Social Prob. ....	3
*Elective ....	3	Foods 332 ....	3
Ed. 330—Prin. Mod. Ed. ....	3	Chem. 341 ....	4
		Bact. 231 ....	3
		A.A. 331 ....	3
	16		16

## Senior Year

First Semester	Credit	Second Semester	Credit
Nutr. 432 ....	3	Nutr. 431—Nutr. in Disease ....	3
H. Mgt. 332—Home Management ....	3	H. Mgt. Elec. ....	3
Foods & Nutr. Elec. ....	3	Foods 333—Exp. Cookery ....	3
**Approved Electives ....	6	**Approved Electives ....	6
	15	H.E. Ed. 411 ....	1
			16

Hours required for graduation—130.

\* Nutrition option select Math. 138. Institutional Management option select Acct. 244.  
 \*\* Teaching option select H.E. Ed. 331, 431, and other courses in education necessary to qualify for the desired certificate. Nutrition option select Chem. 331-2. Institutional Management option select Instit. Mgt. 432, 435, 436; Cloth. 431.

## BACHELOR OF SCIENCE IN HOME ECONOMICS

## GENERAL HOME ECONOMICS MAJOR

For Uniform Freshman Year See Above

## Sophomore Year

First Semester	Credit	Second Semester	Credit
Eng. 237—Types of Lit. ....	3	Eng. 238—Types of Lit. ....	3
Chem. 141—Gen. Chem. ....	4	Chem. 142—Gen. Chem. ....	4
Foods 132—Elem. Food Prep. ....	3	Govt. 232—Amer. Govt. ....	3
A.A. 231—Costume Design ....	3	Cloth 232—Dressmaking ....	3
Cloth. 131—Basic Textiles ....	3	or	
P.E. ....	1	Foods 232—Meal Plan. and Serv. ....	3
		Ed. 230—Ed. Psy. ....	3
		P.E. ....	1
	17		17



**Junior Year**

First Semester	Credit	Second Semester	Credit
Eco. 231—Prin. of Eco.		Soc. 230—Intro. to Sociol. ....	3
or		or	
Ag. Eco. 235—Fund of Eco. ....	3	R. Soc. 432—Rural Design ....	3
Chem. 341—Organic Chem. ....	4	Cloth. 333—Pattern Design ....	3
or		Nutr. 334—Dietetics ....	3
Bact. 231—Bacteriology ....	3	H. Mgt. 432—Res. in H. Mgt. House ....	3
Foods 232—Meal Plan. and Serv.		Electives ....	5
or			
Cloth 232—Dressmaking ....	3		
H. Mgt. 332—Home Management ....	3		
A.A. 331—Interior Design ....	3		
	15 or 16		17

**Senior Year**

First Semester	Credit	Second Semester	Credit
Ch. D. 431—Dev. Learn. ....	3	Elective—Child Dev. ....	3
Speech 338 ....	3	Jour. 3310 ....	3
Cloth. 334—Fam. Cloth. Prob.		Cloth. 435—Home Furn. ....	3
or		H.E. Ed. 411—H.E. Lectures ....	1
Cloth 431—Textile Eco. ....	3	Elective—Foods & Nutr. ....	3
Home Mgt. Elec. ....	3	H. Mgt. 433 ....	3
Electives ....	5		
	17		16

Hours required for graduation—132.

Electives: Students who wish to prepare themselves for Extension Service work such as county home demonstration agents, should choose among their electives Foods 331, 335, Cloth., 233 and electives in the Division of Agriculture 6 semester hours. Students who wish to do home service work with Utility Companies or with equipment manufacturers should elect Foods 331, 335, Home Mgt. 431.

**HOME ECONOMICS MAJOR****(Vocational Home Economics Teacher Training)****For Uniform Freshman Year See Above****Sophomore Year**

First Semester	Credit	Second Semester	Credit
Eng. 237—Types of Lit. ....	3	Eng. 238—Types of Lit. ....	3
Zool. 235—Anat. Phy. Hyg. ....	4	Chem. 142—Gen. Chem. ....	4
Chem. 141—Gen. Chem. ....	3	Ed. 230—Ed. Psy. ....	3
Foods 132—Elem. Food Prep. ....	3	Govt. 230—Amer. Govt. ....	3
A.A. 231—Cost. Design ....	3	Cloth. 232—Dressmaking	
Cloth. 131—Basic Text ....	3	or	
P.E. ....	1	Foods 232—Meal Plan. Table Serv. ....	3
		P.E. ....	1
	17		17

**Junior Year**

First Semester	Credit	Second Semester	Credit
Eco. 231—Prin. Eco.		Soc. 230—Intro. to Sociol.	
or		or	
Ag. Eco. 235—Fund. of Eco. ....	3	Soc. 233—Cur. Sociol. Prob.	
Chem. 341—Organic ....	4	or	
Foods 232—Meal Plan. and Serv.		R. Soc. 432—Rural Soc. ....	3
or		Bact. 231—Bacteriology ....	3
Cloth. 232—Dressmaking ....	3	Nutr. 234—Dietetics ....	3
H. Mgt. 332—Home Mgt. ....	3	H.E. Ed., 331—Prin. Tch. H.E. Ed. ....	3
Ed. 330—Prin. Mod. Ed. ....	3	A.A. 331—Int. Design ....	3
	16		15

**Senior Year**

First Semester	Credit	Second Semester	Credit
H.E. Ed. 431—Meth. Tch. H.E. ....	3	H.E. Ed. 441—Stud. Tch. H.E. ....	4
Ch. D. 431—Dev. Learn. ....	3	Elect. in Ch. Dev. or Fam. Rel. 6. ....	3
H. Mgt. 432—Res. H. Mgt. House ....	3	Cloth. 435—Home Furn. ....	3
Cloth. 334—Fam. Cloth. Prob. ....	3	H.E. Ed. 411—H.E. Lectures ....	1
H.E. Ed. 412—Supr. Obs. in H.E. ....	1	Electives ....	6
Electives ....	2		
Foods electives ....	3		
	18		17

Hours required for graduation—133.

**CURRICULUM FOR PRE-NURSING STUDENTS**

(Recommended for students who contemplate the study  
of nursing as a profession.)

**Freshman Year**

First Semester	Credit	Second Semester	Credit
Eng. 131—Comp. ....	3	Eng. 132—Comp. ....	3
Chem. 141—Gen. Chem. ....	4	Chem. 142—Gen. Chem. ....	4
Foods 131—Elem. Food Prep. ....	3	Foods 132—Elem. Food Prep. ....	3
Math. 137—Com. Alg. ....	3	Ch.D. 131—Child Guid. ....	3
Biol. 133—Botany ....	3	Biol. 134—Zool. ....	3
H.E. Ed. 111—Orientation ....	1	P.E. 112 ....	1
P.E. ....	1		
	<hr/> 18		<hr/> 17

**Sophomore Year**

First Semester	Credit	Second Semester	Credit
Eng. 237—Types of Lit. ....	3	Eng. 238—Types of Lit. ....	3
Govt. 230—Amer. Govt. ....	3	Govt. 231—Amer. Govt. ....	3
Ed. 230—Intro. to Psy. ....	3	Soc. 230—Intro. to Sociol. ....	3
Hist. 231—Eco. & Polit. Hist. U.S. ....	3	Nut. 334—El. Nut. ....	3
P.E. ....	1	Hist. 232—Eco. & Polit. Hist. U.S. ....	3
Foods 232—Meal Plan. and Serv. ....	3	P.E. ....	1
	<hr/> 16		<hr/> 16

## DIVISION OF GRADUATE STUDIES

WILLIAM BRYAN GATES, *Dean*

## GRADUATE COUNCIL 1950-1951

TRUMAN WILDES CAMP, Ph.D., Professor and Head of the Department of English.

JOHN STEPHEN CARROLL, Ph.D., Professor and Head of the Department of Education.

WARREN PERRY CLEMENT, M.A., Registrar and Director of Admissions.

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

ROBERT CABANISS GOODWIN, Ph.D., Professor of Chemistry and Dean of Arts and Sciences.

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

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

WILLIAM CURRY HOLDEN, Ph.D., Professor and Head of the Department of History and Director of the Museum.

MARGARET WATSON WEEKS, M.S., Professor of Foods and Nutrition and Dean of Home Economics.

Graduate work has been offered at Texas Technological College since 1927. In 1935 this work was set apart as the Division of Graduate Studies, and since 1937 the Division has operated as a unit under its own Dean and Council.

PURPOSE OF THE DIVISION  
AND THE DEGREES OFFERED

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

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

## I

Master of Arts      Master of Science      Doctor of Philosophy

## II

Master of Business Administration      Master of Education

Master of Science in the various areas of Agriculture,  
Engineering, and Home Economics

Professional Degrees in Engineering

Doctor of Education

## GENERAL REGULATIONS

*Responsibility of the Student.* For graduate students, the publication of information in the Graduate Bulletin or General Catalog is considered sufficient notification regarding all of the regulations. Every graduate student should therefore thoroughly familiarize himself with the material in this Catalog. Failure to do so may lead to complications for which the Division of Graduate Studies cannot assume the responsibility.

The regulations set forth herein will become effective on June 1, 1951, but none published here for the first time shall be interpreted to the disadvantage of students whose enrollment in the Division of Graduate Studies precedes that date. A student may choose to satisfy the regulations published for the year of his admission or for the year of his graduation.

The General Regulations apply to all degree plans unless exceptions are specifically noted.

*Admission and Eligibility for Enrollment.* Applicants with a Bachelor's degree from a recognized college or university will be 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 Division of Graduate Studies. This application is made at the Office of the Registrar, not at the Office of the Dean of Graduate Studies.

Full-time members of the faculty may not enroll for courses without special permission from the President of the College. No member of the faculty with a rank above instructor is eligible to receive an advanced degree from Texas Technological College.

An undergraduate student who lacks nine semester hours, or less, of graduation and who has at least a "B" average (Grade point average of 2.00 or above) in his major and minor subjects may enroll for courses carrying graduate credit, subject to the approval of the dean of the undergraduate division and the Dean of Graduate Studies. Such a student may not register for more than fifteen semester hours, including graduate and undergraduate courses, and he is expected to complete his undergraduate requirements within the academic year in which he first enrolls for graduate courses.

In exceptional instances, a senior may, upon the recommendation of the department concerned, enroll for some of the courses listed as "Primarily for Graduates," but each case will be considered individually.

*Registration.* A few days before registration (See the Calendar at the front of this Bulletin), the student should apply at the office of the Registrar for instructions for registration. At the time of enrollment, the student should have his complete schedule made out and approved by the head of his major department, or by

some one designated to act for him, and have each of the individual courses approved by the department which offers it. When all of these approvals have been secured, the student should take his card to the Graduate Office for the Dean's approval. The registration cards of all graduate students and of all students enrolling for any graduate credit must be approved by the Dean of Graduate Studies.

*Graduate Advisers.* Throughout the first year of graduate work, the head of the student's major department, or some professor designated by the department head, serves as the student's adviser. If he is an applicant for a Master's degree requiring a thesis, a thesis committee will be appointed by the Dean upon the recommendation of the adviser.

The function of the Advisory Committee for applicants for one of the Doctors' degrees is discussed under the special requirements for those degrees.

*Prerequisites in the Major and Minor Subjects.* For full acceptance by the major department, the student must have completed an undergraduate major in that department or at least twelve semester hours of advanced work in it (with the necessary prerequisites for such courses), together with sufficient advanced work in closely allied subjects to bring the total up to the equivalent of a major in that particular department at this institution.

Full acceptance by the minor department requires an undergraduate minor in that department or at least six semester hours of advanced work in it (with the necessary prerequisites for such courses).

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

In certain of the professional curricula, these requirements may be somewhat modified; such modifications (if any) are shown in the departmental material or in the requirements for the particular specialized degree.

*Requirements in Major and Minor Subjects.* Candidates for the Master's degree will ordinarily complete from eighteen to twenty-four semester hours, including the thesis (if any) in the major subject and the remainder in one or two minor subjects. At least six hours must be in a department other than the major. Fewer than six hours will not be considered a minor.

Undergraduate students who contemplate graduate work should qualify in a suitable minor subject in their Bachelor's program; otherwise they will have to do undergraduate leveling work after they become graduate students.

Candidates for the Doctor's degree will devote about half of their time to the major subject and the remainder to two minors. The first minor may be a division of the major if that department has several components, but the second minor must be in a department other than the major.

*Courses, Credit, and Grades.* Some of the courses listed in this Catalog under the numbers "300" and "400" may be taken for graduate credit provided the graduate student does in them additional work beyond that required of undergraduates. Courses numbered "500" are primarily for graduate students. At least nine semester hours of the work credited toward the Master's degree (exclusive of the thesis) must be in "500" courses. It is expected that most of the courses credited toward the Doctor's degree will be in the group numbered "500."

No course may count for graduate credit unless it forms part of a logical plan made out by the representatives of the student's major and minor departments and unless registration for it was approved by the Dean of Graduate Studies. This regulation applies to extension classes and those meeting in the evenings and on Saturdays as well as to those in the regular schedule.

The grade average of all work credited toward a graduate degree must be at least "B" (Grade point average of 2.00 or above). No grade less than "C" will be counted.

*Adding or Dropping Courses and Withdrawing from College.* No course may be added or dropped without the approval of the Dean of Graduate Studies. Students who find it necessary to withdraw from college must apply at the office of the Dean of Graduate Studies for official withdrawal blanks.

*Credit by Transfer and Extension.* A maximum of six semester hours of credit toward the Master's degree may be accepted from another graduate school of recognized standing; a maximum of six semester hours of graduate work completed by extension may be credited toward the Master's degree provided the work was done under the direction of a recognized institution, but the combination of transferred credit and that earned by extension cannot exceed six semester hours.

Regulations concerning credit toward the Doctors' degrees for work completed elsewhere are given under the special requirements for those degrees.

*Residence Requirements.* The minimum residence requirement for those Masters' degrees listed in Group I is thirty weeks, of which at least eighteen must be spent in regular residence work in a long session or summer sessions. Credit for the remaining twelve weeks may be earned by work completed in residence, in the Evening Program, at another graduate school, or by extension, but not more than six weeks' residence credit may be obtained for work completed elsewhere or by extension or a combination of these two methods.

The residence requirements for those Masters' degrees listed in Group II are the same as those for Group I with the exception that mature students actively engaged in the profession for which they are preparing may complete all residence requirements through the Evening Program of this college provided admission to candidacy for the Master's degree is predicted upon satisfac-

tory completion of written examinations covering the major and minor fields of interest. Such examinations are to be taken upon completion of twelve semester hours of work applicable to the Master's degree.

Residence requirements for the Doctors' degrees are discussed under the special requirements for those degrees.

*Time Limit on Work for the Master's Degree.* It is expected that work credited toward the Master's degree will be completed within a period of six calendar years, but for veterans, the period is extended by the length of time they spend in military service.

*Student Load.* Graduate students devoting their full time to their studies may earn a maximum of fifteen semester hours of credit in a semester or six hours in a six-weeks summer term. For teaching fellows, assistants, or others employed in part-time positions on or off the campus, the permissible load will be determined by the Dean and the head of the student's major department. For teachers and others employed in full-time duties on or off the campus, the maximum is three hours in any semester or summer term.

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

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

Applicants for the degree of Doctor of Philosophy must pass a reading examination in at least two modern foreign languages, usually French and German. Further details will be found under the special requirements for the Doctor of Philosophy degree.

*State of Texas Requirement in Government.* By an act of the Texas Legislature, a student who enters a state-supported college after September 1, 1937, must satisfactorily complete a course in State and Federal Government before he may receive a degree. Graduate students should consult the Dean about this requirement.

*Candidacy for the Master's Degree.* Admission to the Division of Graduate Studies does not automatically make a student a candidate for an advanced degree. A formal application for admission to candidacy must be made at the Dean's office when the applicant has completed twelve semester hours, or a little more, in residence in his major and minor; the application must be made at least twelve weeks before graduation. Before this ap-



plication can be approved and the student admitted to candidacy, he must have completed the following stages in his work: (a) He must have at least a "B" average (Grade point average of 2.00 or above) in all graduate work taken up to the time of application; (b) He must have satisfied the foreign language requirement—if any; (c) His graduate work up to this point must be acceptable in quality and quantity to the major and minor departments; and (d) The thesis subject (if a thesis is required) must have been approved by the adviser.

Admission to candidacy for the Doctors' degrees is discussed under the requirements for those degrees.

*Thesis Requirements for the Master's Degree.* The completion of an acceptable thesis is required of candidates for all Masters' degrees except Master of Education, Master of Business Administration with a major in Business Education, and Master of Science with a major in Home Economics Education, in the programs for which the thesis is optional.

Research leading to the thesis is supervised by a committee appointed by the Dean upon the recommendation of the head of the student's major department or the professor designated to act as the adviser. Primary responsibility for the direction of the thesis rests upon this adviser, who is chairman of the thesis committee, but he and the student should consult frequently with the other members of the committee.

A complete typewritten draft of the thesis, in a form acceptable to all members of the committee and bearing their approval, must be submitted to the Dean at least thirty days before a long-session commencement or at least twenty days before a summer-session commencement. Failure to comply with these regulations will be considered grounds for rejection of the thesis.

Not later than five days before graduation, at least three copies of the final typewritten version of the thesis, signed by each member of the committee, must be presented to the Dean. One of these copies is for the major department; the original or ribbon copy and one carbon copy are for the Library. Any other copies needed by the candidate should be arranged for at the time the three official copies are being typewritten.

Accompanying these final copies of the thesis must be three copies of a digest of the thesis, about two hundred words in length, bearing the approval of the chairman of the thesis committee. At the time the copies of the thesis and digest are submitted to the Dean, the student will pay the fee for binding the thesis. No candidate will be certified for graduation until all of these requirements have been satisfied.

*Departmental Requirements.* Subject to the approval of the Dean, a department may impose any additional requirements deemed necessary, such as a qualifying examination for admission to candidacy for the Master's degree, special reading assignments, and examinations, oral or written or both.



## SPECIAL REQUIREMENTS FOR THE VARIOUS DEGREES

### MASTER OF ARTS AND MASTER OF SCIENCE

*Amount of Work.* The minimum course requirement for the Master of Arts and Master of Science is thirty semester hours, including the thesis. From eighteen to twenty-four of these hours (including those credited for the thesis) must be in the major subject. The student may have one minor or two, but at least six semester hours must be completed in a department other than the major.

Other requirements are listed under "General Regulations."

*Majors.* As a general policy, the Master of Arts degree will be conferred on students who satisfactorily complete majors in Economics, Education, English, Government, History (Anthropology, Sociology), Psychology, Spanish, and Speech. The Master of Science degree will usually be conferred on those who complete majors in Biology, Chemistry, Geology, Mathematics, and Physics. Upon the recommendation of the head of the student's major department, however, this policy may be changed for a particular student.

### MASTER OF BUSINESS ADMINISTRATION

Students who hold a Bachelor's degree in commerce or business administration or whose work for the Bachelor's degree includes a major in business and economic subjects may find it possible to satisfy the requirements for the degree of Master of Business Administration in two semesters. Students who lack adequate preparation will require more than two semesters. So far as possible, programs of study are individualized to meet the specific needs of each candidate.

*Prerequisites.* A Bachelor's degree with thirty semester hours in business and economic subjects, including six hours of accounting and six of economics, three of which must be in principles. The applicant must also have had as an undergraduate, or must take as a part of his graduate program, the following courses or their equivalents: Finance 331 (Corporation Finance), Finance 338-9 (Business Law), Marketing 332 (Principles of Marketing), and Marketing 336 (Introduction to Business Statistics). Not more than nine hours of these fifteen hours may apply toward the Master's degree.

In addition to these general prerequisites, certain other pre-

requisite courses or their equivalents may be required by the individual major departments, as follows:

**ACCOUNTING**

9 hours above elementary work

**BUSINESS EDUCATION**

12 hours in Education, including Educational Psychology

**BUSINESS MANAGEMENT**

15 hours in Management

**ECONOMICS**

Economics 331

**FINANCE**

None beyond the general list

**INTERNATIONAL TRADE**

Economics 331

**MARKETING**

None beyond the general list

**OFFICE MANAGEMENT**

Secretarial Administration 122

Management 231

Accounting 321

Secretarial Administration 333

Management 334

Secretarial Administration 338

Management 431

Management 435

Management 436

**PERSONNEL MANAGEMENT**

Psychology 230

Psychology 330

Management 331

Management 333

Management 334

Management 433

Management 435

Until the student has satisfied these requirements or is enrolled for courses which complete them, he cannot be admitted to candidacy for the degree, but he will be permitted to take graduate courses for which he has the necessary background.

*Requirements for the Degree.* A minimum of thirty semester hours of graduate work. Of this number, at least eighteen, including the thesis,\* must be in the major subject. A minimum of six hours must be in a minor subject.

The major must be one of the subjects listed above in capital letters. The minor may be another of those listed or Advertising, Business Administration, Business Law, Business Statistics, Insurance, Real Estate, Retailing, Secretarial Administration, or some subject outside the Division of Business Administration.

**MASTER OF EDUCATION**

The degree of Master of Education is offered for teachers and administrators, both pre-service and in service. It is based upon the Core Curriculum in Professional Education which leads to the degree of Bachelor of Science in Education or its equivalent, this same core extending through the successive stages of gradu-

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\* Candidates who major in Business Education may omit the thesis and follow this plan: Eighteen hours in Business Education, fifteen of which must be in "500" courses, including Business Education 534; a minor of at least six hours within the Division of Business Administration.

ate work. The Masters' degrees are increasingly intended as preparation for teacher competence, with additional work beyond these degrees being offered for the specialized endorsements leading to certification in particular aspects of professional education.

Candidates for the Master of Education will select one of the plans listed below. Prerequisite for this degree under Plans I, II, III, and IV is the Bachelor of Science in Education or another approved Bachelor's degree with adequate undergraduate preparation in Education.

*Plan I, with thesis:* Designed especially for those working toward additional certificate endorsements. Required: Thirty semester hours of advanced and graduate courses including the thesis. The major in Education is a continuation of the undergraduate core curriculum in professional education and includes three hours of advanced educational psychology (530), three hours of advanced educational sociology (534), three hours of advanced curriculum workshop (5314), and the thesis (631-2). The program includes also fifteen elective hours in graduate level courses in which the student has the necessary prerequisites and which are related to teacher competency or to additional certificate endorsements.

*Plan II, with thesis:* Designed especially for those working toward advanced certificates in the field of teacher competency. Required: Thirty semester hours of advanced and graduate courses including the thesis. The major in Education consists of twelve to eighteen hours in Education and includes the nine hours which constitute the core curriculum in professional education—advanced educational psychology (530), advanced educational sociology (534), advanced curriculum workshop (5314)—and the thesis (631-2). The remainder may be in one subject-area field or in two such fields, but the usual graduate requirements for a minor must be observed. With the consent of the departments concerned, the candidate may write his thesis in a subject-area department provided it deals with the subject in such a way as to emphasize the professional aspects of the material.

*Plan III, without thesis:* Required: Forty-two semester hours of course work, including thirty semester hours of courses on the advanced and graduate levels. At least nine hours must be on the graduate level. As few as twelve hours and as many as twenty-four may be taken in Education. The remainder may be completed in one subject-area department or in two such fields, but the usual graduate requirements for a minor must be observed. Twelve of the forty-two hours may be selected from any department in the college and may be of any level. These twelve hours may not be counted both as leveling work and as part of the required work for the degree.

*Plan IV, without thesis:* Required: Thirty semester hours of advanced and graduate courses, nine of which must be on the graduate level. From twelve to eighteen hours may be taken in Education, the remainder of the thirty hours to be in one or two minor departments in which the candidate has the necessary prerequisites. The required work includes the course in educational research (531) and the course in applied educational research (5311). Since the latter involves one or more practicum projects in educational research, this plan is regarded as the equivalent of those indicated above.

*Plan V, without thesis:* Designed especially for teachers of vocational agriculture. Prerequisite: Bachelor of Science in Agriculture with a major in Agricultural Education or its equivalent. Required: Thirty semester hours of advanced and graduate work. From twelve to eighteen hours must be in Agricultural Education and must include the course in Research Methods (Plant Industry 535) and that in Investigations in the Field of Agricultural Education (Agricultural Education 531). The remainder of the thirty hours may be completed in one or two minor departments in which the student has the necessary prerequisites.

### MASTER OF SCIENCE IN SPECIALIZED FIELDS

The degree of Master of Science is offered with majors in the following subjects:

Agricultural Economics	Electrical Engineering
Agronomy	Foods and Nutrition
Animal Husbandry	Farm Machinery
Chemical Engineering	General Home Economics
Clothing and Textiles	Home Economics Education
Dairy Manufactures	Horticulture

The requirements for this degree are, in general, the same as those for the Masters' degrees listed in Group I except as specified in the General Regulations.

### PROFESSIONAL DEGREES IN ENGINEERING

The professional degrees of Chemical Engineer, Civil Engineer, Electrical Engineer, Industrial Engineer, Mechanical Engineer, Petroleum Engineer, and Textile Engineer are open, upon application, to graduates of the Division of Engineering of Texas Technological College and to others upon the invitation of the faculty of the Division of Engineering.

The applicant must have had a superior record as an undergraduate; he must have engaged in the engineering profession for at least five years after graduation, and in two of these years must have been in engineering positions of direct responsibility and trust, with the result that he may be considered an honor to his profession, and he must submit an acceptable thesis.

The quality of the experience and the thesis will be judged

by the faculty of the Division of Engineering, the Graduate Council, and such specialists as may be considered necessary. A Master's degree in engineering may count in lieu of two years of professional experience. The thesis must be based on original investigation or discoveries by the applicant and must be a distinct contribution to engineering.

Not later than eight months before the degree is to be conferred, a written application for the degree must be submitted to the Dean of Graduate Studies to be passed upon by the faculty of the Division of Engineering and the Graduate Council. This application must include a statement as to the degree sought, a summary of professional experience, with pertinent documentary evidence, and a comprehensive outline of the thesis. If these documents are acceptable to the faculty of the Division of Engineering and the Graduate Council, the applicant will be admitted to candidacy for the degree.

Eight weeks before commencement, the candidate must submit to the Dean of Graduate Studies three typewritten copies of the thesis, in a form acceptable to the Graduate Council.

### Master of Science in Home Economics

General Home Economics is an interdepartmental major leading to the degree of Master of Science. The courses are drawn from most of the areas of Home Economics, but as many as six semester hours may be selected from the physical sciences, the natural sciences, the social sciences, or education.

An approved Bachelor's degree in Home Economics or its equivalent is prerequisite for this program. The minimum requirement for the Master of Science in General Home Economics is 24 semester hours of course work and a thesis.

The student's graduate program must be approved by the professor in charge of the thesis, the Dean of the Division of Home Economics, and the Dean of Graduate Studies.

### DOCTOR OF PHILOSOPHY

The degree of Doctor of Philosophy is awarded in recognition of superior attainments in scholarship, not simply for faithfulness in satisfying certain routine requirements.

Major work leading to the Doctor of Philosophy is offered in American Civilization, Chemistry, Education, English, Geology, and History.

*Admission.* For admission to work leading to the degree of Doctor of Philosophy, the applicant must have a Bachelor's degree from a recognized college or university and an undergraduate record which shows promise of success in independent study. At their discretion, departments may require examinations to test the applicant's fitness for doctoral work. The possession of a Master's degree is not a requirement.

*Residence Requirements.* A minimum of three years of graduate study is required for the Ph.D. degree. Residence for this degree may be fulfilled through the Evening Program and Extension only to the extent applicable to the Masters' degrees. Transferred work will be considered on an individual basis, and residence credit allowed accordingly. In all cases at least one year of residence work must be completed at this college. If this is the only year of residence, it must be the year in which the degree is conferred. The terms of residence for graduate fellows and assistants will be adjusted in accordance with their teaching load, but, in general, will be two years. The remainder of the residence requirement may be satisfied by work in the regular session or in the summer sessions.

*Fields of Study.* The applicant for the Ph.D. will devote about one half of his time to his major subject and will divide the remainder between two minors. One of these may be a division of the major department, but the second minor must be in a department other than the major though related to it.

*Program of Work.* Although the applicant is not required to complete his work in a series of successive years, and although no definite number of semester hours can be stated as a specific requirement, the general program of work toward the Ph.D. degree should be something like this:

First year beyond the Bachelor's Degree: Complete about twenty-four semester hours of work in the major and minor subjects and take the reading examinations in foreign languages.

Second Year: Complete about twenty-four additional hours of course work in the major and minor; take the preliminary or qualifying examination; and choose a dissertation subject and proceed in the investigation connected with it.

Third Year and beyond: Finish whatever course work may be recommended by the advisory committee; finish the dissertation; and, by extensive reading, prepare for and take the final examinations.

It must be emphasized that the requirements for the degree of Doctor of Philosophy cannot be listed merely in semester hours. Some applicants will find that three years are not enough for completing all of the work. The outline given above is merely suggestive.

*Advisory Committee.* Shortly after the beginning of the student's second year of work toward the doctorate, an advisory committee will be appointed to guide him through the remainder of his work. This committee is appointed by the Dean on the recommendation of the head of the student's major department and includes representatives from the minor departments as well as from the major department. This committee will hold meetings with the student as often as may be necessary. Once each semester, the chairman of the committee will make a written report to the Dean showing the student's progress in graduate study.



When the applicant has passed the qualifying examination for admission to candidacy for the Ph.D. degree, the committee will at once prepare the student's definitive program, outlining the remaining courses to be completed and any other requirements which the candidate must satisfy. This program will be submitted to the Dean of Graduate Studies for approval.

*Foreign Language Requirements.* A satisfactory reading knowledge of at least two foreign languages is required before the applicant is admitted to candidacy. The examinations in these languages will usually cover critical material in the area of the student's major interest, and they will be given by the Department of Foreign Languages of Texas Technological College. French and German are the usual languages, but a department may recommend the substitution of another language for one of these if the student's research would benefit by the substitution.

*Preliminary or Qualifying Examination.* Early in the second year of his graduate work, the student should undergo the qualifying examinations, which determine whether he is to be admitted to candidacy for the Ph.D. degree. These examinations, conducted by the advisory committee and other members of the faculty appointed for this purpose by the Dean, will cover the major and minor subjects and will investigate as thoroughly as possible the applicant's scholarly competence.

*Admission to Candidacy for the Ph.D. Degree.* When the student has satisfied the language requirements and has passed the qualifying examinations, his major professor or the chairman of the advisory committee will make a formal written request to the Dean that the applicant be admitted to candidacy for the degree. This request should include a statement about the quality of the student's preliminary examinations, the status of the research on his dissertation, and a general estimate of his fitness for further graduate study. This request must be approved by the Graduate Council before the student is admitted to candidacy.

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

The dissertation should demonstrate a mastery of the techniques of research, a thorough understanding of the subject matter, skill in organizing and presenting the material, and an adequate command of the English language. The work on the dissertation will be constantly under the supervision of the advisory committee and any other professors considered necessary.

Not later than one month before graduation, three typewritten copies of the dissertation, in an acceptable form and ready for binding, must be approved by the advisory committee and the Dean. Three typewritten copies of an abstract, about one thousand words in length, must accompany the manuscript and must also have the approval of the advisory committee and the Dean.

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

*The Final Examinations.* Final examinations are required of all candidates for the Ph.D. degree. They may be oral or written or both. They will cover the entire field of the major subject and those portions of the minor subjects in which the student has concentrated his study. Generally, the field of the dissertation will also be considered in the examinations, but, by special permission from the Graduate Council, the student may (under exceptional circumstances) take the final examinations before the dissertation is quite finished. The examiners will be some members of the advisory committee and several other professors appointed by the Dean.

#### DOCTOR OF EDUCATION AND DOCTOR OF PHILOSOPHY IN THE FIELD OF PROFESSIONAL EDUCATION

Each year, a selected number of students interested in the doctorate in professional education, and identified with special reference to their intellectual maturity and capacity for independent thinking, are accepted for advanced graduate work in this field. The scope and sequence of the work for these students are designed so as to be most advantageous for the development of their general and special abilities in terms of responsibility for leadership.

While for the most part there is a common core of the professional education curriculum which extends from the undergraduate work through the successive stages of the graduate program and which is required of both the Ed.D. and the Ph.D. candidates, there is a differentiation between the two programs.

The differentiation is based primarily upon such factors as the interest of the student in the two foreign languages which are required of candidates for the Ph.D. degree and his need for them, or his interest in advanced statistical and analytical procedures and his need for these disciplines. Among other differentiations is an analysis, based on a conference between the Head of the Department of Education and the Dean of Graduate Studies of the professional needs of the individual student.

The basic requirements for the Ph.D. degree in Education are the same as those for other majors and may be found in the general material relating to this degree. Likewise, the requirements for the Ed.D., so far as residence and distribution of work are concerned, are comparable to those for the Ph.D.

In general, the work leading to a Doctor's degree in Education consists of three stages, at all points of which the student's program is under the supervision of the Head of the Department of Education and the Dean of Graduate Studies.



1. The first stage is the achievement of the Master's degree in Education or its equivalent. As previously indicated, this program continues the core curriculum in professional education and provides the basis for the second stage.

2. During the second stage of the graduate work, emphasis is placed upon the importance of the student's securing a thorough and unified understanding of the whole field of professional education and whatever minor subjects he may have selected. The basic Education course for the second stage is the "General Education Seminar" (5351). This seminar is required of all graduate students in Education and provides preparation for the third stage of graduate work, which comprises intensive action research and documentary research culminating in the Doctor's dissertation.

In addition to the work in the "General Education Seminar," the second stage of graduate study provides an opportunity for extending the broad base of general education through work in other divisions and departments of the college and through study in special seminars, the selection of which will be determined in part by the student's interest in a particular certificate endorsement or a special field of education.

Among such special seminars are these: history and philosophy, comparative education, educational psychology, educational sociology, elementary education, secondary education, the junior college, educational administration, supervision and curriculum development, audio-visual education, health education, counseling and guidance, and others which may be developed as the need arises. Admission to any of the special seminars is through approval of the admissions committee of the education faculty and the faculty committee assigned to the particular seminar.

3. The third stage of the graduate program is normally devoted to the intensive research leading to the dissertation. A student is not admitted to this stage of the work until he has secured from the admissions committee of the education faculty and the Dean of Graduate Studies approval of the dissertation subject and of the graduate work which has been completed.

Examinations: Before the acceptance of the dissertation, the candidate must qualify by passing three groups of examinations:

(a) Comprehensive examinations in Education and the minor subjects are administered in relation to the program completed during the first stage or Master's degree work. These examinations may be taken at specified intervals during the second stage of the work through arrangements with the Head of the Department of Education and the Dean of Graduate Studies.

(b) An intensive written examination is administered in the fields of the major and minor interests and supplements the comprehensive examinations mentioned above. It is designed to measure the student's basic knowledge of his special fields, with particular reference to his dissertation problem. This examination is

prepared and conducted by a committee appointed by the Dean of Graduate Studies on the recommendation of the heads of the departments concerned. It should be taken near the end of the second stage of graduate work and before much research has been done on the dissertation.

(c) The oral examination consists primarily of an advocacy of the completed dissertation, but it may include also questions on the student's major and minor subjects. It is conducted by a committee appointed by the Dean of Graduate Studies on the recommendation of the heads of the departments concerned.

## **Fellowships and Scholarships**

A number of graduate assistantships and teaching fellowships are available. Prospective graduate students are invited to correspond with the head of the department in which they plan to do their major work since these scholarships and fellowships are under the administration of the departments rather than the Division of Graduate Studies.

## 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 Department 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 and Air Forces of the United States. The Department of Air and Military Science and Tactics places special emphasis upon leadership to assist men in meeting life situations with success and honor. The Reserve Officers' Training Corps is not a component of the armed forces of the United States. Besides producing reserve officers, the senior division ROTC provides the principal source of procurement of junior officers for the Regular Army or Air Force. The Department of the Army maintains three units of ROTC at the College which are: Corps of Engineers, Signal Corps and Infantry. The Department of the Air Force maintains two units: Administration, Supply and Logistics; and Armament.

### Senior ROTC Program

The senior ROTC program consists of two parts: Basic course and Advanced course, including a summer camp.

Basic course. (a) For freshmen, the course consists of formal military instruction of four hours per week for one academic year, and (b) for sophomores, the course consists of formal instruction of three hours per week for one academic year. The Department 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 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, 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.

## DIVISION OF AIR AND MILITARY SCIENCE AND TACTICS

Advanced course. The advanced course consists of formal military instruction, principally of a specialized type applicable to the arm or service concerned for six hours per week over a period of not less than two academic years of 32 weeks each and a summer camp of six weeks duration and is designed to qualify selected students for Reserve or Regular Army or Air Force Commissions in one of the several arms or services. Entrance to the advanced course is limited to those taking an academic course on the college level who have completed the basic course or received credit for prior service. Upon successful completion of the 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). Exception to this allows the granting of Reserve Commissions to veterans upon successful completion of the advanced course.

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, and who continues to do the same quality of work until graduation, is at that time designated a Distinguished Military Graduate. This makes him eligible to be considered for a Regular Army or Regular Air Force Commission.

### Financial Assistance

Advanced ROTC course students are paid a monetary allowance at a daily rate equal to the value of the commuted ration, (During the fiscal year 1949-50 this was 90 cents per day) for a maximum of 570 days. These figures are in excess of veteran benefits under Section 400 (b), Servicemen's Readjustment Act of 1944, and of any disability benefit authorized a veteran provided he passes the ROTC physical examination.

### Uniforms and Equipment

All ROTC students are furnished officer type uniforms, including overcoat and shoes, without cost to the student. This uniform and other property remains the property of the United States. Each student is required to maintain his uniform by cleaning and proper care and to return same to the ROTC supply office.

in the event he leaves school or becomes separated from the ROTC for other reasons.

The Federal Government provides the necessary texts and equipment to carry out the ROTC program. This equipment consists of M1 .30 caliber rifles, .45 caliber pistols, carbines, machine guns, automatic rifles, .22 caliber rifles, ammunition for small bore rifle shooting, mortars, 20 mm, 57 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, an 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 and are furnished mess, housing, uniforms, and medical attention at government expense and are paid at the rate of \$75 per month while at camp. Summer camp begins about June 15 each year and is of six weeks' duration.

The military training at camp will consist of practical and theoretical instruction of a specialized branch type. In addition to this training, the student has an opportunity to participate in outdoor sports of all kinds and in competition with young men from other colleges. All students attending camp should take with them athletic shorts, tennis shoes, swimming suit, and personal athletic equipment. A well-arranged religious program is conducted at each of the several camps by experienced army chaplains.

## Requirements for Enrollment and Continuance

The general requirements for enrollment and continuance in the ROTC are: be a citizen of the United States, be physically qualified as prescribed by the Department of the Army or 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 except for veterans of World War II enrolling in college prior to January 1, 1950. No student will be enrolled in the advanced course after he has reached 27 years of age. He must successfully complete such general survey or screening tests as are given to determine eligibility for admittance to the basic and advanced courses, and agree in writing upon admission to the advanced ROTC course to complete the course of instruction offered unless sooner released by the Department of the Army or the Department of the Air Force. Successful 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 Commanding General of the 14th Air Force determines the disposition of an advanced AF ROTC student'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 1948 as amended.) 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. In the latter case he is under no special obligation to enter on active duty after graduation.

## Academic Credit

Credit is granted toward a degree for the completion of courses 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. Additional college credit will be allowed for membership in the ROTC band.

## 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.

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. The course provides demonstrations and practical problems involving the use of military wire and radio material.

Admission to the Signal Corps unit is based upon academic 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.

## AIR FORCE ROTC

### Armament

This unit has as its aim the instruction and training of engineering and science students in the materiel, procedures, and theory involved in Armament activities in the Air Force.

Admission to the Armament course is limited to those otherwise qualified students who are enrolled in courses leading to degrees in engineering, chemistry, physics, biology, or bacteriology. Courses leading to degrees in Mechanical, Chemical, Chemical or Electrical Engineering are preferred as concurrent courses.

The Armament course covers such special subjects as 20mm. and 50 cal. guns, rocket and bombing equipment, gun remote control system, gun sights, radar equipment, chemical and atomic applications and defense, Armament supply, explosives, ammunition, and ballistics, storage and inspection. A short course in administrative matters is also given in order that the prospective Armament officer may better carry out his duties.

### Administration and Logistics

This unit has as its aim the instruction and training of students in the procedure and theory involved in the administrative and supply work of the Air Force.

Admission to this course is open to all otherwise qualified students from any division of the college.

This course covers such subjects as publications, correspond-



ence, pay and allowances, records, base administration, funds, transportation, all phases of supply, and the functioning of administrative and supply staffs.

In order to provide a rounded presentation, all Air Force ROTC students will also be introduced to Aerodynamics and Propulsion, Weather and Navigation, Applied Air Power, Air Operations, Military Law and Boards, Military Teaching Methods, and Air Force Management.

### **Military Awards and Recognition of Achievement**

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 local unit of the Reserve Officer's Association annually awards a saber to the most outstanding ROTC cadet in the senior 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 Departments of the Air Force and the Army annually offer regular commissions to a limited number of qualified cadets in the 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.

## DIVISION OF EXTENSION

J. HOMER MILLIKIN, *Director*

Texas Technological College, through the Division of Extension offers approximately 270 courses through correspondence study for those who cannot attend regularly scheduled classes. Correspondence study and extension have been approved by the Association of Texas Colleges. The Division of Extension is a member of the National University Extension Association.

### Correspondence Department

Correspondence study courses are available in the following divisions and departments:

#### Agriculture:

Agricultural Economics, Farm Management, and Rural Sociology.

#### Arts and Sciences:

Bible, Biology; Education, Psychology, and Philosophy; English, Foreign Languages (French, German, Latin, and Spanish); Geology (Geography); Government; History, Anthropology, and Sociology; Journalism; Mathematics and Astronomy; Music and Band; and Physical Education.

#### Business Administration:

Accounting and Finance; Economics and Management; Marketing, and Secretarial Administration.

The following general regulations govern correspondence courses:

One-fourth of the work for a Bachelor's Degree may be done through correspondence and/or extension class work. A maximum of six hours of the final semester's work for a Bachelor's Degree may be completed by correspondence study, provided the work does not constitute a part of the major or minor requirements toward the degree.

The minimum time for completing a two-semester-hour course is thirty days; and for a three-semester-hour course, forty-five days.

No credit toward a degree will be given on 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 through correspondence study.

The registration fee for each semester hour is \$7 (a three-semester-hour course would cost \$21). All fees are payable in advance and are not refundable. A correspondence course may not be exchanged for some other course nor transferred to another person.

A resident student may begin or continue work in the division only with the approval of his academic dean. Students of other colleges must secure the advance approval of their deans for correspondence or extension class work, or assume the risk of securing credit for the work.

Correspondence courses for credit are the equivalent in content of the corresponding residence courses.

College entrance courses are available in the following fields:

Agriculture, business, English, foreign languages (Latin, French, and Spanish), history and social sciences, journalism, mathematics and science.

The enrollment fee for a one-half unit course is \$11; for each one-unit course, \$21.

## Extension Department

Extension classes will be organized in convenient centers upon request of a sufficient number of students, depending upon distance. Both graduate and undergraduate courses are available.

Registration fees for extension class courses are the same as for correspondence courses: \$7 per semester hour of credit. Laboratory fees may be required for courses requiring laboratory work. All fees are required in advance and are not refunded.

A maximum of six 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.

## Lecture Department

Speakers for any educational occasion (such as study club programs or commencement addresses) will be suggested upon request. Travelling expenses and suitable honoraria are customary.

## Visual Instruction Department

Educational motion picture films (16mm. sound and silent) are available for use by schools, clubs, and other organizations at reasonable rental rates.

For further information or bulletins giving details of any of the services of the Extension Division, please write to: The Division of Extension, Texas Technological College, Lubbock, Texas.

## DESCRIPTION OF COURSES

The course number indicates in general the academic level of the course. The second digit in the course number indicates the credit hour value of the course. Courses numbered in the 100 series are primarily for first-year students; 200 series for second-year students; 300 series for third-year students; 400 series for fourth-year students; 500 series and above for graduate students exclusively. Certain 300 and 400 courses, as indicated, may apply toward graduate degrees.

### Accounting and Finance

PROFESSORS RUSHING, TAYLOR.\* PART-TIME PROFESSOR DUPREE. ASSOCIATE PROFESSOR NORWOOD. ASSISTANT PROFESSORS EAVES, GIBSON, HOOPER, WHARTON, WHITTINGTON. PART-TIME ASSISTANT PROFESSORS BEHNER, BOLINGER, CHISHOLM, HEARN. INSTRUCTOR MUELLER. PART-TIME INSTRUCTORS BOWEN, HOWARD, IRVIN, SANDERS, SELLERS.

#### ACCOUNTING

The purpose of the department is to offer training to students who wish to specialize in the field of accounting. The Department of Accounting is arranged in two general fields: business accounting and public accounting. Elective courses will be suggested by faculty advisers to equip each student according to the specific line of activity he intends to enter within the chosen major.

The courses offered lay a foundation for broadly-trained accountants. Because the curriculum in business administration requires a broad knowledge of all forms of business procedure, the prospective accountant has only a limited time for the study of his major during the undergraduate period and will need to continue his preparation for the practice of public accountancy after graduation.

#### For Undergraduates

##### 231. Industrial Accounting for Engineers. Cr. 3.

Intended for engineers interested in the processes and executive uses of industrial accounting. Offers a foundation in basic accounting principles, a treatment of the essentials of cost accounting theory and practice, and training in managerial aspects of accounting.

##### 244. 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.

#### For Undergraduates and Graduates

##### 321. Analysis of Financial Statements. Cr. 2

Financial statement preparation and analysis. A study of the items that appear on financial statements. Methods and devices used in interpreting financial and operating data.

##### 322. Payroll Accounting. Cr. 2.

Accounting for payrolls. Social Security legislation and Wage and Hour laws.

##### 334. Intermediate Accounting. I. Cr. 3.

Prerequisite: Acct. 245. A review of elementary accounting, financial statements, current assets, fixed assets, depreciation and depletion.

##### 335. Intermediate Accounting. II. Cr. 3.

\* On leave.

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. Records and reports for the cost department. Methods of allocating overhead costs. Records and principles for handling material, labor, and indirect costs.

**337. Advanced Cost Accounting. Cr. 3.**

Prerequisite: Accounting 334 and 336. Especial attention will be given to estimate cost accounting, standard cost accounting, and the installation of systems.

**338. Budgeting. Cr. 3.**

Prerequisite: Accounting 245. Coordination of various business activities by means of the budget. Procedures in obtaining and enforcing the budget.

**430. Income Tax Accounting. Cr. 3.**

Prerequisite: Accounting 245. and junior classification. The Federal Revenue Acts with reference to taxations of the incomes of individuals, corporations and estates. The preparation of tax returns.

**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 involving gift taxes, estate taxes, inheritance taxes, and social security 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. Consolidations, foreign exchange, estates and trusts, budgets, governmental, bank, and stock brokerage.

**436. Accounting 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 and 336. 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.

**441. Machine Accounting. Cr. 4. (3-3).**

(Formerly Acct. 433 and Sec. Adm. 434). Prerequisite: Accounting 245. Principles of machine methods; tabulation machine cards, punches, verifiers, sorters, tabulators, and interpreters; organization of tabulating machine departments. Practice in the operation of the punch, verifier, sorter, plugboard, and tabulator. 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**

**531. C. P. A. Problems. I. Cr. 3.**

Prerequisite: Graduate standing or consent of instructor. Solution of problems given on C.P.A. examinations; a review of accounting theory and practice.

**532. C. P. A. Problems. II. Cr. 3.**

Prerequisite: Graduate standing or consent of instructor. Solution of problems given

on C.P.A. examinations; a review of accounting theory and practice. (Continuation of material in accounting 531).

**533. Current Accounting Theory. Cr. 3.**

**Prerequisite:** Graduate standing or consent of instructor. A study of current accounting literature; accounting bulletins of the American Institute of Accountants' Committee on Accounting Procedure; S.E.C. accounting releases, etc.

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

### FINANCE

Fundamental courses in the field of banking and finance have been arranged into a major for those students who wish to prepare themselves for the numerous opportunities existing in banks, financial organizations, and in the financial departments of business enterprises. Advisers will assist students to plan their courses to fit the individual for his particular activity.

#### 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.

#### For Undergraduates and Graduates

**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.**

**Prerequisites:** 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 bank 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.

**336. Life Insurance. Cr. 3.**

**Prerequisites:** Economics 232 and Accounting 245. The economic, business and personal uses of life insurance; classification and analysis of policies, reserves and surrender values; policy loans; rate computation, organization and administration of life insurance companies and agencies; state supervision of the life insurance business.

**337. Property and Casualty Insurance. I. Cr. 3.**

**Prerequisites:** Economics 232 and Accounting 245. The principles of property and casualty insurance. An analysis of premiums, reserves and policy types. A study of fidelity and surety bonds; liability, compensation and marine insurance. Organization and administration of the company, underwriter, agency and broker.

**338. Business Law. I. Cr. 3.**

**Prerequisite:** 60 semester hours. Courts and procedure, evidence, persons, crimes, torts, contracts, property, and security contracts.

**339. Business Law. II. Cr. 3.**

Second course in business law. Sales, negotiable instruments, banks and banking, partnerships, corporations, estates, insurance, and labor relations.

**3310. Oil and Gas Law. Cr. 3.**

General contracts, oil and gas leases and their interpretation, titles, royalty, proportion and conservation of oil and gas, regulations governing drilling operations, government lands, cases on oil and gas.

**3311. Real Estate Law. Cr. 3.**

**Prerequisite:** Enrollment or credit for Finance 338. 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.  
431. The Federal Reserve System. Cr. 3.

Prerequisite: Finance 333. Organization and development of the federal reserve system; open-market transactions; rediscounts; the transit department; fiscal agency operations; examinations; the board of governors and its powers; industrial advances; federal reserve notes; member bank reserves.

432. Real Estate. Cr. 3.

Recommended Prerequisite: Finance 331. 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. Property and Casualty Insurance. II. Cr. 3.

Recommended prerequisite: Finance 337. A continuation of Finance 337. Theory of probabilities, rates and rate making, insurance surveys and accident prevention. Designed for C.P.C.U. candidates.

438. Property and Casualty Insurance. III. Cr. 3.

Deals with the economics of insurance, government regulation and social legislation as they affect the insurance business. Designed for students who are C.P.C.U. candidates.

439. Property and Casualty Insurance. IV. Cr. 3.

Prerequisite: Graduate standing. Solution and presentation of an approved problem. Designed for students who are C.P.C.U. candidates.

4310. C.P.A. Law Review. Cr. 3.

A review of Business Law with emphasis on subject matter appearing frequently on the C.P.A. law examination.

#### For Graduates

531. Current Financial Problems. Cr. 3.

Prerequisite: Graduate standing. Solution and presentation of an approved problem involving individual research work in the field of finance.

631-2. Thesis.

## Agricultural Economics

PROFESSOR McBRIDE, ASSOCIATE PROFESSOR LEONARD,  
ASSISTANT PROFESSORS BENNETT,\* PINSON,  
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 with preparation for county agent work or vocational agriculture teaching, employment with federal or private agencies dealing with problems of rural life, or for commercial and industrial vocations closely allied with agriculture.

### AGRICULTURAL ECONOMICS

#### For Undergraduates

235. Fundamentals of Economics. Cr. 3. (3-0).

Analysis of fundamental economic principles and their application to modern economic problems.

236. Principles of Marketing Agricultural Products. Cr. 3. (3-0).

Prerequisite: Agricultural Economics 234. Analysis of the various agents performing the functions in the purchase, sale, and distribution of agricultural products.

#### For Undergraduates and Graduates

322. Marketing Agricultural Products. Cr. 2. (2-0).

Prerequisite: Agricultural Economics 236. Problems and practices involved in the  
\* On leave.

marketing of specific agricultural commodities.

**323. Advanced Agricultural Economics. Cr. 2. (2-0).**

Analysis of proportion of factors of production in agriculture.

**331. Statistical Problems. Cr. 3. (2-3).**

Prerequisites: Junior standing and 3 hours of mathematics. Principles involved in the collection, and interpretation of agricultural data.

**332. Advanced Agricultural Statistics. Cr. 3. (2-3).**

Prerequisite: Agricultural Economics 331. Analysis and construction of seasonal and moving averages, trends, curvilinear relationships, sampling, estimates, variance, and the presentation of agricultural statistical reports.

**333. Cooperation in Agriculture. Cr. 3. (3-0).**

Prerequisite: Agricultural Economics 236. Organization and operation of agricultural cooperatives.

**335. Farm Appraisal and Finance. Cr. 3. (2-3).**

Prerequisite: Junior standing. Appraisal for value and potential income. Classification and use of farm credit, interest rates, credit instruments, functions and practices of lending institutions as applied to agriculture.

**411, 412. Agricultural Economics Seminar. Cr. 1. (1-0).**

Prerequisite: Senior standing in agriculture. Round table discussion of current economic problems.

**421. Land Economics. Cr. 2. (2-0).**

Prerequisite: Junior standing in agriculture. Land as a factor of production; classification and utilization.

**422. Agricultural Prices and Forecasting. Cr. 2. (2-0).**

Prerequisite: Agricultural Economics 331. Agricultural prices and forecasting. Original research applied to an agricultural commodity of the student's choice.

**425. Farm Laws. Cr. 2. (2-0).**

Prerequisite: Agricultural Economics 236. Legal problems and practices affecting agriculture. Relations of employer and employee, farm owners and neighbors, farm operators and commission men, farm real estate, lenders and borrowers, and other rights and obligations.

**431. Livestock Marketing. Cr. 3. (3-0).**

Prerequisite: Junior standing in agriculture including Agricultural Economics 236. Livestock marketing practices and problems.

**433. Farm Management and Records. Cr. 3. (2-3).**

Prerequisite: Junior standing in agriculture. The organization management of the individual farm. Field trips to nearby farms.

**434. Advanced Farm Management. Cr. 3. (3-0).**

Prerequisite: Agricultural Economics 433. Legal problems in farm organization and operation. Administration, finance, contracts, leases, liens, and insurance.

**435. International Agricultural Economics. Cr. 3. (3-0).**

Prerequisite: Junior standing or permission of the dean. An economic analysis of the conditions under which the world's supplies of agricultural products are obtained; trade routes, trade barriers. Analysis of domestic relationships to world agriculture.

**436. Marketing Dairy Products. Cr. 3. (3-0).**

Prerequisite: Agricultural Economics 236. Economic conditions affecting the marketing and prices of dairy products. Analysis of the various agencies in the marketing channels.

### For Graduates

**511. Problems. Cr. 1. (1-0).**

Prerequisite: Graduate standing. A study of agricultural outlook and similar material.

**531. Problems in Land Use. Cr. 3. (3-0).**

Prerequisite: Graduate standing. Advanced study in the field of land use and the factors affecting land use.

**533. Marketing Problems. Cr. 3. (3-0).**

Prerequisite: Graduate standing. Advanced study in the problems and practices in marketing of some selected farm product.

**534, 535. Research in Agricultural Economics. Cr. 3. (3-0).**

Prerequisite: Graduate standing. A selected research problem in agricultural economics, farm management, or rural sociology.

**631-2. Thesis.**



**RURAL SOCIOLOGY****For Undergraduates and Graduates**

431. Agricultural Research, Extension, Organization and Methods.  
Cr. 3. (1-6).

Prerequisite: Junior standing. Methods and problems for research, extension work, and vocational teaching. A survey of a selected county or region will be made and written by each student.

432. Rural Sociology. Cr. 3. (3-0).

Prerequisite: Junior standing. A study of rural society and its institutions. Rural leadership. Methods of dealing with the problems involved. This course is required for elementary education majors.

**For Graduates**

532. Current Problems in Rural Sociology. Cr. 3. (3-0).

Prerequisite: Graduate standing. Current problems in rural sociology.

- 631-2. Thesis.

**Agricultural Education**

PROFESSORS CHAPPELLE, LEACH. ASSOCIATE PROFESSOR  
HARGRAVE. ASSISTANT PROFESSOR LINER.  
INSTRUCTOR TINNEY.

Curriculum in the Department of Agricultural Education is designed to qualify the prospective teacher of vocational agriculture to teach under the Federal Vocational Education (Smith-Hughes) Act, and to supplement the student's instruction in technical and professional agriculture. The satisfactory completion of the requirements will be followed by recommendations to teach vocational agriculture in high schools.

Upperclassmen 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, the student should 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 Division of Graduate Studies. A statement of courses to be completed for this certification will be furnished upon request.

**For Undergraduates and Graduates**

423. Problems. Cr. 2. (2-0).

Prerequisites: Senior or graduate standing and Ag. Ed. 431-2. An investigation and study of problems in the field of vocational agriculture of special interest to the individual student. May be repeated for credit.

424. Organization and Administration of Vocational Agriculture.  
Cr. 2. (2-0).

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.

425. Future Farmer Activities. Cr. 2. (2-0).

Prerequisite: Senior 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, advanced degrees, national and state F.F.A. awards and contests.

431. Methods. Cr. 3. (3-0).

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.

432. Methods. Cr. 3. (3-0).

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. Practice Teaching. (Cr. 6. (0-18).

Prerequisite: Senior standing in agriculture. Six weeks off the campus supervised observation and practice teaching in high school vocational agriculture department approved by the Agricultural Education Department. Opportunity for participation in all-day, part-time, and evening classes.

## For Graduates

## 511. Problems. Cr. 1. (1-0).

Prerequisite: Graduate standing. Current problems of the teacher in the field of vocational agriculture. May be repeated for credit.

## 522. Advanced Methods, I. Cr. 2. (2-0).

Prerequisite: Graduate standing. Advanced methods of teaching vocational agriculture in all-day classes in the high school.

## 523. Advanced Methods, II. Cr. 2. (2-0).

Prerequisite: Graduate standing. Advanced methods of teaching vocational agriculture in part-time and evening schools.

## 524. Advanced Methods, III. Cr. 2. (2-0).

Prerequisite: Graduate standing. Advanced methods of teaching Future Farmer work.

## 531. Investigations in the Field of Agricultural Education. Cr. 3. (3-0).

Prerequisites: Graduate standing and consent of the head of the department. Investigation of a problem in the field of vocational agriculture of special interest to the student; presentation of a paper. May be repeated for credit.

## 532. Investigations in the Field of Agricultural Education. Cr. 3. (3-0).

Prerequisites: Graduate standing and consent of the head of the department. Investigation of a problem in the field of vocational agriculture of special interest to the student; presentation of a paper. May be repeated for credit.

## 537. Advanced Methods, IV. Cr. 3. (3-0).

Prerequisites: Graduate standing and consent of the head of the department. Advanced methods in teaching farm shop to all-day, part-time, and evening classes.

## 631-2. Thesis.

## Agricultural Engineering

PROFESSOR \*———. ASSISTANT PROFESSORS  
SULLIVAN, WILLIAMS.

The Department of Agricultural Engineering offers training in the application of engineering to agricultural problems. The curriculum provides instruction in the selection, care, use, repair and management of farm machinery; care, fitting and use of wood working, sheet metal working, forging, welding, pipe fitting, electrical wiring, and painting tools and machines as applied to farm shops, buildings and farm machinery. The college farm offers much opportunity for class instruction and training in the engineering of soil and water conservation structures, irrigation and drainage planning, land mapping and measurement and other agricultural engineering problems as related to the soil and to crop production. Rural Electrification is treated from the standpoint of the farmers' problems and their solutions. Selection, care and maintenance of electrical appliances for the farm and farm home are included. Farmstead planning for economy and convenience, farm building planning and construction for efficient operation and sanitation are stressed.

The curriculum offered by this department is designed to be as practical as possible and to train not only the students majoring in the department but also to provide service courses for students majoring in other fields of agriculture.

\* To be appointed.

## AGRICULTURAL ENGINEERING

## For Undergraduates

## 321, 322. Farm Shop. Cr. 2. (1-3).

Prerequisite: Junior standing. Care, fitting, and use of tools. Woodwork as affects farm products. Minor work for farm machinery and engines. Farm sheet metal, forging, oxy-acetylene, and arc welding, pipe fitting, concrete, electric wiring, painting, and rope work.

**323. Farm Machinery. Cr. 2. (1-3).**

Prerequisite: Junior standing. Construction, care, operation, and repair of the different types of farm machinery.

**331-2. Farm Power. Cr. 3. (2-3).**

Prerequisite: Junior standing. Principles of operation of the gasoline engine as power, operation, care and repair, modern farm tractors, and electric motors.

**410. Seminar. Cr. 1. (1-0).**

Prerequisites: Senior standing in Agronomy and Farm Machinery. Assigned readings, current advances and thought. Informal discussions, oral reports and papers.

**For Undergraduates and Graduates****411. Soil Management Laboratory. Cr. 1. (0-3).**

Prerequisite: Senior standing in agriculture. Terrace location, design, and construction for soil erosion control and moisture conservation. Inspection trips.

**412. Soil Management Laboratory. Cr. 1. (0-3).**

Prerequisite: Ag. Engr. 411. Senior standing in agriculture. Design and layout of ditches and systems for irrigation or drainage. Measurements of water. Inspection trips.

**425. Agricultural Engineering Problems. Cr. 2.**

Prerequisite: Open to senior students having satisfactory scholastic record and background. An investigation of a problem in the field of special interest to the student.

**430. Agricultural Engineering Problems. Cr. 3.**

Prerequisite: Open to senior students having satisfactory scholastic record and background. An investigation of a problem in the field of special interest to the student.

**431. Farm Buildings. Cr. 3. (2-3).**

Prerequisite: Senior standing in agriculture. Farm building objectives, location for efficient operation and sanitation. Materials of construction, dimensions, floor plans, and construction of a farm building.

**432. Land Mapping and Measurement. Cr. 3. (1-6).**

Prerequisite: Senior standing in agriculture. Study and construction of plane table and topographic maps and the interpretation of aerial maps with special application.

**433. Advanced Farm Shop. Cr. 3. (1-6).**

Prerequisite: Ag. Engr. 321, 322, senior standing in agriculture. Hot and cold metal work, arc and torch welding on farm machines; power tool use. Principles and practices in construction of electric appliances for the farm, concrete structures, septic tanks, chutes, and trailers.

**434. Advanced Farm Machinery. Cr. 3. (1-6).**

Prerequisite: Senior standing in agriculture. Ag. Engr. 323, 331. Types, uses and servicing, adjusting and repairing internal combustion engines with emphasis on farm tractors. Factors for calculating and reducing farm power and machinery costs. Adjusting and replacing field machines, much practice, cause and effect.

**435. Methods in Farm Shop. Cr. 3.**

Prerequisite: Ag. Engr. 321, 322, 323 or equivalent. Setting up the farm shop program, special emphasis on teaching techniques, demonstrations, evening schools and community shop projects.

**436. Farm Machinery Evaluation. Cr. 3. (2-3).**

Prerequisites: Junior standing in agriculture and Ag. Engr. 323 or equivalent. Selecting farm machines for the job, characteristics and peculiarities of individual models of current machines in use, general design and adherence to sound engineering, standards for judging values and scoring different machines.

**Agronomy**

PROFESSORS YOUNG, LEIDIGH. ASSOCIATE PROFESSOR AYERS.  
ASSISTANT PROFESSORS BURNETT,\* MORROW, PETERSON.

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.

Students may select options in specialization in any one of these fields. Information is provided on operations for dry farming, humid farming

\* On leave 1950-51.

and farming on irrigated soils. The agronomy farm with areas of soil under both dry farming and irrigated conditions is maintained for field study and demonstrations. An extensive grass and legume crop nursery with many different species and selection of plants is maintained for studying the identifying and growth characteristics of forage and grass-land 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.

## AGRONOMY

### For Undergraduates

#### 131. The Fundamentals of Crop Production. Cr. 3. (2-3).

A survey course. Crops, their classification, identification, distribution, production, grading, and use. Tillage and elementary soils. Diseases and pests.

#### 241. Soils. Cr. 4. (3-3).

Prerequisite: 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, field surveying and mapping.

#### 311. Soils Laboratory. Cr. 1. (0-3).

Prerequisite: Agron. 221. Field study of soil-forming materials, soil texture, classification, identification, field surveying, and mapping.

#### 323. Principles of Crop Judging and Grain Grading. Cr. 2. (0-6).

Prerequisite: Junior standing in agriculture or approval of Instructor, and Agron. 131. Practice in identification, grading, judging, and testing quality and values of seeds and crop products.

#### 331. Forage and Pasture Crops. Cr. 3. (2-3).

Prerequisite: Agron. 131, 241, junior standing in agriculture. The production, harvesting, storage and uses of forage and pasture crops.

#### 410. Seminar. Cr. 1. (1-0).

Prerequisite: Senior standing in agronomy. Assigned readings, current advances and thought. Informal discussions, oral reports and papers.

### For Undergraduates and Graduates

#### 332. Grain Crops. Cr. 3. (2-3).

Prerequisite: Agron. 131, junior standing in agriculture. The production, harvesting, storing, grading, 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-grassaceous forage plants and poisonous plants. Identification, habitat, palatability, and regions of growth.

#### 341. Principles of Genetics. Cr. 4. (3-3).

Prerequisite: Junior standing. Heredity and variation in both plants and animals. History. The chromosome theory in higher animals, poultry, and insects. Biometry as applied to genetic data stressing economic plants and animals.

#### 421. Cotton and Other Fiber Crops. Cr. 2. (2-0).

Prerequisite: Junior standing in agronomy or approval of instructor. Culture, improvement and classification of cotton. Diseases and insect pests of cotton.

#### 422. Soil Management. Cr. 2. (2-0).

Prerequisite: Agron. 241, 331, senior standing in agriculture, and registration in Ag. Engr. 411. Soil moisture conservation, supplemental water supply, permanent farming under the conditions of light or wide seasonal variations of rainfall.

#### 423. Soil Management. Cr. 2. (2-0).

Prerequisite: Agron. 241, 331, senior standing in agriculture and registration in Ag. Engr. 412. The nature and sources of plant nutrients, their liberation and conservation. Use of supplements and fertilizers. Irrigation and drainage, inspection trips.

#### 424. Advanced Crop Judging and Grain Grading. (Cr. 2. (0-6)).

Prerequisite: Agron. 323, junior standing. Special work in identification, judging, testing, grading, and market standards for grain crops, hay crops, and general farm crops, inspection trips and contests.

## 425. Agronomy Problems. Cr. 2. (2-0).

Prerequisite: Open to senior students having satisfactory scholastic records. An investigation of a problem in the field of special interest to the individual student concerned.

## 430. Agronomy Problems. Cr. 3. (3-0).

Prerequisite: Open to all senior students having satisfactory scholastic records. An investigation of a problem in the field of special interest to the individual student concerned.

## 431. Plant Breeding and Improvement. Cr. 3. (3-0).

Prerequisite: Agron. 341. Practical application of genetics in the breeding and improvement of plants.

## 434. Soil Conservation and Land Use Planning. Cr. 3. (2-3).

Prerequisite: Agron. 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: Agron. 241, senior standing in agriculture. The origin and classification of soils of the world and particularly of the United States.

## 436. Soil Chemistry. Cr. 3. (3-0).

Prerequisite: Agron. 241, 10 hours chemistry, senior standing in agriculture. Chemistry of the soil as affected by cultivation, crop rotation, fertilizers, and moisture relationships.

## 437. Range Management. Cr. 3. (2-3).

Prerequisite: Senior standing in agriculture. Agron. 331, 333, A.H. 331. Management problems and use of plants and soils under range conditions.

## 439. Soil Microbiology. Cr. 3. (3-0).

Prerequisite: Agron. 241, Bact. 231, 10 hours of chemistry, senior standing in agriculture. Micro-organisms in the soil with emphasis upon the functions of the soil bacteria and their influence upon decomposition of organic matter and soil fertility in general.

## 4310. Advanced Range Management. Cr. 3. (2-3).

Prerequisites: Agron. 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.

## 441. Plant Production. Cr. 4. (3-3).

Prerequisites: Agron. 131, 241, and junior standing in agriculture. Not open to agronomy majors. A modified course composed of applied production of fiber and grain, forage and vegetable crops applicable to Texas. Problems in seed and feed production. Special emphasis on needs of vocational agriculture teachers, county agents, etc.

## For Graduates

## 512, 513, 514. Agronomy Seminar. Cr. 1, 2, or 3. (1-0).

Prerequisite: Graduate standing in agriculture or equivalent. Review and discussion of current literature in the field.

## 531, 532, 533. Agronomy Problems. Cr. 3, 6, or 9. (3-0).

Prerequisite: Graduate standing and consent of major professor and head of department. Credit to vary depending upon problem outlined. The work will consist of an outline of a specific problem in line with the major interest of the student and dealing with a phase of specialized study not included in regular course work.

## 535. Research Methods. Cr. 3. (3-0).

Prerequisite: Graduate standing in agriculture or equivalent. Project outlines, research administration, research organization, fellowships, research budgets, thesis organization and writing, research foundations.

Special Note: All courses of 300 and 400 series taken for graduate credit require special work in addition to that required for undergraduate credit. Special assignments as provided by the instructor in charge of the class must be satisfactorily completed before graduate credit is earned in these courses. Graduate credit for these courses must be petitioned for in writing to the instructor in charge prior to enrollment in the course.

## 631-2. Thesis.

## Air and Military Science & Tactics (ROTC)

PROFESSORS WHITE, COLONEL, CE; TURNER, COLONEL, USAF.  
 ASSOCIATE PROFESSORS McCONNELL, LT. COLONEL, INF;  
 NEUBAUER, MAJOR, SC. ASSISTANT PROFESSORS BUR-  
 NETT, MAJOR, USAF; BAUMGARDNER, CAPTAIN, USAF;  
 GROECLOSE, CAPTAIN, INF; HADDOX, CAPTAIN,  
 USAF; CLEM, FIRST LIEUTENANT, USAF. SER-  
 GEANT INSTRUCTORS ROPER, SC; MOSLEY,  
 INF; WILSEY, USAF; WELSH, USAF; PAR-  
 KER, AGC; MYERS, INF; PETERSON,  
 USAF; MOBLEY, USAF; DOANE, US  
 AF; SCHMILL, ORD; ELLIS, CE.  
**AIR SCIENCE AND TACTICS**

### AS 121-2. First Year Basic. Cr. 2.

Prerequisites: Physical and mental qualification prescribed by the Department of the Air Force. 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; geographical foundations of national power; military problems of the United States; military mobilization and demobilization; maps and aerial photographs, military psychology and personnel management; first aid and hygiene; and leadership, drill, and exercise of command.

### AS 211-2. Second Year Basic (Administration and Supply). Cr. 1.

Prerequisites: AS 121-2 or equivalent. This course first provides an introduction to general Air Force activity covering such subjects as weather and navigation, aerodynamics and propulsion, and applied air power. The course then continues with an introduction to Air Force supply, administration, and logistics; Air Force publications; military correspondence; pay and allowances; and organizational records. Leadership, drill, and exercise of command continue as an important phase of student activity.

### AS 213-4. Second Year Basic (Armament). Cr. 1.

Prerequisites: AS 121-2 or equivalent. This course first provides an introduction to general Air Force activity covering such subjects as weather and navigation, aerodynamics and propulsion, and applied air power. The course then continues with the history and development of armament; armament publications; administration of an armament section; armament supply handling and inspection; basic electricity; and explosives, ammunition, ballistics, bombs, rockets, fuses. Leadership, drill and exercise of command continues as an important phase of student activity.

### AS 331-2. First Year Advanced (Administration and Supply). Cr. 3.

Prerequisites: Basic course or one year's active duty with the armed forces of the United States. Continues with work begun in AS 212 covering individual records; Base Administration; non-appropriated funds; special administrative responsibilities; transportation; and various phases of supply activity. Also covers such general subjects as air operations; logistics; and leadership, drill and exercise of command.

### AS 333-4. First Year Advanced (Armament). Cr. 3.

Prerequisites: Basic course or one year's active duty with the armed forces of the United States. Continues with work begun in AS 214 covering 20mm and 50 cal. guns; rocket and bombing accessories; amplidyne fire control system; chemical and atomic factors in armament; and guided missiles and pilotless aircraft. Also covers such general subjects as air operations; logistics; and leadership, drill, and exercise of command.

### AS 431-2. Second Year Advanced (Administration and Supply). Cr. 3.

Prerequisites: AS 331-2. Continues specialized work covering staff organization; administrative staff functions; and supply staff functions. General subjects covered include military law and boards; military teaching methods; Air Force management; career management; the Inspector General's Department; and leadership, drill, and exercise of command.

### AS 433-4. Second Year Advanced (Armament). Cr. 3.

Prerequisites: AS 333-4. Continues specialized work covering principles of radar and radar bombing equipment; thyatron fire control system; gyro principles; theory of bombing; GBR sight, A-1B; harmonizing procedures; and AN-APA 59 computer. General subject covered includes military law and boards; military teaching methods; Air Force management; career management; the Inspector General's Department; and leadership, drill, and exercise of command.

## MILITARY SCIENCE AND TACTICS

### MS 121-2. First Year Basic. Cr. 2.

Prerequisites: 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; Geographical Foundations of National Power; Military Problems of United States; Military Mobilization and Demobilization; Maps and Aerial photographs; Military Psychology and Personnel Management; First Aid and Hygiene; and 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; and 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. Subjects: includes 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 Patrolling; Tactics of a Rifle Squad; and 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. Courses common to all military branches includes: 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 Communication; Engineer Combat Intelligence; Engineer Supply; Military Roads and Runways; Organization of Combat Divisions; Tactics of Engineer Units; Vehicle Leadership, Drill, and Exercise of Command.

**MS 337-8. First Year Advanced (Infantry). Cr. 3.**

Prerequisite: MS 217-8 or equivalent. An advanced course of Infantry subjects; includes a further study of Infantry weapons (heavy machine gun, all types of mortars, tank guns, recoilless rifles, rocket launchers, mines, and sound locating sets); gunnery (direct and indirect fire of weapons studied); Infantry organization; communications; combat intelligence; estimate of situation and combat orders; field fortifications; tactics of rifle and heavy weapons, platoons and companies; and Leadership Drill, and Exercise of Command.

**MS 333-4. First Year Advanced (Signal Corps). Cr. 3.**

Prerequisite: MS 213-14 or equivalent. Courses common to all military branches includes: 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 service systems of supply with emphasis upon signal supply; career guidance and weapons and marksmanship.

**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, Corps of Engineer 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; and 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, including, Military Teaching Methods; Psychological Warfare; Administration, Military Law and Boards; and 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; and Leadership, Drill, and Exercise of Command.

**MS 433-4. Second Year Advanced (Signal Corps). Cr. 3.**

Prerequisite: MS 333-4. Courses common to all military branches include: Military Teaching Methods; Psychological Warfare; Military Administration; Military Law and Boards; and Leadership, Drill, and Exercise of Command. Tactics and Techniques of the Signal Corps includes: Wire Communication-Materiel used by the Infantry Division; Higher Echelon Signal Communication 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; Command and Staff; and Combat Intelligence.

## American Civilization

### COMMITTEE IN CHARGE:

PROFESSORS CAMP (ENGLISH), DAVIS (GOVERNMENT),  
AND HOLDEN (HISTORY).

### Majors Only for the Doctor of Philosophy

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

Applicants will be expected to have the usual course prerequisites in at least two of the principal areas of study—government, history, and literature, but, with the consent of the advisory committee and the heads of the departments concerned, they may enroll for graduate courses in the other departments without having all of the customary prerequisites.

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

731-2. Doctor's Thesis. Cr. 6.

## Anthropology

(See History and Anthropology)

## Animal Husbandry

PROFESSORS MOWERY, STANGEL, HARBAUGH, FINE. ASSOCIATE  
PROFESSOR NEELEY. ASSISTANT PROFESSORS ANDER-  
SON, BAUMGARDNER, TURNER. INSTRUCTOR BOREN.

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 building, equipment, and pastures are maintained.

Graduates of the animal husbandry curriculum and its various options, which allow liberal elective credits, find many employment opportunities in addition to livestock farming and ranching for which the curriculum is primarily designed.

### ANIMAL HUSBANDRY

#### For Undergraduates

#### 131. General Animal Husbandry. Cr. 3. (2-3).

An introductory course designed to acquaint the student with the importance of livestock in Texas and United States. Types, market classes and grades of cattle, hogs, horses, sheep and goats, livestock markets. Slaughtering and slaughter by-products. Selection of feeder and market animals.

#### 212. Meat Selection and Identification. Cr. 1. (0-3).

Prerequisite: 30 semester hours. The selection of wholesale and retail cuts of meat, cutting methods, grading of meat, nutritive value, methods and problems of meat storage.

#### 231. Breeds of Livestock. Cr. 3. (2-2).

Prerequisite: A.H. 131. Development of the breeds of beef cattle, dairy cattle, dual-purpose cattle, hogs, horses, sheep, and goats. Special emphasis upon the work of recent prominent breeders and the merits of individual animals.

#### 312-3. Advanced Livestock Judging. Cr. 1. (0-3).

Prerequisite: A.H. 231. Contrasting study and comparative showyard judging and grading of cattle, horses, mules, sheep and swine. Selection of breeding and market animals. Inspection trips to farm herds, flocks and livestock shows.



**323. Advanced Dairy Cattle Judging. Cr. 2. (1-3).**

Prerequisites: A.H. 231 and 60 semester hours in agricultural curricula. Major dairy cattle breed characteristics. Showyard classifications. Comparative judging. Field trips to farm herds and dairy cattle shows.

**324. Dairy Breeds, Pedigrees and Records. Cr. 2. (2-0).**

Prerequisites: A.H. 231 and 60 semester hours in agricultural curricula. History, development, foremost breeding establishments, breeders, and individuals. Pedigree compilation and study. Form of production testing.

**421. Purebred Herds and Flocks. Cr. 2. (0-6).**

Prerequisite: A.H. 312-13. Fitting, exhibiting, and judging livestock for show and sale.

**411. Livestock Production. Cr. 4. (3-3).**

Prerequisite: A.H. 331. A modified course composed of portions of A.H. 424, 426, 427, and 428. Problems. Feeds; feeding and managing of beef and dairy cattle, hogs, and sheep. For students not following an animal husbandry major.

**For Undergraduates and Graduates****322. Farm Meats. Cr. 2. (1-2).**

Prerequisite: A.H. 131, 60 semester hours in agricultural curricula. Form, quality, and condition as affecting dressing percentage and quality of carcass. Slaughtering, dressing, cutting and curing. Uses and market demands. Class limited to 16. Special health certificate required of student.

**331. Principles of Feeding. Cr. 3. (2-3).**

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. (2-3).**

Wool and mohair production and preparation for market. A study of physical and chemical characteristics; sampling, grading, sorting and scouring.

**411. Animal Husbandry Seminar. Cr. 1. (1-0).**

Prerequisite: Senior standing in Department of Animal Husbandry. Assigned subjects. Review of recent investigations. Reports and discussions.

**4111. Dairy Husbandry Seminar. Cr. 1. (1-0).**

Prerequisites: A.H. 428 and 90 semester hours in agricultural curricula. Assigned subjects. Review of recent investigations. Reports and discussions.

**412. Dairy Cattle Breeding. Cr. 1. (0-3).**

Prerequisite: Dairy Husbandry Option and enrollment in A.H. 429. Study of artificial insemination of dairy cattle. Collecting, preparing and shipping of semen.

**420. Meat and Meat Products. Cr. 2. (1-3).**

Prerequisite: A.H. 322. Principles and practices of meat cutting, preparing special cuts and cut-out value, nutritive value, wholesale and retail buying, methods and problems of storage.

**422. Animal Breeding. Cr. 2. (2-0).**

Prerequisite: Agron. 341. Genetics applied to the improvement of farm animals. Fertility and sterility. Systems of breeding.

**423. Animal Nutrition. Cr. 2. (2-0).**

Prerequisite: A.H. 331. Principles of nutrition and their application in the feeding practice. The role of protein, carbohydrates, fat, minerals, and vitamins in the metabolism of farm animals.

**424. Beef Cattle Production. Cr. 2. (2-0).**

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

**425. Horse and Mule Production. Cr. 2. (2-0).**

Prerequisite: A.H. 331. Review of the horse and mule industry. Breeding, feeding, breaking, training, stabling, harness and harnessing, and shoeing. Fitting for sale and show. Caring for brood mare and foal, stallion and jack. Parasites and diseases. Laboratory practice with farm animals and equipment is done as assigned problems.

**426. Sheep and Wool Production. Cr. 2. (2-0).**

Prerequisite: A.H. 331. The sheep industry. Adaptation of breeds. Breeding, feeding, shearing, and marketing. Farm flock and range management. Fitting for show and showing. Parasites and diseases. Laboratory practice with farm animals and equipment is done as assigned problems.

**427. Swine Production. Cr. 2. (2-0).**

Prerequisite: A.H. 331. The swine industry. Breeding, feeding, housing, marketing. Fitting for show and showing. Parasites, diseases, and sanitation. Laboratory practice

with farm animals and equipment is done as assigned problems.

**428. Dairy Cattle Production. Cr. 2. (2-0).**

Prerequisite: A.H. 331. The dairy industry. Feeding for growth, maintenance, and milk production. Handling and marketing milk and animals. Dairy barn construction and sanitation. Advanced registry and herd records.

**429. Advanced Dairy Cattle Production. Cr. 2. (2-0).**

Prerequisite: A.H. 422 and 428. Advanced studies in dairy cattle breeding, nutrition, and management.

**438. Range Management. Cr. 3. (3-0).**

Prerequisite: Agron. 437. The relationship of livestock to range management; history, development, and types of ranges; types and breeds of range livestock; the interrelationship between management of the soil and plant growth, and the management of the animals and their requirements.

### For Graduates

**531, 532. Advanced Animal Husbandry. Cr. 3.**

Prerequisite: Graduate standing and the consent of the head of the department. Investigations in the field of animal production and nutrition.

**533. Animal Husbandry Research. Cr. 3.**

Prerequisite: Graduate standing and consent of the head of the department. Special research in some phase of livestock production which may form the basis of a master's thesis.

**535. Analysis of Research. Cr. 3.**

Interpretation of experimental data.

**631-2. Master's Thesis.**

## Poultry Husbandry

### For Undergraduates

**231. Farm Poultry. Cr. 3. (2-3). (Formerly P.H. 131).**

The poultry industry. Classes, breeds and varieties. Judging, culling, breeding, feeding, housing, and marketing. Disease control and sanitation.

**324. Advanced Poultry Judging. Cr. 2. (1-3).**

Prerequisite: P.H. 231. History and characteristics of the standard breeds and varieties of poultry. Scoring and judging of exhibition and utility fowls. Inspection trips to farm flocks and poultry shows.

### For Undergraduates and Graduates

**331. Incubation and Brooding. Cr. 3. (1-6).**

Prerequisite: P.H. 231. Factors influencing fertility and hatchability of eggs; practical chick embryology; organization and management of commercial hatcheries; brooding requirements of baby chicks; cost of production and methods of marketing.

**411. Poultry Husbandry Seminar. Cr. 1. (1-0).**

Prerequisite: Senior standing in Department of Animal Husbandry. Assigned subjects. Review of recent investigations. Reports and discussions.

**421. Poultry Production. Cr. 2. (2-0).**

Prerequisites: A.H. 331 and P.H. 231. The poultry industry. Brooding, breeding, housing, feeding and marketing. Disease control and sanitation. Studies of cost of production. Required field trip to visit nearby poultry enterprises.

**422. Turkey Production. Cr. 2. (2-0).**

Prerequisites: A.H. 331 and P.H. 231. The turkey industry. Breeds, breeding, incubation, rearing, housing, feeding, and marketing. Disease control and sanitation. Required field trip to visit nearby turkey farms.

**423. Market Eggs. Cr. 2. (1-2).**

Prerequisite: P.H. 231. Methods of handling market eggs: candling, grading, packing, storing and marketing eggs. This course will aid in qualifying students as government egg graders.

### For Graduates

**531. Poultry Husbandry Research.**

Specialized research in poultry breeding, nutrition, or management.

## Veterinary Science

### For Undergraduates

#### 330. General Veterinary Science. Cr. 3. (3-0).

Prerequisite: 60 semester hours in agricultural curricula. A brief consideration of anatomy and physiology. Livestock sanitation, disease, and parasites. Cannot be counted in fulfilling major requirements in animal husbandry.

### For Undergraduates and Graduates

#### 331. Anatomy and Physiology. Cr. 3. (3-0).

Prerequisite: A.H. 131. The skeletal, muscular, digestive, circulatory, respiratory, and reproductive organs of farm animals. The physiology of the blood lymph, circulatory and respiratory systems; ductless glands, digestion, and organs of elimination.

#### 332. Livestock Diseases and Parasites. Cr. 3. (3-0).

Prerequisite: Vet. 331. The common infectious and non-infectious diseases. Common external and internal parasites. Application to personal and professional problems in everyday life. Study, observation, practice with color, texture, line, form, neutral value. Prevention, treatment, and sanitation.

## Applied Arts

PROFESSOR POINDEXTER. ASSISTANT PROFESSORS  
BEITLER, LOCKARD. INSTRUCTOR ROGERS.

In the Department of Applied Arts, work is offered leading to the Degree of Bachelor of Science in Home Economics with a major in applied arts. The curriculum offers optional courses during the junior and senior years which will prepare the student for special phases of work in the field of applied arts, i.e., homemaking, teaching, appointment to camp, recreational and commercial positions. These options are listed with the curriculum in this catalog. Students should consult the Head of the Department before registering for advanced courses and electives.

In addition to the curriculum for majors in applied arts a minor consisting of 18 hours in the Department of Applied Arts may be taken by any student in the college. The courses to be taken as a minor must be chosen in conference with the Head of the Department.

Instruction in this department is based on the belief that first, every individual desires information which will help in the selection of more beautiful articles for use in enjoyable living; second, every individual has some creative ability which can be developed under efficient leadership and in a sympathetic environment; third, Applied Arts can contribute to the health and happiness of the individual, the family and the community.

### For Undergraduates

#### 131. Design. Cr. 3. (2-3).

Study and application of the elements and principles of design to situations in the everyday life of the students and the community.

#### 133. Design. Cr. 3. (1-6).

Aims first, to strengthen understanding of the elements and principles of design; second, to promote appreciation and enjoyment of certain media as used by others. Applications in the following media: pencil, charcoal, pen and ink, watercolor.

#### 231. Costume Design. Cr. 3. (2-3).

Prerequisite: A. Arts 131. Elements and principles of design applied to selection of costumes; analysis of personality and figure differences and the choice of specifically becoming line, color, texture, value. Planned to help the individual student with such problems as the selection and wearing of clothes for becomingness, appropriateness, service and economy.

#### 232. Crafts Design. Cr. 3. (1-6).

Prerequisite: A. Arts 131 or the equivalent. Practice in bookbinding, leather work, and wood carving. Attention given to adapting these crafts to use in homes, public schools, and recreational departments.

#### 233. Textile Design. Cr. 3. (1-6).

Prerequisite: A. Arts 131, or previous training satisfactory to the instructor. Application of student's designs to textiles by the following methods: batik, tie-dye, block

print, stencil, silk screen printing. Students are led by progressive steps into creating original designs and discovering new procedures.

**234. Minor Crafts. Cr. 3. (1-6). (Formerly 432).**

**Prerequisite:** A. Arts 131. An introduction to cord knotting, basketry, puppetry, beading, and other so-called minor crafts. Emphasis on good design and practical use of native materials.

**331. Interior Design. Cr. 3. (2-3).**

**Prerequisite:** A. Arts 131 and junior standing. House plans with emphasis on utility, convenience, and beauty; application of design principles to selection and arrangement of wall coverings, rugs, furniture, curtains, pictures, and accessories.

**336. Advanced Costume Design. Cr. 3. (2-3).**

**Prerequisites:** A. Arts 131 or the equivalent and A. Arts 231. Greater emphasis placed on developing technical ability and further practice in creative problems.

**337. Art Appreciation. Cr. 3.**

**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.

**For Undergraduates and Graduates**

When used for graduate credit these courses must be properly petitioned for and additional work or an added problem is required.

**412. Homes in the United States. Cr. 1.**

**Prerequisite:** Junior standing. Study of homes in the United States in relation to exterior and interior design. Study of how the homes have met the needs of the occupants in a changing civilization.

**431. Wood. Cr. 3. (1-6).**

**Prerequisites:** A. Arts 131, 232, or 233 or the equivalent and junior standing. A study of different woods and their suitability for various projects. Fundamentals of wood carving, construction and finishes. Use and care of wood working tools such as used in the home.

**434. Metal and Plastic. Cr. 3. (1-6). (Formerly 332).**

**Prerequisite:** A. Arts 131, 232, or 233 or the equivalent. Creative problems executed in metal and plastic. Structural processes: raising, bending, riveting, soldering. Decorative processes: etching, saw-plecing, engraving, inlay, enameling.

**435. Jewelry and Lapidary. Cr. 3. (1-6).**

**Prerequisite:** A. Arts 131, 232 or 233 or the equivalent. Creative problems. Rings, pins, bracelets, earrings, necklaces executed in brass, copper, silver, and gold. Local stones cut, polished, and mounted.

**436. Home Planning. Cr. 3. (1-6).**

**Prerequisite:** 9 semester hours including A. Arts 331. Junior standing. Study of the philosophy and practice in planning homes. Relation of the plans to the manner of living, locality and building materials.

**For Graduates**

**531. Special Problems. Cr. 3. (1-6).**

**Prerequisite:** 12 semester hours in Applied Arts or the equivalent; 3 hours must have been taken in the medium chosen for the special problems:

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

## Architecture and Allied Arts

PROFESSORS KLEINSCHMIDT, BRADSHAW. ASSOCIATE PROFESSOR LOCKARD. ASSISTANT PROFESSORS HALE, HOUGHTON, SASSER, TURNER. INSTRUCTORS KAISER, 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 Arts, the College Art Association, and it holds valuable teaching aids provided by the Carnegie Foundation.

Curricula open to both men and women lead to:

- (1) Bachelor of Architecture, a five-year curriculum for the Design Option or a five-year curriculum for the Construction Option.

- (2) Bachelor of Advertising Art and Design, a five-year curriculum.
- (3) Bachelor of Arts may be conferred at the at the completion of the first four years of the Advertising Art and Design 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 four-year and five-year programs for majors in Advertising Art and Design are 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, 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 Arch. 333 and in Arch. 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.

Courses which may be used for graduate credit in this department are 324, 333-4, 420, 423-4, 426-7, 433-4, 436, 439-10, 4311-12, if properly petitioned for, and provided additional work or an added problem is done in each course numbered in the 300 or 400 series, which otherwise carry no credit.

The department reserves the right to retain, exhibit, and reproduce the work submitted by students for credit in any course.

## For Undergraduates

## 121-2. Freehand Drawing I, II. Cr. 2. (0-6).

Representational drawing in charcoal emphasizing fundamental skills. Alternating problems stressing creative interpretation. Culminating work introducing color with pastels.

## 125. Shades and Shadows. Cr. 2. (0-6).

Exercises in conventional shades and shadows of common geometrical solids, solids of revolution, and simple architectural members.

## 126. Perspective. Cr. 2. (0-6).

Prerequisite: Engr. Dwg. 134 or Arch. 131. Theory of perspective as applied to common geometrical solids and to problems from architectural practice.

## 131-2. Introduction to Design. Cr. 3. (0-9).

Study of design elements in architecture and allied art fields through problems incorporating these elements. 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: Arch. 121-2. Pencil, pen and ink rendering and sketching from life and nature.

## 225. Freehand Drawing IV. Cr. 2. (0-6).

Prerequisite: Arch. 224. Beginning course in water color painting from life and from nature.

## 231-2. Architectural Design, Grade I. Cr. 3. (0-9).

Prerequisite: Arch. 125 and registration in Arch. 126, 131-2, 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.

## For Undergraduates and Graduates

## 320. History of Ornament and Furniture. Cr. 2.

Prerequisite: Arch. 323. The study of the development of ornament and furniture from prehistoric through modern times. Illustration by means of lectures and slides, photographs. Library research.

## 321. History of Early Civilization and Arts. Cr. 2.

Prerequisite: Arch. 222. Illustrated lectures dealing with the origins of art and architecture in early civilizations. Three hours a week of library research in anthropology and archaeology as related to the origins of art and architecture.

## 322. History of Renaissance Architecture. Cr. 2.

Prerequisite: Arch. 222. Technical history of architecture of the Italian, French, Spanish, English, and German Renaissance. Illustrated lectures. Library research.

## 323. History of American and Modern Architecture. Cr. 2.

Prerequisite: Arch. 322. History of American architecture from colonial times to present day. Modern movements in architecture in Europe. Illustrated lectures. Library research.

## 324. History of Sculpture. Cr. 2.

Prerequisite: Arch. 321. Illustrated lectures on the development of sculpture from the Egyptian to the present day. Three hours of library research a week.

## 326. Constructive Anatomy. Cr. 2. (0-6).

Prerequisite: Arch. 224. Preparation for figure drawing providing a thorough grounding in the fundamentals of proportion and a working knowledge of anatomical structure.

## 327. Life Drawing I. Cr. 2. (0-6).

Prerequisite: Arch. 326. Drawing from life in a variety of media and approaches with emphasis upon aesthetic factors. Instruction by individual criticism. \$5.00 model fee.

## 3216-17. Architectural Sculpture. Cr. 2. (0-6).

Prerequisite: Arch. 224. Clay modeling, architectonic studies in clay and other media. Plaster mold making. Glazing and firing of clay products. Fee for ceramics materials \$5.00 each.

**333-4. Building Construction. Cr. 3. (1-6).**

Prerequisite: Arch. 232. Preparation of working drawings and specifications for suburban houses; drawing complete details for buildings, heating, plumbing and structural problems.

**351-2. Architectural Design, Grade II. Cr. 5. (0-15).**

Prerequisite: Arch. 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 details or architecture and with larger architectural compositions.

**420. Professional Practice. Cr. 2.**

Prerequisite: Junior standing. Office organization, ethics, professional relations.

**422. Building Materials and Construction. Cr. 2.**

Prerequisite: Arch. 333-4. Introduction to the properties and uses of materials of construction. Occasional visits to buildings under construction.

**423-4. Life Drawing II, III. Cr. 2. (0-6).**

Prerequisite: Arch. 327. Continuation of Arch. 327. \$5.00 model fee each.

**435. Advanced Architectural Construction. Cr. 3. (1-6).**

Prerequisite: Arch. 333-4. A continuation of Arch. 333-4 but as applied to office-building type construction with estimating and specification writing.

**436. City Planning. Cr. 3. (1-6).**

Prerequisite: Arch. 435 and registration in Arch. 352. The theory and problems of city development, community planning, housing, and their drawn and rendered solutions under individual criticism.

**461-2. Architectural Design, Grade III. Cr. 6. (0-18).**

Prerequisite: Arch. 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.

**483-4. Architectural Design, Grade IV. Cr. 8. (0-24).**

Prerequisite: Arch. 461-2. 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.

**411-2. Engineering Seminar. Cr. 1.**

Credit for this course may be given as often as successfully repeated. The investigation and study of engineering problems of special interest and value to the students taking the course. Work is in the nature of research. May be taken only with permission of head of the department.

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 Public School art fields both on the undergraduate and graduate levels. Many courses in Architecture and Allied Arts are available for electives by majors in Education, Music, Landscape Architecture, etc.

## **ALLIED ARTS COURSES IN ADVERTISING ART & DESIGN (COMMERCIAL ART)**

### **For Undergraduates**

**123-4. Elements of Composition, I. Cr. 2. (0-6).**

Occasional lectures. Theory of space design; underlying principles of line and area composition. Problems under individual criticism.

**133. Commercial Lettering. Cr. 3. (0-9).**

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.

**235-6. Elements of Composition, II. Cr. 3. (1-6).**

Prerequisite: Allied Arts 123-4. A continuation of Arch. 123-4 with more detailed problems in composition.

**239-10. Pottery. Cr. 3. (0-9).**

Prerequisite: Allied Arts 123-4 or equivalent. All hand methods of pottery production and simple commercial ones. Decorating, glazing and firing of ware. For ceramic materials fee, \$5.00 each.



## For Undergraduates and Graduates

**3210-11. Commercial Illustration I. Cr. 2. (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.

**331-2. Commercial Design I. Cr. 3. (0-9).**

Prerequisite: Arch. 131-2 and Allied Arts 235-6. Structural representation of originally designed commercial products emphasizing effective techniques of rendering in a variety of materials.

**426-7. Oil Painting or Advanced Water Color. Cr. 2. (0-6).**

Prerequisite: Arch. 225. Principles of design related to various types of composition in conjunction with direct study from the human model, still life, or landscape. Problems in oil or water color may take the form of book illustration, painting or mural decoration. \$5.00 model fee each.

**428-9. History of Painting. Cr. 2.**

Prerequisite: Arch. 324. Illustrated lectures in the development of painting from the Egyptian period to the present modern day developments. Three hours of library research a week.

**4210-11. Decorative Figure Drawing. Cr. 2. (0-6).**

Prerequisite: Arch. 424. The drawing and painting of the draped or costumed figure against backgrounds with accessories planned to emphasize beauty and interest in color. \$5.00 model fee each.

**4212-13. Commercial Illustration II. Cr. 2. (0-6).**

Prerequisite: Allied Arts 3210-11. A continuation of Arch. 3210-11 with problems in presentation and studio practice; specialization in illustration with completion of full scale work.

**433-4. Commercial Design II. Cr. 3. (0-9).**

Continuation of Allied Arts 331-2. Problems involving extended research and group product development. Construction of scale models or execution of the finished product where feasible.

**437-8. Principles of Drawing and Painting, and Theory of Design.**

Cr. 3. (1-6).

Prerequisite: Arch. 225. Aims to give an understanding and appreciation of the fundamental principles governing good drawing and painting throughout the ages. Lectures with laboratory work. Actual drawing and use of color.

**4311-12. Ceramics. Cr. 3. (0-9).**

Prerequisite: Allied Arts 239-10 or Arch. 3216-17. Advanced pottery design and production. Glaze calculation and clay body construction. Research. Ceramics materials fee \$5.00 each.

### SERVICE COURSES PRIMARILY FOR EDUCATION MAJORS AND FOR THOSE TEACHING PUBLIC SCHOOL ART

**328-9. Poster Design and Lettering for Public School Teachers.**

Prerequisite: Junior standing. A course for those who wish to teach integral art in public schools.

**335-6. History of Art. Cr. 3.**

Prerequisite: Junior standing. A general survey of the history of architecture, sculpture, painting, and the minor arts. Course consists of lectures illustrated by means of slides, photographs and facsimile reproductions from the Carnegie Collection and collateral reading. Library research. Open to all students except those majoring in commercial art and architecture, design option.

**337-8. Art in Elementary Education. Cr. 3. (2-3).**

Prerequisite: Allied Arts 123-4 or 131-2; or junior standing. A course in drawing, composition, and color for those who teach art in public schools, made to apply directly to classroom teaching.

**439-10. Methods of Teaching Art Integrated for the Elementary School and the High School. Cr. 3. (2-3).**

Prerequisite: Allied Arts 335-6, 337-8, 334, or senior standing. Problems on the methods of presenting the study of art to students of elementary and high school levels.

**4313-14. Methods of Teaching Art Integrated for the High School. Cr. 3. (2-3).**

Prerequisite: Allied Arts 335-6, 337-8, 334, or senior standing. Problems on the methods of presenting the study of art to students of high school levels.



## Astronomy

(See Mathematics)

## Bacteriology

(See Biology)

## Band

(See Music and Band)

## Biology

PROFESSORS CROSS, LANDWER, STRANDTMANN, STUDHALTER.  
ASSOCIATE PROFESSOR SEALEY. ASSISTANT PROFESSOR  
CAMP. INSTRUCTORS HOLMAN, McLEAN, TILTON.  
PART-TIME INSTRUCTORS BATTS, CROSSLEY.

Students majoring in botany may minor in zoology, and vice versa, in undergraduate work. Students majoring in botany for the B. A. degree are expected to complete the following courses in the Department of Biology as a minimum: Biology 133-134; Botany 231, 232, 331, 339, 411; Zoology 234, 241; and 12 additional hours in courses of junior or senior rank in bacteriology, biology, or botany. Students majoring in zoology for the B. A. degree are expected to complete the following courses in the Biology department as a minimum: Biology 133-134, Zoology 234, 241; any two of the following four—Zoology 331, 332, 333, 334; Zoology 411; Botany 231, 232; and 12 additional hours of courses of junior or senior rank in bacteriology, biology or zoology.

Students looking forward to a Master's degree should add enough courses, as electives, in their proposed major and minor subjects to meet the entrance requirements of the Division of Graduate Studies.

At least one course in the field is very strongly recommended for all graduate students majoring in botany or zoology. This work may be taken from this institution or at one of the mountain, seashore, or other biological field stations.

For detailed information for requirements for the B. S. degree see Division of Arts and Sciences section of this catalog.

### BACTERIOLOGY

#### 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.

#### 335. General Sanitation. Cr. 3. (3-0).

Prerequisite: Three semester hours in bacteriology and junior standing. Public health and community hygiene; diseases and infection; disinfection; sewage and refuse disposal; sanitation of drinking water, swimming pools, summer camps, milk supplies and other foods; insects and public health; public health administration. Offered on demand.

#### 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. (3-0).**

Prerequisite: 3 semester hours in bacteriology; junior standing. History, prevalence, etiology, sources and modes of infection, laboratory diagnosis, and methods of control of the principal human diseases.

**334. Bacteriology of Foods and Food Sanitation. Cr. 3. (2-3).**

Prerequisite: 3 semester hours in bacteriology; junior standing. Bacteria and molds in their relations to food spoilage and food sanitation. Offered at intervals.

## BIOLOGY

### 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.

**331. Heredity. Cr. 3. (3-0).**

Prerequisite: 12 semester hours in the Biology Department. Principles of heredity with special reference to practical application in human affairs, heredity mechanisms, and problems.

**332. Teaching of Biology. Cr. 3. (3-0).**

Prerequisite: 12 semester hours in the Biology Department; or 6 semester hours in the Biology Department and 6 semester hours in chemistry, geology, geography, or physics; and 6 semester hours in education. Lectures, assigned readings, reports, and laboratory and field problems. May be counted as biology or education. Offered at intervals.

### For Undergraduates and Graduates

**333. Bio-ecology. Cr. 3. (3-0).**

Prerequisite: 12 semester hours in the Biology Department, or junior standing in the Division of Agriculture. Introduction to the relationship of organisms to their environment. Field trips to nearby points are included at a minimum cost to the student.

**334. Bio-ecology. Cr. 3. (2-3).**

Prerequisite: Biology 333. The biotic community, population studies, and succession. Field trips to nearby points are included at a minimum of cost to the student.

**431. Advanced Heredity. Cr. 3. (2-3).**

Prerequisite: Biology 331. The nature of the gene, chromosome mechanics, and population genetics. Offered at intervals.

## 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 131. The physiological processes as applied to the seed plants.

**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.

**411. Botany Seminar. Cr. 1. (1-0).**

Prerequisite: Senior or graduate standing in botany or zoology. Critical reviews of classical and recent literature and reports of original investigations. May be repeated for full credit.

**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.

**433. Advanced Morphology. Cr. 3. (1-6).**

Prerequisite: Botany 231, 331, 339. Morphology of one of the following groups: algae, bryophytes, pteridophytes, gymnosperms, angiosperms. May be repeated with full credit in one of the other groups named. Offered at intervals.

**435. Advanced Taxonomy. Cr. 3. (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.

**436-7. Plant Geography. Cr. 3. (3-0).**

Prerequisite: 6 semester hours in botany of junior rank; or Biology 133-4 and 12 semester hours in zoology, geology, geography, horticulture, or agronomy. Geographic distribution of plants, types of vegetation, origin and composition of the floras of North America, some applied problems of plant geography. Field trips to nearby sections of the country are included as feasible at a minimum of cost to the student.

**438. Morphology of Fungi. Cr. 3. (2-3).**

Prerequisite: Botany 331, 339; or Botany 232 and 9 semester hours in horticulture or agronomy. Morphology and taxonomy of the fungi as a basis for plant pathology. Offered at intervals.

**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. May not be used as part of the requirements for a major in zoology.

**234. Invertebrate Morphology. Cr. 3. (2-3).**

Prerequisite: Biology 133-4. Structure, function, and history of invertebrates, with emphasis on forms not stressed in Biology 134.

**235-6. Anatomy, Physiology, and Hygiene. Cr. 3. (2-3).**

Prerequisite: Chemistry 131-2 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 part of the requirements for a major in zoology. Zoology 236 may be taken before 235.

**241. Comparative Vertebrate Anatomy. Cr. 4. (2-6).**

Prerequisite: Biology 133-4. Structure, function, and history of the vertebrates, with emphasis on the dogfish and the cat.

**For Undergraduates and Graduates****331. Animal Histology. Cr. 3. (2-4).**

Prerequisite: Zoology 234, 241. 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 234, 241. The embryological development of different vertebrate forms with emphasis on the pig and the chick. Laboratory assignments are to be completed in the laboratory.

**333. Parasitology. Cr. 3. (2-3).**

Prerequisite: Zoology 234, 241. Internal and external parasites, their life histories and host relationships.

**334. Entomology. Cr. 3. (2-3).**

Prerequisite: Zoology 234, 241; or Biology 133-4, and 6 semester hours sophomore rank in the Division of Agriculture. Structure and classification of insects.

**335. Entomology. Cr. 3. (1-6).**

Prerequisite: Zoology 334, Botany 232. Systematics; control of common insect pests. Assigned problems and readings. Offered on demand.

**411. Zoology Seminar. Cr. 1. (1-0).**

Prerequisite: Senior or graduate standing in zoology or botany. Critical reviews of classical and recent literature and reports of original investigations. May be repeated for full credit.

**435. Cytology. Cr. 3. (2-3).**

Prerequisite: Biology 331. A study of the cell and its application to heredity.

**436. Zoology Microtechnique. Cr. 3. (0-9).**

Prerequisite: 12 semester hours of zoology above the freshman year. Preparation and interpretation of permanent microscopic slides.

**437. Mammalogy. Cr. 3. (1-6).**

Prerequisite: Senior standing in zoology. Readings, reports, and field work on assigned problems. The cost to the student of field work is held to a minimum. Offered at intervals.

**438. Field Entomology. Cr. 3. (1-6).**

Prerequisite: Zoology 334, 335, and approval of instructor. Readings, reports, and field work on assigned problems. The course will include a field trip to the Davis Mountains and the Big Bend area of Texas, or to some other suitable area for the study of insects. Offered at intervals during the summer only.

**4312. Advanced Parasitology. Cr. 3. (1-6).**

Prerequisite: Zoology 333, 334, 436. Techniques of collecting, preserving, mounting, staining, and classifying parasites. Also assigned problems and readings. Offered on demand.

**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)

**Business Education and Secretarial Administration**

PROFESSOR SHIPLEY, ASSOCIATE PROFESSOR TERRELL,  
ASSISTANT PROFESSOR SCHICK, INSTRUCTORS  
QUICKSALL, SNOW.

**SECRETARIAL ADMINISTRATION**

Students of Secretarial Administration are urged to acquire skills in typewriting and shorthand early in their college program in order that advanced work may be devoted to courses which require these skills and knowledges.

The purpose of instruction in the department is to provide professional education and experiences rather than purely vocational training. Opportunity in the Secretarial Administration program of studies is provided for acquiring adequate skill in stenographic, machine, and secre-

tarial duties; in broad business background courses; and in obtaining a well-rounded college education.

Technical skills in stenography and office machines are offered because they are basic to office employment. However, the more ambitious student who exhibits administrative qualities continues these skills in advanced secretarial practices and obtains business work experience. The four-year program of Secretarial Administration then qualifies him to supervise or manage an office force effectively.

### For Undergraduates

#### 111. Typewriting for Personal Use. Cr. 1. (3-0).

For beginners in typewriting. General knowledge of the care and operation of the typewriter, copy work, personal and business letter writing and reports, and composition at the machine. No credit will be given for those who have had one year of typewriting in high school. Typewriter service, \$4.

#### 121. Intermediate Typewriting. Cr. 2. (3-0).

Prerequisite: one year of typewriting or 30 words per minute. Composition and typing various styles of business letters, tabulation, writing business reports, manuscripts, and rough drafts. Typewriter service, \$4.

#### 122. Advanced Typewriting. Cr. 2. (3-0).

Prerequisite: Two years of high school typewriting or Secretarial Administration 121 or 40 words per minute. Preparation of master copy for duplicators, advanced business and legal typewriting, advanced personal typewriting, and speed and accuracy development. Typewriter service, \$4.

#### 131-2. Elementary Shorthand. Cr. 3 each.

Prerequisite for 132: 1 year of high school shorthand. Theory, reading, penmanship, and simple transcription of shorthand. Secretarial Administration 132 requires the scheduling of one extra hour weekly for transcription.

#### 235. Intermediate Shorthand. Cr. 3. (3-1).

Prerequisites: Secretarial Administration 132 and 121 or equivalents. Increased accuracy and speed in reading and writing shorthand. Requires one extra hour for machine transcription weekly.

#### 236. Advanced Shorthand. Cr. 3. (3-1).

Prerequisites: Secretarial Administration 122 and 235 or equivalents. Speed in taking dictation and accuracy of transcription with stress upon correct, legible shorthand, advanced phrasing, and rapid, accurate, mailable transcriptions. One extra hour weekly for machine transcription.

#### 310. Business Comportment. Cr. 1.

A study of essential rules of conduct that promote pleasant and productive working relationships among employees within a business organization. Recognized business customs and recommended attitudes and practices for beginning employees, various work situations, employer-employee relations, and contacts with the public.

#### 338. Filing Systems, Procedure, and Practice. Cr. 3.

Prerequisite: Junior standing. Principles, procedures, and practices in filing by the following methods: alphabetic, triple-automatic, geographic, numeric, and Soundex.

### For Undergraduates and Graduates

#### 321. Office Machines. Cr. 2. (1-4).

Operation of the following adding-listing machines and calculators, both manual and electric: full-keyboard adding-listing, ten-key adding-listing; and key-driven, crank-driven, and rotary-type calculators. Machine service, \$4.

#### 331-2. Secretarial Practice. Cr. 3. (3-1).

Prerequisite: Secretarial Administration 122. Transcription from shorthand or voice-writing machine cylinders. Theory and practice in other office duties, systematizing and supervising activities. For majors in Secretarial Administration, Business Education, and Office Management. Preparation for secretarial civil service positions. One extra hour weekly for machine transcription.

#### 333. Business Correspondence. Cr. 3.

Prerequisites: English 131-2, 237-8, knowledge of typewriting. Lectures, reading, and practice. Study of characteristics of general business correspondence. Types of letters common to a wide variety of business concerns. Technique of credit letters, collection letters, adjustment letters, sales letters, and the writing problems of students discussed in personal conferences.

#### 337. Report Writing. Cr. 3.

Prerequisites: English 131-2, 237-8, knowledge of typewriting. Training in the field of report writing, including business and technical reports, as well as brief letter reports.

**421. Voice Writing and Duplicating. Cr. 2. (1-3).**

**Prerequisite:** Secretarial Administration 122. Instruction and practice in the use of the voice-writing machines. Preparing stencils and master sheets and operation of the following type duplicators: gelatin, direct-process, and the mimeograph. Machine service, \$4.

**433. Secretarial Problems and Practices. Cr. 3. (2-3).**

**Prerequisite:** Senior standing, Secretarial Administration 122. Responsibilities and duties of various types of secretaries, office supervisors or managers, and other office workers. Practice of a minimum of 75 hours under supervision in performing varied duties in an approved office or business.

**BUSINESS EDUCATION**

The four-year Business Education program of studies prepares the prospective teacher for certification in two general areas of business teaching: secretarial-bookkeeping, and social business-bookkeeping. This program provides broad general education, technical business skills, and professional techniques and practices. The student who successfully completes this program earns the Bachelor of Business Administration degree as well as the special certificate in business subjects.

Those who seek professional advancement may prepare for the Master of Business Administration degree with a major in Business Education. This graduate program consists of 30 semester hours, or of 24 semester hours and a thesis. This program is planned individually with the candidate and includes minors in any of the appropriate related fields. The program prepares the candidate for a more responsible teaching position in a secondary school or a junior college, and qualifies him for supervision and administration of a business department.

**For Undergraduates and Graduates****422. Improvement of Instruction in Bookkeeping and the Social Business Subjects. Cr. 2.**

**Prerequisites:** Acct. 245, Fin. 338. **Aims and objectives:** grade placement, achievement standards, testing, and teaching materials for Bookkeeping, Economic Geography, Business Law, and Business Arithmetic.

**423. Improvement of Instruction in Typewriting and Shorthand. Cr. 2.**

**Prerequisites:** Sec. 121, 235. **Aims and objectives:** grade placement, achievement standards, testing, and teaching materials.

**424. Improvement of Instruction in Basic Business. Cr. 2.**

**Prerequisites:** Fin. 338, Marketing 332. **Business learnings of value to all students regardless of vocational objective.** **Aims:** relation to general education, grade placement, standards, testing and teaching materials.

**425. Improvement of Instruction in Office Machines. Cr. 2.**

**Prerequisite:** Sec. 321. **Aims and objectives:** grade placement, achievement standards, testing and teaching materials.

**For Graduates****530. Objectives and Principles of Business Education. Cr. 3.**

Responsibility of the business education program to general and to vocational educational development of youth. Principles guiding the program in coordination with the general education program, curriculum organization, standards of achievement, guidance, and use of community resources. Required of business education majors.

**531. Curriculum Problems of Business Education. Cr. 3.**

Curriculum organization for general and differential curricula, grade placement, enrichment, work experience, in-school business experience, and public relations. Required of business education majors.

**532. Guidance in Business Education. Cr. 3.**

Role of the teacher and the supervisor in guiding pupils. Critical examination, selection, and administration of prognosis, diagnosis, achievement, and employment tests. Planning the occupational survey, job analysis, and the follow-up study.

**533. Supervision and Administration of Business Education. Cr. 3.**

Role of the department head in improvement of instruction. Policies and practices in teacher selection, in-service training, curriculum planning, pupil promotion, guidance, and placement.

**534. Research Seminar in Business Education. Cr. 3.**

A study of significant researches in business education. Individual class members select, organize, and pursue a research project or a thesis.

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

## Chemistry and Chemical Engineering

PROFESSORS DENNIS, CRAIG, GOODWIN, HOLCOMB, OBERG,  
SLAGLE. ASSOCIATE PROFESSOR JONES.\* ASSISTANT  
PROFESSORS BERST, DETMAN, DODGE, SOUTH-  
ALL, WATSON. INSTRUCTORS BROCK,  
HUFSTEDLER, STUART.

The Department of Chemistry and Chemical Engineering offers curricula leading to three bachelor 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 the 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 section of this catalog devoted to the Division of Graduate Studies and also in the Graduate Bulletin.

### CHEMISTRY

#### For Undergraduates

##### 141-2. General Chemistry. Cr. 4. (3-3).

Prerequisite for all other courses in chemistry. Metals and non-metals and the principles of chemistry.

##### 231. Qualitative Analysis. Cr. 3. (2-3).

Prerequisite: Chem. 141-2. The qualitative separation and detection of basic and acidic radicals with full consideration of underlying principles.

##### 232. Inorganic Chemistry. Cr. 3. (3-0).

Prerequisite: Chem. 231. A thorough consideration of those principles of chemistry which normally are not covered sufficiently in a first course.

##### 235. Hydrocarbon Chemistry. Cr. 3. (3-0).

Prerequisites: Chem. 141-2 and sophomore standing in petroleum engineering. The study of hydrocarbons with particular reference to petroleum, natural gas, and synthetic fuels.

##### 236. Analytical Chemistry. Cr. 3. (1-6).

Prerequisites: Chem. 141-2 and sophomore standing in petroleum engineering. Theory and methods of analysis of fuels, gases, petroleum products, water, and emulsions.

##### 330. The Teaching of High School Chemistry. Cr. 3. (3-0).

Application of principles of teaching to chemistry; history and aims of teaching chemistry; laboratory and class management. Selection of film, exhibit, and library material.

##### 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. Satisfies pre-medical requirements. Seniors or graduates

\* Deceased January 30, 1951.



other than chemistry majors may, with special permission, take Chem. 332 without having had Chem. 331. Requires no outside preparation.

### 336. Physical Chemistry. Cr.3. (2-3).

Prerequisites: Organic chemistry, analytical chemistry, sophomore physics, and junior standing in petroleum engineering or textile engineering. A survey of the modern concept of solids, liquids, and gases, and the laws regarding their physical and chemical behavior. Physicochemical measurements.

### 341. Organic Chemistry. Cr. 4. (3-3).

Prerequisite: Chem. 141-2. The study of the compounds of carbon as a background for courses in physiological chemistry, feeds and feeding, nutrition, etc. Primarily for students in agriculture and home economics. May be used only where a one-semester course in organic chemistry is required. Not open to majors or minors in chemistry 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).

Section I. Industrial Section. Prerequisite: Junior standing in chemistry. The compounds of carbon. Provides a thorough foundation course in organic chemistry for engineers and candidates for the Bachelor of Science Degree.

Section II. Biological Section. Prerequisites: Chem. 141-2 and 231. A course similar to Section I save that emphasis is placed on physiological aspects. Designed for candidates for the Bachelor of Arts Degree, for pre-medical students, and for those interested in biological sciences.

## For Undergraduates and Graduates

### 411-2. Chemistry Seminar. Cr. 1.

Required for all candidates for any Bachelor's Degree given by this department. Usually reserved for the senior year. Open to juniors with permission of the head of the department. May be counted for credit as often as taken.

### 421. Senior Chemistry—History of Chemistry. Cr. 2. (2-0).

Prerequisite: Consent of the instructor. A study of the development of chemistry as a science, chemical theories and biographical sketches of the persons who contributed most to the science.

### 431. Senior Chemistry—Qualitative Organic Analysis. Cr. 3. (1-6).

Prerequisite: Senior standing in chemistry. The identification of individual unknowns and the separation and identification of the components of mixtures.

### 433. Senior Chemistry—Inorganic Preparations. Cr. 3. (0-9).

Prerequisite: Senior standing in chemistry. Preparation and purification of inorganic compounds with emphasis on principles and techniques.

### 434. Senior Chemistry—Organic Preparations. Cr. 3 (0-9)

Prerequisite: Consent of instructor. The synthesis of organic materials with special attention to technique and yields.

### 436 Senior Chemistry—Biological Chemistry. Cr. 3. (2-3).

Prerequisite: Senior standing in chemistry. The chemistry of carbohydrates, proteins, liquids, enzymes, and other constituents of living systems.

### 437. Senior Chemistry—Biological Chemistry. Cr. 3. (2-3).

Prerequisite: Senior standing in chemistry. A study of biochemical processes and their regulation.

### 438. Senior Chemistry—Advanced Physical Chemistry. Cr. 3. (3-0).

Prerequisite: Senior standing in chemistry. Thermodynamics, solutions, atomic theory and valence, reaction kinetics, and other advanced topics.

### 439. Senior Chemistry—Instrumental Methods of Analysis. Cr. 3. (1-6).

Prerequisite: Senior standing in chemistry. The theory and application of the important instruments which are used for analysis in industry and research.

### 441-2. Physical Chemistry. Cr. 4. (3-3).

Prerequisites: 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 staff members and graduate students. With the consent of the head of the department a student may take this course more than once for additional credit. Every graduate student majoring in this department must take this course at least once.



**5202. The Nature of the Chemical Bond. Cr. 2. (2-0).**

Prerequisite: Chem. 5301. Modern theories of chemical bonds.

**5204. Coordination Compounds. Cr. 2. (2-0).**

Prerequisite: Chem. 5301. A study of Werner's theory and its modern modifications, interpretations, and applications.

**5301. Advanced Inorganic Chemistry. Cr. 3. (3-0).**

Prerequisite: Chem. 441-2. The periodic classification and atomic structure, the chemistry of representative elements, and other selected topics.

**5305. The Chemistry of the Less Familiar Elements. Cr. 3. (3-0).**

Prerequisite: Chem. 5301. A study of those elements not commonly included in other courses.

**5314. Advanced Analytical Chemistry. Cr. 3. (3-0).**

Prerequisite: Chem. 331-2. A 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.

**5318. Chemical Microscopy. Cr. 3. (1-6).**

Fundamental principles and applications of chemical microscopy.

**5321. Advanced Organic Chemistry. Cr. 3. (3-0).**

Prerequisite: Chem. 353-4. A survey of the principles and reactions of organic chemistry.

**5322. Organic Reactions. Cr. 3. (3-0).**

Prerequisites: Chem. 5321. A detailed study of the important reactions which are met in research and industrial processes.

**5324. Quantitative Organic Analysis. Cr. 3. (0-9).**

Prerequisite: Chem. 353-4. The quantitative estimation of elements and functional groups in organic compounds.

**5325. Selected Topics in Organic Chemistry. Cr. 3. (3-0).**

Prerequisite: Chem. 5321. Topics may vary from year to year.

**5326. Industrial Chemicals from Petroleum. Cr. 3. (3-0).**

Prerequisite or parallel: Chem. 5321. A study of the reactions and processes employed in the production of chemicals from petroleum.

**5327. Physical Organic Chemistry. Cr. 3. (3-0).**

Prerequisite: Chem. 5321 and 5342. The application of the principles of physical chemistry to the reaction kinetics and properties of organic compounds.

**5328. Mechanisms of Organic Reactions. Cr. 3. (3-0).**

Prerequisite: Chem. 5321. Modern interpretations of mechanisms and rearrangements.

**5331. Biochemical Techniques. Cr. 3. (1-6).**

Prerequisite: Chem. 436, 437. A study of various advanced biochemical techniques.

**5334. Selected Topics in Biochemistry. Cr. 3. (3-0).**

Prerequisite: Chem. 436, 437. Prerequisite or parallel: Chem. 441-2. Topics may vary from year to year.

**5335. Physical Biochemistry. Cr. 3. (3-0).**

Prerequisite: Chem. 436, 437, and 5342. The application of the principles of physical chemistry to the study of such biochemical problems as membrane permeability, membrane potentials, energy metabolism, properties of large molecules, biocatalysts, etc.

**5336. The Chemistry of Enzymes. Cr. 3. (3-0).**

Prerequisite: Chem. 436, 437, and 441-2. A study of the occurrence, preparation, kinetics, physiological functioning, and industrial applications of enzymes.

**5342. Advanced Physical Chemistry. Cr. 3. (3-0).**

Prerequisite: Chem. 441-2. An extensive review of the important topics of physical chemistry.

**5343. Colloidal Chemistry. Cr. 3. (2-3).**

Prerequisite: Chem. 5342. Theory and application of colloidal chemistry.

**5344. Kinetics of Chemical Reactions. Cr. 3. (3-0).**

Prerequisite: Chem. 5342. The rates and mechanisms of chemical reactions.

**5346. Electrochemistry. Cr. 3. (3-0).**

Prerequisite: Chem. 5342. The principles and applications of electrochemistry.

**5347. Advanced Chemical Thermodynamics. Cr. 3. (3-0).**

Prerequisite: Chem. 5342. The development of thermodynamic equations and their application to chemical systems.

**5348. 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.

**537, 538. Advanced Work in Specific Fields. Cr. 3-6.**

Prerequisites: Chem. 441-2 and graduate standing. Nature of course and amount of credit depend upon the interests of the student. All registration must be approved by the head of the department.

**631-2. Master's Thesis. Cr. 3.****731-2. Doctoral Dissertation. Cr. 3.****CHEMICAL ENGINEERING****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 the testing of fuels, lubricants, and water.

**331-2. Principles of Chemical Engineering. Cr. 3.**

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. (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. The layout of the chemical plant, selection and design of equipment, and cost estimation.

**431-2. Chemical Technology. Cr. 3.**

Prerequisites: Chem. 331-2 and Chem. 353-4. The technology of the more important inorganic and organic chemical industries, including the unit processes and unit operations involved.

**433-4. Chemical Engineering Thermodynamics. Cr. 3.**

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. Advanced Chemical Engineering. Cr. 3.**

Prerequisite or parallel: Ch.E. 331-2. Theory and problems on selected unit operation.

**438. Petroleum Refining Engineering. Cr. 3.**

Prerequisite: Ch.E. 331-2. Refining operations from the point of view of reactions involved and their control and equipment performance.

**For Graduates****531. Advanced Chemical Engineering Thermodynamics. Cr. 3.**

Prerequisites: Ch.E. 432-4 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).**

Prerequisites: 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.**

Prerequisites: 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.**

Prerequisites: 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 Special Fields. Cr. 3-6.**

Prerequisite: Graduate standing. Course and credit depends on interests of student. All registration must be approved by the head of the department. Offered on demand.

**631-2. Master's Thesis. Cr. 3.**

## Child Development and Family Relations

PROFESSOR CALLAN. ASSISTANT PROFESSOR GIFFORD.  
INSTRUCTOR CROZIER.

Students are prepared through the study of the development of the child in infancy and early childhood for vocations of home making and teaching home economics; and major students are equipped to direct nursery schools. The nursery school provides a laboratory for student observation and participation. Parent education and family relations are integral parts of the child development program.

### For Undergraduates

**131. Introduction 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. Development in Infancy. Cr. 3.**

Prerequisite or parallel: Zool. 235-6. Psy. 230 or Ed. 230. Development of the child during the pre-natal period and infancy.

**431. Development of Learning in Young Children. Cr. 3. (2-3).**

Prerequisite: Ch.D. 131. Psy. 230 or Ed. 230. Growth in physical, mental, social and emotional areas. Nursery school used as laboratory. Required of Elementary Education majors.

### For Undergraduates and Graduates

When used for graduate credit these courses must be properly petitioned for and additional work or an additional problem is required.

**432. Nursery School Education. Cr. 3. (2-3).**

Prerequisite: Ch.D. 431; prerequisite or parallel: Nutr. 333 or 334. Nursery school administration and organization. Methods of teaching nursery school. Nursery school used as laboratory.

**433. Family Relations. Cr. 3.**

Prerequisite: Phy. 230 or Ed. 230 and junior standing. Factors which contribute to successful family life in mate selection and marriage adjustment.

**435. Student Teaching in Nursery School. Cr. 3. (1-6).**

Prerequisite: Ch.D. 431; prerequisite or parallel: Nutr. 333 or 334. Nursery school observation and teaching the nursery school.

## Civil Engineering

PROFESSORS MURDOUGH, ADAMS, McREE. ASSOCIATE PROFESSORS DECKER, HARDING, WHETSTONE. ASSISTANT PROFESSORS BOWDEN, OVERBY. INSTRUCTORS GILBERT, ODLE, PARRISH.

The courses offered by the department fall into two classes: service courses, such as surveying, applied mechanics, and fluid mechanics, which are required in many engineering curricula; and courses which serve students majoring in civil engineering, and in closely allied fields.

The curriculum in civil engineering follows the pattern developed

through usage by engineering colleges throughout the nation, and is designed to develop in the student the basic fundamentals of engineering as particularly applied to civil engineering. Opportunities are offered for some specialization in highway engineering, in structures or in sanitary engineering.

Courses which may be used for graduate credit:

In addition to all courses numbered in the 500 series, courses in this department which may be taken for graduate credit are: 3311, 411, 423, 424, 425, 431, 432, 433, 434, 437, 438, 439, 4312, 4313, 4314, if properly petitioned for and provided additional work or an added problem is done in each course numbered in the 300 or 400 series which otherwise carry no graduate credit.

**231-2. Plane Surveying. Cr. 3. (2-3).**

Prerequisite: Math. 131. The use and adjustment of surveying instruments; plane surveys with transit and tape; profiles and cross sections; computations from field notes; the mathematics of curves as applied to railroads and highways, with field practice; earthworks, mass diagrams.

**310. Testing Laboratory. Cr. 1. (0-3).**

Prerequisite: Registration in C.E. 333. Standard tests and reports on steel, iron, and wood specimens; the physical properties of cement and concrete.

**311. Highway Laboratory. Cr. 1. (0-3).**

Prerequisite: Junior engineering standing. Standard tests of road building materials.

**312. Fluid Mechanics Laboratory. Cr. 1. (0-3).**

Prerequisite: Registration in C.E. 339.

**320. Structures. Cr. 2. (2-2).**

Prerequisite: C.E. 331. Graphic statics; shear, moment and stresses in framed structures by graphical and analytical methods.

**330. Structures. Cr. 3.**

Prerequisites: 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.

**331. Applied Mechanics-Statistics. 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.

**332. Applied Mechanics-Kinematics and Kinetics. Cr. 3.**

Prerequisite: C.E. 331. Motion of the particle and of rigid bodies; kinetics of translation, rotation, and plane motion; work, energy; impulse, momentum.

**333. Applied Mechanics-Strength of Materials. Cr. 3.**

Prerequisite: C.E. 331. Stresses and strains in elastic bodies subjected 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.**

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.**

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.

**3310. Municipal Sanitation. Cr. 3. (2-2).**

Prerequisite: Junior engineering standing. General principles of sanitation. Microscopy of water and sewage.

**3311. Hydraulic Machinery. Cr. 3.**

Prerequisites: C.E. 332 and C.E. 339. Theory and performance of centrifugal pumps.

impulse and reaction turbines, and other hydraulic machinery.

**411. Soil Mechanics and Foundations Laboratory. Cr. 1. (0-3).**

Prerequisites: C.E. 4312, or parallel. Laboratory tests of soil as an engineering material. May be taken in lieu of C.E. 311.

**423. Economics of Highway Design. Cr. 2. (0-6).**

Prerequisite: C.E. 335. Economics of design applied to various highway projects and problems.

**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.

**426. Municipal Sanitation. Cr. 2.**

Prerequisite: Junior standing or consent of instructor. General principles of sanitation as applied to the community.

**431. Reinforced Concrete. Cr. 3.**

Prerequisite: C. E. 333. Study and application of the theory of reinforced concrete design.

**432. Reinforced Concrete. Cr. 2.**

Prerequisite: C. E. 431. Continuation of 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).**

Prerequisites: C.E. 339. Consumption of water; quality of water; sources of supply—streams, lakes, impounding reservoirs, wells; theory of treatment—coagulation, softening, filtration, recarbonation, aeration, chlorination; laboratory work in the chemistry of water.

**438. Sewerage and Sewage Treatment. Cr. 3. (2-3).**

Prerequisites: C.E. 339 and C.E. 431. 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.

**4310. Airplane Structures. Cr. 3.**

Prerequisite: C.E. 333. Stress analysis and design of elastic materials as applied to airplane structures.

**4312. Soil Mechanics and Foundations. Cr. 3.**

Prerequisite: C.E. 333. Physical and mechanical properties of soils; theories of stress, settlement, displacement and consolidation; stability of earth masses; structural applications to embankments and retaining walls; bearing capacity and settlement of structures.

**4313. Water Purification. Cr. 3. (1-6).**

Prerequisite: Registration in C.E. 437. The design of structures used in the collection, treatment, and distribution of public water supplies.

**4314. Sewage Treatment. Cr. 3. (1-6).**

Prerequisite: Registration in C.E. 438. The design of structures employed in the collection of sanitary and storm sewage, the treatment of sewage, and its ultimate disposal.

**411-2. Engineering Seminar. Cr. 1.**

Credit for this course may be given as often as successfully repeated. Investigation and study of engineering problems of special interest and value to students taking the course. Work is of the nature of research. May be taken only with permission of head of the department. Offered only to students of senior standing.

## Clothing and Textiles

PROFESSOR ERWIN. ASSOCIATE PROFESSOR BUSTER.  
ASSISTANT PROFESSORS KINCHEN, WRIGHT.  
INSTRUCTOR McMURRAY.

The Department of Clothing and Textiles endeavors to train in a thorough understanding of basic principles and concepts in the selection, use and care of fabrics and making them into garments and household furnishings according to standards consistent with time, money and home energy available. Students who wish to teach should choose electives in economics education. To enter such professions as merchandising and dress designing electives should form a continuity approved by the Head of the Department.

### For Undergraduates

#### 131. Basic Textiles. Cr. 3. (2-3).

Problems in selection and maintenance of fabrics, ready-made clothing and home furnishings. Judging fabric quality; evaluating consumer literature, terms, labels, laws and advertising.

#### 132. Basic Clothing Problems. Cr. 3. (1-6).

Use of the machine and commercial patterns. Making a dress and blouse. Planning attractive costumes.

#### 135. Fashion in Dress. Cr. 3.

Assembling garments and accessories suitable for different occasions and personalities. Psychology of dress selection. Re-styling and fitting ready-mades. Principles of good shopping.

#### 136. Slip Covers and Upholstery. Cr. 3. (2-3).

Construction of slip covers. Refinishing and upholstering furniture. Especially for non-majors and homemakers.

#### 232. Dressmaking. Cr. 3. (1-6).

Prerequisites: Cloth. 131, 132; A.A. 231. Principles of dressmaking applied to a wool coat and a silk or rayon dress. Emphasis on precision and management. Considerable attention to pattern alteration, fitting, pressing and finishes of self material.

#### 233. Clothing Demonstrations. Cr. 3.

Prerequisite: Sophomore standing. Demonstrations and discussions by instructor and students without laboratory to develop the theory and principles of dressmaking. Emphasis on appreciation of standards and a planned procedure before beginning to sew.

#### 321. Children's Clothing. Cr. 2. (1-3).

Prerequisite: Cloth. 132. Selecting, constructing and assembling wardrobes suitable for infants and children of all ages. Offered in alternate years.

#### 333. Pattern Designing. Cr. 3. (1-6).

Prerequisite: Cloth. 131, 232. Principles of fitting and special needs for common figure difficulties. Corrected patterns used as a foundation pattern in designing and cutting free-hand patterns. Practical methods of designing details in blouses, sleeves, skirts, and collars. For teachers, homemakers, prospective fashion designers.

#### 335. Weaving Crafts. Cr. 3. (1-6).

Prerequisite or parallel: Cloth. 131 and A.A. 131. Hand weaving. Preparing warp, threading loom, dyeing yarn for luncheon sets, drapery, rugs, upholstery, and coatings. Relation of primitive textile industry to modern weaving.

#### 336. Dress Decoration. Cr. 3. (2-3).

Prerequisite: Cloth. 132. Techniques in decorative details for garments and accessories. Machine adjustments and attachments. Organization of work, pressing and short cuts consistent with professional results.

#### 436. Textile Merchandising. Cr. 3. (2-3).

Prerequisite: Junior standing. Study of factors influencing values in merchandising that consumers want and retailers look for in buying. Identification of fibers, fabrics, qualities, and brands of piece goods; care, use, and display of merchandise. Familiarity with technical terms, current fashion trends, labels, legislation. Especially for marketing and clothing majors. Offered in alternate years.

### For Undergraduates and Graduates

When used for graduate credit these courses must be properly petitioned for and an added problem is required.

#### 311. Historic Textiles. Cr. 1.

Prerequisite: Clothing, textiles, history, or art satisfactory to the instructor. Study

of tapestries, Oriental rugs, Paisley shawls, Navajo blankets and other historic and contemporary textiles.

331. Tailoring. Cr. 3. (1-6).

Prerequisite: Cloth. 232. Techniques of constructing and pressing tailored garments. Time and cost studies.

332. Advanced Dress Design. Cr. 3. (1-6).

Prerequisites: Cloth. 232, 333. Construction and designing of garments by modeling on a dress form, with some adaptations from commercial and flat-patterns. Emphasis on absolute perfection of fit and sewing, and the use of unusual and textured materials.

334. Family Clothing Problems. Cr. 3. (2-3).

Prerequisites: Cloth. 232 and Eco. 231. Developing a spending pattern to satisfy the needs of the family based on the family income. Assembling and maintaining wardrobes consistent with the needs and desires of each age group. Selecting quality grades in relation to use. Application of modern theories to the construction of a child's garment. Speed problems.

336. Textile Appreciation. Cr. 3.

Shopping for yard goods and ready-made clothing; recent trends and new developments in textiles. Emphasis on recognizing quality, on evaluating real worth of fabrics in terms of cost, and on developing a philosophy of buying and using textiles. Wearability and performance studies included.

431. Textile Economics. Cr. 3. (2-3).

Prerequisites: Cloth. 131 and Eco. 231. A study of the range in quality of such household textiles as bedding and floor coverings and of other fabrics. Methods of selecting the quality suited to specific needs. Care and maintenance of household articles and clothing. Interpretation of specifications, standards, labels, trade-marks, performance tests and existing laws concerning the sale of certain commodities. Evaluation of consumer literature.

432. Advanced Textiles. Cr. 3. (2-3).

Prerequisites: Cloth. 131, economics and senior standing in home economics. Technical information necessary for thorough knowledge of textile buying. Effect of fiber content, construction, and finish on the quality, use, serviceability and cost of fabrics. Recent trends in textiles, research studies and specific problems in the field of clothing and textiles. Practice in standard methods of testing textiles. Offered in alternate years.

433. History of Costume. Cr. 3.

Prerequisites: Advanced standing and history courses satisfactory to instructor. A study of historic and national costumes with their contribution to the development of dress. Special emphasis on historic and modern fashion influences. Offered in alternate years.

435. Home Furnishings. Cr. 3. (1-6).

Prerequisites: Senior standing, Eco. 231, Cloth. 232, and A.A. 331, or parallel. Purchase, use, care, and construction of household linens, curtains, rugs, upholstery, and slip covers. Refinishing furniture.

### For Graduates

531. Advanced Garment Fitting. Cr. 3. (1-6).

Prerequisite: One advanced course in clothing. Advanced study of pattern making and alteration. Techniques, principles, and high standards for fitting. Methods of fitting oneself, re-styling old garments, altering ready-to-wear. Classroom methods of handling these problems. Offered in alternate summers.

532-3. Special Problems in Clothing. Cr. 3.

Prerequisite: Advanced clothing courses approved by head of department. Study and discussion of current problems in clothing and textiles of importance in the personal and professional advancement of class members. Independent projects in construction, teaching, purchasing, using or distributing clothing and textiles.

631-2. Thesis.

## Dairy Manufactures

PROFESSORS WILLINGHAM, HARMON. ASSOCIATE PROFESSOR  
TINNEY. INSTRUCTOR CARDWELL.

The Department of Dairy Manufactures offers courses in the fundamentals of the science of dairying. Special technical courses are offered which prepare the student to become a general dairy plant operator; dairy food and sanitary inspector; dairy products salesman; and technical dairy laboratory control operator. The curriculum is so arranged that electives may be pursued in other fields closely allied with the dairy in-



dustry. The department maintains a dairy plant with modern equipment for laboratory instruction in market milk, cheese, butter, ice cream, condensed milk, and laboratory control of dairy products. Complete laboratory facilities are maintained for making analysis of dairy products. Individuals within the State of Texas may avail themselves of this service at the actual cost of performing the tests.

#### For Undergraduates

##### 131. Principles of Dairying. Cr. 3. (2-3).

A general survey of the field of dairying, composition of milk, milk analysis, milk production and processing.

##### 222. The Dairy Industries. Cr. 2. (2-0).

Prerequisite: D.M. 131. Developing of the dairying industries, relationship to agriculture, promotion, policies, regulations.

#### For Undergraduates and Graduates

##### 323. Judging Dairy Products. Cr. 2. (1-3).

Commercial grades and classification of dairy products; practice in judging milk, butter, cheese, and ice cream; student contests.

##### 333. Domestic Dairying. Cr. 3. (2-3).

For Home Economics students. Food value, production and uses of dairy products, with emphasis on quality; testing and scoring of milk, butter, cheese, and ice cream.

##### 334. Fundamentals of Dairy Science. Cr. 3. (2-3).

Prerequisites: D.M. 131, Chem. 142. Chemical and physical principles of basic importance in the manufacture of dairy products.

##### 335. Dairy Bacteriology. Cr. 3. (2-3).

Prerequisites: D.M. 131, Bact. 231. Study of organisms in milk and dairy products, methods of control.

##### 337. Dairy Plant Equipment. Cr. 3. (2-3).

Prerequisite: D.M. 222. 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.M. 131, Chem. 142. Chemical and physical tests used in the manufacture of dairy products; laboratory control methods for the dairy plant.

##### 341. Market Milk. Cr. 4. (3-3).

Prerequisites: D.M. 131, Bact. 231. The fluid milk industry; milk and public health; city, state, and federal regulations and ordinances; production, transportation, handling, retailing, wholesaling of milk; cost studies; processing; field trips.

##### 411. Dairy Seminar. Cr. 1. (1-0).

Prerequisite: Senior standing in the department. A review of scientific literature, papers and reports, class discussion.

##### 412. Starters and Cultured Milk. Cr. 1. (0-3).

Prerequisite: D.M. 335. Bacteriology of starters and fermented milks; technique of preparing cultures for use in dairy manufacturing operations.

##### 413. Advanced Judging of Dairy Products. Cr. 1. (0-3).

Prerequisite: D.M. 323. Commercial grades and classification of dairy products; practice in judging milk, butter, cheese and ice cream; student contests.

##### 422. Condensed and Powdered Milk. Cr. 2. (2-0).

Prerequisite: D.M. 222. The manufacture of condensed milk and milk powder, malted milk, milk casein, commercial buttermilk and whey, supplemented by field trips.

##### 430. Advanced Problems in Fundamentals of Dairy Science. Cr. 3. (2-3).

Prerequisites: D.M. 131, D.M. 334. Investigation of advanced problems of chemical and physical principles related to the production of milk and the processing of dairy products.

##### 431. Cheese Making. Cr. 3. (1-6).

Prerequisites: D.M. 131, Bact. 231. Foreign and domestic varieties of plain and fancy cheese, manufacture of soft cheese and the more common varieties of semi-hard and hard cheeses, required field trip.

##### 432. Dairy Industry Problems. Cr. 3. (3-0).

Prerequisite: 21 hours in the department and consent of head of department. Investigation of special problems in the field of dairy industry in which the student has a special interest.



**433. Ice Cream Making. Cr. 3. (2-3).**

Prerequisite: D.M. 131. Problems of the butter industry, ingredients, standardization and calculation of mixes, processing; cost studies, supplemented by field trips.

**434. Buttermaking. Cr. 3. (2-3).**

Prerequisites: D.M. 131, Bact. 231. Problems of the butter industry, manufacture of sweet and sour cream, plant practice in the manufacture of butter, supplemented by field trips.

**435. Dairy and Food Inspection. Cr. 3. (2-3).**

Prerequisite: D.M. 222. Municipal, state and federal dairy and food regulations; methods used in inspection in field and laboratory; analysis of dairy and food products; required field trip.

**437. Creamery Management and Merchandising. Cr. 3. (3-0).**

Prerequisite: D.M. 222. Organization and control of dairy plants, duties of plant manager; plant plans and construction, ethics and methods of merchandising, required field trip.

**438. Advanced Dairy Bacteriology. Cr. 3. (2-3).**

Prerequisites: D.M. 131, Bact. 231, D.M. 335. Advanced study of organisms common in dairy products, special types of organisms, methods of control, use of special cultures of organisms in the manufacture of dairy products.

**For Graduates****512. Advanced Dairy Products Quality Control. Cr. 1. (0-3).**

Prerequisite: Graduate standing in agriculture. Judging quality in dairy products; discussion of problems relative to quality control, especially milk, butter, cream cheese and ice cream.

**531, 532. Dairy Manufacturing Problems. Cr. 3. (0-9).**

Prerequisite: Graduate standing in agriculture and consent of head of department. Scientific research in one of the following fields in the dairy industry: market milk, butter, cheese, ice cream, dairy bacteriology, condensed milk or milk powder.

**533, 534. Dairy Manufacturing Problems. Cr. 3. (0-9).**

Prerequisite: Graduate standing in agriculture and consent of head of department. Selection of a problem in dairy manufacturing industries; outlining of problem, review of available literature, securing data, and compilation of results.

**535, 536. Dairy Bacteriology Research. Cr. 3. (0-9).**

Prerequisite: Graduate standing, consent of head of department. Scientific research in field of dairy bacteriology as related to a specific field of processing, selection of problem, and a thorough investigation and report of the problem.

**631-2. Thesis.****Economics**

PROFESSOR WIESEN. ASSOCIATE PROFESSORS ANDERSON, CLOVER. ASSISTANT PROFESSORS ALLDREDGE, HARDING, MOORE,\* ROUSE. INSTRUCTOR PERSONS.

The purpose of the courses in economics is to provide a general training or background for students in specialized professional or vocational fields and for those desiring a cultural training in the foundations of our economic institutions, ideas, and policies. Specialized curricula are available for those interested in public administration or international trade. Generalized courses of study are provided to meet the need of those interested in a broadened understanding of the organization and practices of private business and its relations to government policy as a basis of further training in particular lines of business activity. All major study problems are flexible enough to permit a wide selection of courses in other departments of the division and college.

**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.

\* On leave.

**233. Aviation I. Cr. 3.**

Aviation consisting of ground school instruction and flight training leading to private license from Civil Aeronautics Administration. There will be a maximum of 50 hours of ground school instruction and a maximum of 20 hours dual and 25 hours of solo flight instruction.

**234. Aviation II. Cr. 3.**

Prerequisite: A certified copy of commercial pilot's license and proper medical certificate. Advanced aviation consisting of ground school instruction and flight training to a flight instructor rating. There will be a maximum of 40 hours of ground school instruction at 70 cents per hour and a maximum of 25 hours dual time at \$11 per hour and 10 hours solo flight at \$8 per hour.

**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 in the world order.

**For Undergraduates and Graduates****331. Intermediate Economic Principles. Cr. 3.**

Prerequisite: Economics 231-2. A study of the operation of the modern economic system. Primary consideration is given to the determination of prices of products and productive agents under conditions of competition, imperfect competition, and monopoly.

**332. Public Utility Economics. Cr. 3.**

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; international market studies.

**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: 12 hours in economics. A study of national income concepts 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.

**3313. Consumer Economics. Cr. 3.**

Prerequisite: 6 hours of 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.

**432. Foreign Market Surveys. Cr. 3.**

Prerequisite: Economics 231-2. Intensive study of foreign markets which are of particular significance to the United States. For international trade majors only.

**433. International Economic Relations. Cr. 3.**

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.

**434. Air Transportation. Cr. 3.**

Prerequisites: 6 hours of economic principles and Marketing 332. A course devoted exclusively to air transportation, including economic characteristics of the air transportation industry, regulation, types of service, rates for persons and property, labor relations, and its development.

**435. Transportation Economics. Cr. 3.**

Prerequisites: Economics 231-2 and Finance 331. Development of transportation system, 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.

**438. Research in Economics and Business. Cr. 3.**

Prerequisite: 3 hours of statistics. Research methods used in the field. A definite problem will be undertaken for actual experience on the part of students.

**4310. Advanced Economic Principles. Cr. 3.**

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.

**4311. 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.

**4312. Distribution Theory. Cr. 3.**

Prerequisite: 12 hours in economics. Consideration of significant elements in the theory of Profits, Wages, Capital and Interest, and Rent.

**For Graduates****531. Economic Research. Cr. 3.**

Prerequisite: Graduate standing. Solution and presentation of an approved problem involving individual research in the field of economics and business.

**532. Seminar in Current Economic Trends. Cr. 3.**

Prerequisite: Graduate standing and 12 hours of economics.

**533. Seminar in Recent Economic Theory. Cr. 3.**

Prerequisite: Graduate standing and 12 hours of economics.

**534. Seminar in Public Finance. Cr. 3.**

Prerequisite: Graduate standing and 12 hours of economics including Economics 333 or 334.

**535. Readings in Economics. Cr. 3.**

Prerequisite: Graduate standing and 12 hours of economics.

**631-2. Master's Thesis. Cr. 6.****Education and Philosophy**

PROFESSORS CARROLL, BARNETT, GARLIN, JACKSON. ASSOCIATE PROFESSORS COOPER, MECHAM, MURRAY. ASSISTANT PROFESSORS DAVIDSON, LITTLE, LIVINGSTON, McDONALD.\* INSTRUCTORS BETTENCOURT, EDWARDS, HARTSELL.

The Professional Education Curriculum is based upon the Professional Education Core of courses totaling 36 units and upon the five Broad Areas, all constituting either required or elective courses, supporting competence of professional education personnel. These Broad Area courses

include the Communicative Arts, the Basic Social Sciences, the Basic Science Arts, the Fine and Practical Arts, and Bases for Healthful Living. The required Professional Education Core courses include Education 130, 131, 230, 231, 330, 333 or 334, 335 or 336, 430, 431 or 432, 433 or 434, 435, and Educational Psychology 331 or 335. Students preparing for elementary school teaching will complete 333, 335, 431, 433, and Educational Psychology 331. Students preparing for secondary school teaching will complete Education 334, 336, 432, 434, and Educational Psychology 335. A more detailed statement concerning the Degree of Bachelor of Science in Education, together with the required and suggested curriculum schedules, are contained in a preceding section of this catalog under the general heading of "Division of Arts and Sciences." For requirements on certification see Appendix B.

In addition to the courses listed below, certain others, particularly in methods, may be used as courses in education. These others may be found in the various departments of the college. For example, English 3310, "The Teaching of English in the Secondary School," is described under the Department of English.

\* On leave.

## EDUCATION

### 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.

#### \*131. Personal Growth in Education. Cr. 3.

Personality development, career planning and service concepts in a professional career. Continuum—observation of teaching. Testing materials and tests scoring—\$2.00.

#### 230. Educational Psychology. Cr. 3.

Prerequisite: Sophomore classification. Psychological principles as basic knowledge in professional education. 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.

#### 431. Student Observation and Teaching in the Elementary School. Cr. 3.

Prerequisite: Upper division classification, 18 hours in education and educational psychology, including 6 hours in elementary education or consent of department. Advanced stage of the continuum in observation of 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. Curriculum Practicum in Elementary Education. Cr. 3.

Prerequisite: Upper division classification, 18 hours in education and educational psychology, including 6 hours in elementary education 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. Curriculum Practicum in Secondary Education. Cr. 3.

Prerequisite: Upper division classification, 18 hours in education and educational psychology, including 6 hours in secondary education 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 co-operating in the total 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.

**3310. 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.

**3311. Reading Development in the 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.

**3314. Secondary School Organization and Administration. Cr. 3.**

Prerequisite: Upper division classification, including one course in secondary education. Relationship of secondary schools to American democracy.

**3315. Audio-Visual Education. Cr. 3.**

Prerequisite: Upper division classification, including one course in elementary or secondary education. Reviews procurement and distribution, emphasizes utilization of audio-visual resources including materials, equipment, and personnel.

**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. Bases and techniques of appraisal, tests, polls, measurement, date 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. 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. 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. Principles, planning, organization, and techniques of supervision and curriculum development in both secondary and elementary education.

**439. Methods of Teaching Speech. Cr. 3.**

Formerly Speech 421. Prerequisite: 20 semester hours of speech, 9 semester hours of education. Methods of teaching speech. Review of the areas of speech. A survey of texts in speech. Preparation of syllabi. May also be taken as Speech 439.

**4310. Advanced Stage Directing Methods. Cr. 3. (2-3).**

Formerly Speech 423. Prerequisite: Junior classification; 18 semester hours in speech, including Speech 231-2 or equivalent. A study and analysis of the functions of the director as related to the principles of play production. Knowledge of the styles, conventions, and techniques of dramatic production as evidenced by student direction of representative plays. May also be taken as Speech 4310.

**4311. Advanced Stage Directing Methods. Cr. 3. (2-3).**

Continuation of Education 4310. May also be taken as Speech 4311.

**4312. Elementary School Organization and Administration. Cr. 3.**

Prerequisite: Upper division classification. The responsibilities of the elementary school personnel in the administration, supervision, and curriculum development for the elementary school.

**4314. Speech Pathology. Cr. 3.**

Prerequisite: Education 4318, Physics 137-8, Zoology 135-6, or permission of Head of Speech Department. Study of causes, symptoms, and diagnosis of major disorders of speech. Readings in current theories and recent experimental work. Practical work in the field by special arrangement. May also be taken as Speech 4314.

**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.

**4318. Speech Correction Methods. Cr.3. (3-1).**

Formerly Speech 432. Prerequisite: Junior classification. A general survey of the speech correction field and classification of common speech disorders. Study of the nature and development of speech, including structure and controls of speech mechanism and the science of phonetics; emphasis on classification of speech disorders, fundamental causes and basic problems of the field. Time for observation in the clinic required. May also be taken as Speech 4318.

**4319. Speech Correction Methods. Cr. 3.**

Formerly Speech 433. Prerequisite: Education 4318. A background study of the causes and therapies of common speech disorders. Observation of hearing tests. Supervised work with cases in the Speech Clinic. May also be taken as Speech 4319.

**4320 and 4321. Supervised Clinical Practice in Speech Correction.**

Cr. 3 each.

Each credit hour requires 35 laboratory hours. Prerequisite: Education 4318, concurrent registration in 4319, or by permission of Head of Speech Department. Required of teachers desiring special certificate for speech correction. (May be taken as 4220, 4221, or 4222 for two hours credit each semester.) May also be taken as Speech 4320 and 4321, or 4220, 4221 and 4222.

**For Graduates****531. 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.

**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 curriculums, functions of administration. Study of master schedule, personnel, finance, and related aspects of organization. Emphasis on sharing processes with community.

**538. Advanced Audio-Visual Education. Cr. 3.**

Prerequisite: Graduate classification, 18 hours in education and educational psychology, approval of the education department. Analyses procurement, distribution, and utilization and audio-visual materials and equipment. Special emphasis on preparation of personnel and development of physical facilities.



**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.

**5310. Audio-Visual Workshop. Cr. 3.**

Prerequisite: Graduate classification, 18 hours in education and educational psychology, approval of the education department. Emphasis on real problems in audio-visual work including the machinery of procurement and distribution. Preparation of selected audio-visual materials. Integration with a total curriculum development program.

**5311. Applied Educational Research. Cr. 3.**

Prerequisite: Graduate classification, 18 hours in education and educational psychology, approval of the education department. Emphasis on the working out of a real research problem prepared for and selected in Education 531 (Educational Research). The research reports prepared by students in this course are compiled into a volume for publication following the conclusion of the course. Each student desiring to do so, subject to approval of his report, may have it included by payment of \$10 for the first 25 pages and 50 cents for each additional page.

**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 elementary school and its relationship to the curriculum development program.

**5314. Advanced Curriculum Workshop. 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.

**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.

**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.

**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. Discussion analyses 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 this 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 edu-

cation and approval by faculty committee 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. Discussion 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 discussion 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.

**5360. 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 total audio-visual education programs for variety of school systems and intermediate service agencies.

**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.

**631-2. Education Thesis Seminar. Cr. 3 each.**

Selection of and work upon an action research problem or a course research problem. Prior registration required of those following the Master's thesis degree plan.

**731-2. Education Dissertation Seminar. Cr. 3 each.**

Selection of and intensive work upon a dissertation problem involving a significant amount of independent research. Required by those qualified candidates for the Ed.D. or the Ph.D. degree in Education.

## EDUCATIONAL PSYCHOLOGY

### For Undergraduates and Graduates

**331. Child Psychology. Cr. 3.**

Prerequisite: Upper division classification. Social behavior and development, from early childhood to adolescence, in living and learning as related to physical, mental and emotional maturation and readiness levels. Continuum—observation of teaching in the elementary school.

**333. Statistical Methods. Cr. 3.**

Prerequisite: 6 semester hours of educational psychology. Application of statistical methods to educational 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.

**335. Adolescent Psychology. Cr. 3.**

Prerequisite: Upper division classification. Social behavior and development from early adolescence to maturity, in living and learning as related to physical, mental and emotional growth and adjustment. Guidance emphasis. Continuum—observation in teaching in the secondary school.

**337. Introduction to Counseling and Guidance. Cr. 3.**

Prerequisite: 6 semester hours of educational psychology. A survey of the basic principles, techniques and procedures as applied to educational, vocational and personal counseling. (This course was formerly Education 336).

**431. Tests and Measurements. Cr. 3.**

Prerequisite: Educational Psychology 333. Instruction and supervised practice in the administration and scoring of individual and group intelligence tests and various tests of achievement, aptitudes and personality.

**433. Mental Hygiene: The Psychology of Personal Adjustment. Cr. 3.**

Prerequisite: Educational Psychology 231. The application of mental hygiene principles which promote adequate individual adjustment and group participation in daily life situations of the family, school, and community.



**For Graduates****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, measurement, personality are reviewed.

**531. Introduction to Projective Techniques. Cr. 3.**

Prerequisite: Educational Psychology 431. Review of the development of projective techniques. Intensive study and administration of specific projective tests.

**533. Experimental Child Psychology. Cr. 3.**

Prerequisite: Graduate classification and 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: Educational Psychology 431. Instruction and practice in administering the Binet Test and the Wechsler-Bellevue Test. (This course was formerly Psychology 530.)

**535. Introduction to the Rorschach Test. Cr. 3.**

Prerequisite: 12 advanced semester hours in educational psychology. Technique of administration, scoring, and fundamentals of interpretation of normal Rorschach records. Review of literature on use of the Rorschach in the clinical situation.

**537. Advanced Statistical Methods. Cr. 3.**

Prerequisite: Educational Psychology 333. 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.

**539. Vocational Information. Cr. 3.**

Prerequisite: Educational Psychology 337. The sources, techniques of collecting, classifying and using educational, occupational and vocational information necessary in counseling.

**5310-11. Practicum in Techniques of Counseling and Guidance. Cr. 3 each.**

Prerequisite: Educational Psychology 337 and 431. Methods of vocational, educational and personal counseling approached through case histories, observation, and interviews. Methods of counseling, directive and nondirective.

**5312-13. Practicum in Advanced Psychological Testing. Cr. 3 each.**

Prerequisite: Educational Psychology 5311. The interviewing of students and clients, the selecting of appropriate tests, administering and interpreting tests, reporting results and recommending remedial procedures.

**5314. 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. Discussion analyses of the application of the results of psychological research to problems in the field of professional education.

**5315. Seminar in Counseling and Guidance. Cr. 3.**

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for this seminar. Recent developments and current problems in vocational, educational and personal guidance in various types of agencies with particular reference to the field of professional education.

**560-1. Internship in Counseling and Guidance. Cr. 6 each.**

Prerequisite: Educational Psychology 5313. Internship, consisting of counseling and guidance. Supervised work in one or more school systems, or other approved agencies engaged in professional psychological services.

**PHILOSOPHY**

Students may major or minor in philosophy. Minimum requirements for the major are 24 semester hours; the minimum for the minor is 18 semester hours. By special permission, the following courses in other fields may be applied on the major in philosophy: Government 433 and 434; Psychology 433 and 434.

**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.

## Electrical Engineering

PROFESSORS BULLEN, SMITH. ASSOCIATE PROFESSORS BENNETT,\* HOUSTON. ASSISTANT PROFESSORS MINTER, SPUHLER, STENIS. INSTRUCTORS HARMAN, LEE, LILLY, WADE.

Electrical engineering is one of the newest branches of engineering. The branch has developed so rapidly, and the applications of electricity have become so broad, that many subdivisions in electrical engineering now exist, offering opportunity and vocations in a variety of engineering endeavors. Graduates in electrical engineering find employment in such fields as manufacturing, public utilities, business, contracting, sales, research, teaching, design, construction, application, transportation, illumination, and communication.

Specialization in any of these fields usually follows graduation. Some degree of specialization is provided in the senior year by the offer of two options, the Communications Option and the Power Option. The purpose of the course is to give comprehensive training in the principles of electricity required for a thorough understanding of electrical circuits, apparatus, and machinery.

Laboratories are equipped with the latest types of radio, electronics equipment, and machines. Experimental verification of the theory studied in the classroom is carried out in the laboratory. The curriculum is broadened by the inclusion of courses in chemical, civil, industrial and mechanical engineering, in addition to the course in electrical engineering.

**For Undergraduates****221-2. Electrical Engineering Laboratory. Cr. 2. (0-6).**

Prerequisite: Registration in E.E. 231-2. A laboratory course to accompany E.E. 231-2. Three hours per week is assembled and 3 hours nonassembled.

\* On Leave.

**231-2. Principles of Electrical Engineering. Cr. 3.**

Prerequisite: Parallel enrollment in calculus. Lectures, recitations, and problems on the fundamental principles of electric, magnetic, and dielectric circuits. Magnetic properties of iron and steel. Induced and generated electromotive forces. Forces on conductors. Electric and magnetic fields. Conduction in solids and liquids.

**335. Wiring and Illumination. Cr. 3.**

Prerequisite: Math. 132, 6 semester hours of physics. Standard methods of wiring circuits; the general theory and modern methods of illumination. For architectural students.

**412-13. Electrical Engineering Laboratory. Cr. 1. (0-3).**

Prerequisite: Registration in E.E. 426-7 or 438-9. For civil, chemical, industrial, mechanical, and textile engineering students.

**426-27. Elements of Electrical Engineering. Cr. 2.**

Prerequisite: Phys. 235, Math. 251. Recitations and problems dealing with the elementary principles of direct and alternating current circuits and machinery. For civil, chemical, and textile engineering students.

**438-9. Elements of Electrical Engineering. Cr. 3.**

Prerequisite: Phys. 235, Math. 251. Recitations and problems dealing with the principles of direct and alternating current circuits and machinery. For industrial, mechanical, and petroleum engineering students.

**For Undergraduates and Graduates****322. Alternating Current Circuits Laboratory. Cr. 2. (0-6).**

Prerequisite: Registration in E.E. 332. A laboratory course to accompany E.E. 332. Three hours per week of the laboratory in assembled and 3 hours nonassembled.

**323. Electronics Laboratory. Cr. 2. (0-6).**

Prerequisite: Registration in E.E. 325. A laboratory course to accompany E.E. 325. A laboratory study of the operating characteristics of representative types of modern vacuum tubes, both radio and industrial types. Three hours per week of the laboratory is assembled and three hours non-assembled.

**324. Communications Circuits Laboratory. Cr. 2. (0-6).**

Prerequisite: Registration in E.E. 334. A laboratory course to accompany E.E. 334. Three hours per week of the laboratory is assembled and three hours non-assembled.

**325. Electronics. Cr. 2.**

Prerequisite: E.E. 332. Basic theory underlying the operation of representative types of modern vacuum tubes. Consideration is given to both radio and industrial types of tubes.

**332. Alternating Current Circuits. Cr. 3.**

Prerequisite: E.E. 231-2. Lectures, recitations, and problems dealing with the fundamental principles of alternating current circuits.

**334. Communications Circuits. Cr. 3.**

Prerequisite: E.E. 332. Lectures, recitations, and problems dealing with electric networks, coupled circuits, transients, electric and magnetic fields.

**336. Illumination. Cr. 3. (2-3).**

Prerequisite: Junior standing or consent of instructor. Fundamental principles and modern practice of illumination. Offered when demand justifies.

**410. Current Electrical Engineering. Cr. 1.**

Prerequisite: Senior standing. Class discussion of current developments in the field of electrical engineering.

**4112-13. Electrical Machinery Laboratory. Cr. 1. (0-3).**

Prerequisite: Registration in E.E. 4312-13. Same as E.E. 4212-13 except less time is spent in the laboratory. For communications option only.

**4114. Communications Circuits Laboratory. Cr. 1. (0-3).**

Prerequisite: Registration in E.E. 4314. A laboratory course to accompany E.E. 4314. Filters, transmission lines, and antennas are studied in the laboratory.

**429. Engineering Electronics. Cr. 2.**

Prerequisite: E.E. 4310, 4210. Registration in E.E. 4216. A study of basic principles and engineering applications of electronic apparatus. High-vacuum and gaseous tubes, photoelectricity, control circuits and seromechanisms, high-frequency heating, welding controls, motor controls, x-ray applications. Emphasis is placed on theory and basic principles of operation.

**4210. Vacuum Tube Circuits Laboratory. Cr. 2. (0-6).**

Prerequisite: E.E. 325, 334. Registration in E.E. 4310. A laboratory course to accompany E.E. 4310. Three hours per week of the laboratory is assembled and 3 hours unassembled.

**4211. Radio Engineering Laboratory. Cr. 2. (0-6).**

Prerequisite: E.E. 4310. Registration in E.E. 4311. A laboratory course to accompany E.E. 4311. Three hours per week of the laboratory is assembled and 3 hours unassembled.

**4212-13. Electrical Machinery Laboratory. Cr. 2. (0-6).**

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 previously derived.

**4217. Instrument Laboratory. Cr. 2. (0-6).**

Prerequisite: Registration in E.E. 4317. Experimental study of the fundamental transducer elements, their characteristics and calibration. Application of the basic elements in the measurement of physical quantities. Study of elementary telemetering and control systems.

**432-3. Electric Power Transmission. Cr. 3.**

Prerequisite: E.E. 332, 334. Electric and magnetic fields of transmission lines; the calculation of inductance and capacitance for single and multiple circuits. Distribution and transmission practice: construction, switching and protection. Short-and-long-line calculations. Theory of symmetrical components and application to network analysis.

**435. Advanced Illumination. Cr. 3.**

Prerequisite: E.E. 335 or E.E. 336, or consent of instructor. Quantitative and qualitative considerations in interior lighting design. Mathematical treatment of illumination determinations. Economic considerations in light production. Offered when demand justifies.

**436-7. Electromagnetic Field Theory. Cr. 3.**

Prerequisite: Math. 321 and consent of instructor. 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.

**4310. Vacuum Tube Circuits. Cr. 3.**

Prerequisite: E.E. 325, 334. Circuit elements, sources of power, amplifiers, oscillators, modulators, detectors, and mixers.

**4311. Radio Engineering. Cr. 3.**

Prerequisite: E.E. 4310. Miscellaneous aspects of tubes and circuits, propagation of radio waves, transmitters, receivers, radio aids to navigation, radar, television, sound equipment.

**4312-13. Electrical Machinery. Cr. 3.**

Prerequisite: E.E. 332, 334. Theory and operation of power machinery. Includes transformers, d.c. machines, synchronous machines, induction motors, and converters. Theoretical calculations of operating characteristics are derived by equivalent circuit solutions and graphical construction.

**4314. Communications Circuits. Cr. 3.**

Prerequisite: E.E. 334. Problems in filters, transmission lines and antennas. For communications option only.

**4317. Instrumentation—Theory and Practice. Cr. 3. (0-6).**

Prerequisite: Senior standing in E.E. and Math. 321, or consent of instructor. Basic study of the instrumentation problem. Fundamentals of transducers. Transmission, indication, and recording of data. Emphasis on the electrical methods for the measurement of physical quantities. Telemetering and elementary control systems.

**411-2. Engineering Seminar. Cr. 1. (0-3).**

Credit for this course may be given as often as successfully repeated. The investigation and study of engineering problems of special interest and value to the students taking the course. Work is of the nature of research. May be taken only with permission of head of the department.

**For Graduates****521-2. Advanced Electronic Laboratory. Cr. 2. (0-6).**

Prerequisite: B.S. in E.E. or consent of instructor. Designing, construction, setting up, and testing of electronic equipment, industrial, radio, radar, and special equipment used in the study and testing of electron tubes. Special emphasis is given to the principles of electronic control of industrial apparatus.

**523. Symmetrical Components Laboratory. Cr. 2. (0-6).**

Prerequisite: Registration in E.E. 533 or consent of instructor. Experiments in the determination of sequence components of machine reactance. The application of both the symmetrical component and cross-field theory is developed in experiments on capacitor and other types of single-phase motors.

**526. Controls and Servo-Mechanisms Laboratory. Cr. 2. (0-6).**

Prerequisite: B.S. in E.E. or consent of instructor. Experiments are conducted in the

operation of automatic controllers for a-c and d-c motors, voltage regulators for generators, selsyns and other elements of servo-mechanisms. The magnetic oscillograph is used in a variety of experiments.

**528-9. Advanced Electrical Machines Laboratory. Cr. 2. (0-6).**

Prerequisite: Registration in E.E. 538-9. Experimental, determination of steady state and transient machine reactances, power, torque angle, hunting period, etc. The induction machine as a frequency converter and generalized transformer. Investigation of special devices.

**531-2. Vacuum Tubes and Associated Circuits. Cr. 3.**

Prerequisite: E.E. 4310 or 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, the Nyquist criterion for stability, 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 or unbalanced loading. The symmetrical component impedances of machines are defined and calculated, also the zero sequence impedance of lines and cables. The network analyzer is investigated.

**535. Protection of Electric Power Systems. Cr. 3.**

Prerequisite: E.E. 533 or consent of instructor. The cause and nature of static and dynamic system over-voltages is introduced as a background for developing methods of minimizing system disturbance. Protection factors to be considered are: system grounding, the Peterson Coil, lighting arresters, expulsion gaps, insulation coordination, and the relation of impulse to sustained dielectric strength. Systems of relaying and the application of circuit breakers are studied.

**536-7. Advanced Network Theory. Cr. 3.**

Prerequisite: B.S. in E.E. or consent of instructor. Solution of transients in linear systems by means of the LaPlace transform. Theory of two terminal and four terminal networks, impedance transformation, Foster's theorem, conventional and lattice filters, equalizers, network design, application of network theory to vacuum tube circuits. The first semester is of general value in both communications and power fields. The work of the second semester is largely of value in the field of communications.

**538-9. Advanced Electrical Machine Theory. Cr. 3.**

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 mmf. Emphasis is on operation, but design factors such as flux plotting are considered.

**601. Thesis.**

## Engineering Drawing

(See Industrial Engineering)

## Engineering Orientation

**111. Engineering Orientation. Cr. 1. (1-0).**

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 freshmen engineering students during their first semester.

## English

PROFESSORS CAMP, ALLEN, CUNNINGHAM,\* DOAK,\*\* GATES, GUNN, MILLS, SMALLWOOD†, STROUT. ASSOCIATE PROFESSORS GILLIS, MURPHY, TEAGUE. ASSISTANT PROFESSORS CARTER, MALE, McCULLEN, WHITE. INSTRUCTORS COBB,\*\*\*, GAHRING, GREEN, JOHNSON,\*\*\* LEWIS, MILES,\*\*\*\* NALL,\*\*\*\* POLK, RUSSELL, WELLBORN, WELLS, WILSON

### Requirements and prerequisites:

Students of all divisions are required to take six semester hours of freshman English, English 131-2 or 133-4, as a prerequisite for all English courses on the sophomore level. All entering freshmen normally take a Cooperative English Examination. Those who attain a superior rating on this examination and wish to take advanced work in freshman English will be tentatively assigned to English 133. Those in this group who make "B" or better on examinations in theme writing and reading comprehension will remain in English 133; the others will be transferred to English 131. Those students who make "C" or better in English 133 will be allowed to enroll in English 134; those making "D" must complete their six semester hours of English by taking English 132. Those students who make "A" in English 131 will be eligible to complete their six semester hours of freshman English by taking English 134 in the second semester.

Entering students who make extremely low scores on the Cooperative English Examination and those who have previously failed English will be enrolled in special sections of English 131 which meet four periods a week instead of three periods.

For sophomore English, students in the Division of Agriculture will take English 234, and most students in the Division of Engineering will take English 233. All other students will take English 237-8.

To take advanced courses in English, a student must have completed 12 semester hours of English—131-2 or 133-4 and 237-8 or their equivalents. Majors in journalism who minor in English will take four advanced English courses instead of the usual two advanced courses required for minors.

A student must make at least "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 rank, a student must demonstrate an adequate command of correct and effective English or receive an "F" in the course.

\* Students in the Department of Architecture (Design and Commercial Art Option) will take 6 semester hours, English 237-8.

English majors should 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 Division of Graduate Studies. A student working for a doctorate in English literature may choose American literature as one of his two minors. Upon completing his work for the Master's Degree or at the beginning of his second full year of graduate work, the student who plans to take his Doctor's Degree in English will be given a preliminary comprehensive examination in

† Deceased.

\*\*\* On leave, 1950-51.

\*\*\* Resigned, February, 1951.

\*\* Professor and Dean of Women Emerita 1945.

\* Professor Emeritus 1949.

English literature, and American literature if he plans to minor in it, to determine his degree of proficiency in these subjects. The student must also have at least one graduate course in eight specific fields of English literature and must concentrate with additional courses in one of these fields (or two or more closely related fields) and write his dissertation in that field.

### For Undergraduates

#### 131-2. English Composition. Cr. 3.

The essentials of clear, correct, and effective general writing. Reading and the discussion of examples of good English literature. Class discussion, tests, regular themes, outside reading, some individual conferences.

#### 133. Advanced Composition and Literature for Freshmen. Cr. 3.

Course designed for those who demonstrate unusual ability in English fundamentals as measured by English placement tests and departmental examinations. 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, and an investigation of special topics. Reading of various types of literature.

#### 233. Technical Writing. 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. Special Work on Correct Usage. Cr. 3.

Themes, reports, and much practical experience in writing. Required of sophomores in the Division of Agriculture.

#### 237-8. Types and Masterpieces of Literature. Cr. 3.

A study of the chief literary types illustrated from the masterpieces of English, American, modern European, and classical literature. Required as the sophomore course in English for students in the Divisions of Arts and Sciences, Business Administration, Home Economics, and in the Department of Architecture (Design and Commercial Art Options). In English 237 outstanding plays and novels are read; in English 238 biography and narrative and lyrical poetry are studied.

#### 339. Literary Biography. Cr. 3.

The biographical works of Cellini, Boswell, Franklin, Southey, Lockhart, Gosse, Strachey, and Bradford, as they reflect the social and political conditions, the art, the science, and the literature of their times.

#### 3310. The Teaching of English in the Secondary School. Cr. 3.

Prerequisite: 18 semester hours in English, Education 336, Psychology 335. In exceptional instances, Psychology 335 may be taken parallel with English 3310 or in the semester following. Problems of teaching English in secondary schools; effective methods; material and equipment; classroom observation and demonstration. May be counted as English or as education by English majors.

#### 3311. The Nature of Literature. Cr. 3.

A careful study of representative poems, plays, and novels to determine something of the method by which thought and experience find expression in literature.

#### 3315. The Short Story. Cr. 3.

Samplings of the work of outstanding writers, together with a study of patterns and some attention to the writing of the short story. May be counted as English or journalism by journalism majors.

#### 3323. Masterpieces of World Literature. Cr. 3.

A study in English of some of the great books of the western world. Selections from the Homeric poems, the Greek dramatists, Vergil, Dante, Petrarch, Boccaccio, Shakespeare, Cervantes, Mollere, and the Bible.

#### 3324. Modern European Drama. Cr. 3.

Representative plays of such writers as Ibsen, Strindberg, Tolstoy, Chekhov, Hauptmann, Wedekind, Bacque, Hervieu, Maeterlinck, Galsworthy, Barrie, and Shaw. Some consideration of more recent dramatists.

#### 3325. Creative and Professional Writing. Cr. 3.

Study of the various techniques of creative writing. Exercises in the composition of the short story, verse, drama, and other literary forms. Enrollment limited to those who have made a "B" average in freshman English or who have the consent of the instructor.

### For Undergraduates and Graduates

#### 332. History of the English Language. Cr. 3.

A study of the principal changes which the English language has undergone from



the beginnings to the present and the relation of these changes to the cultural development of the English-speaking people.

**333. American Prose. Cr. 3.**

Selections of literary significance from the outstanding American prose writers.

**338. American Poetry. Cr. 3.**

Selections from the works of the outstanding American poets.

**3316. The American Novel. Cr. 3.**

Selected novels of James, Garland, Wharton, Lewis, Peterkin, Tarkington, Hergesheimer, Ferber, Cather, and Dreiser.

**3317. The English Novel from Lyly to Scott. Cr. 3.**

Lectures on the development of the English novel. Representative examples of Elizabethan fiction and the novels of Defoe, Richardson, Fielding, Smollett, Sterne, Jane Austen, and Scott.

**3318. English and Foreign Fiction from 1825 to 1910. Cr. 3.**

Representative novels of Dickens, Thackeray, the Brontës, Hardy, Meredith, Balzac, Flaubert, Zola, Tolstoy, Dostoevski, and Turgenev.

**3320. American Drama. Cr. 3.**

Representative plays of Godfrey, Tyler, Dunlap, Boucicault, Howard, Belasco, Thomas, Fitch, O'Neill, Kaufman, Rice, Anderson, and others. Considerable emphasis on the contemporary period.

**3322. Modern British and American Poetry. Cr. 3.**

The major poets and poetic movements from Hardy and Robinson to the present.

**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.

**431. Restoration and Eighteenth Century Drama. Cr. 3.**

Outstanding English plays from Dryden to Sheridan, 1660-1780.

**432. Shakespeare. Cr. 3.**

A close reading of the following plays: "The Comedy of Errors," "Richard II," "The First Part of Henry IV," "Romeo and Juliet," "The Merchant of Venice," "Much Ado About Nothing," "Hamlet," "Macbeth," "Anthony and Cleopatra," and "The Tempest."

**433. Shakespeare. Cr. 3.**

A close reading of the following plays: "The Two Gentlemen of Verona," "Richard III," "Henry V," "Julius Caesar," "As You Like It," "Twelfth Night," "Measure for Measure," "Othello," "King Lear," and "The Winter's Tale."

**434. Milton and His Age. Cr. 3.**

The social, political, and religious conditions in the time of Milton. A careful reading of Milton's life and early poems and an intensive study of "Paradise Lost," "Paradise Regained," and "Samson Agonistes."

**435. English Romanticism. Cr. 3.**

Selections from the works of the Pre-Romanticists. The 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.

**437. English Drama from the Beginnings to 1642. Cr. 3.**

The development of tragedy, comedy, and chronicle history from the early types of drama in England.

**439. Current English. Cr. 3.**

Phonetics, grammar, syntax, idiom, vocabulary and dialects of present-day English, British and American. Special attention to dialects and idioms of Southwestern United States. (English 332 desirable but not prerequisite as a background course.)

**4311. Early Eighteenth Century English Poetry and Prose. Cr. 3.**

Rise of journalism and the periodical essays of Defoe, Addison and Steele. Satire and criticism of Swift, Pope, and others.

**4312. Age of Johnson. Cr. 3.**

Continuation of English 4311. Rise of the English novel. Detailed study of Boswell's *Life of Johnson* and Johnson's contemporaries, Goldsmith, Walpole, Burke, and others.

**4314. Non-Dramatic Poetry and Prose of the Seventeenth Century. Cr. 3.**

A survey of English writers, exclusive of Milton, from Bacon and Donne through Dryden and Locke.

**4315. Tudor Poetry and Prose. Cr. 3.**

The Elizabethan lyric and narrative poets and prose writers: More, Marlowe, Sidney, Spenser, Shakespeare, Daniel, Drayton, Campion, Jonson, and others.

**4316. The Structure of the Novel. Cr. 3.**

Lectures on the principles of craftsmanship which make for effective fiction. Reading from a selected list of novels.

**4318. Early Victorian Prose and Poetry. Cr. 3.**

Lamb, Hazlitt, DeQuincey, Tennyson, and Browning.

**4319. Later Victorian Prose and Poetry. Cr. 3.**

Caryle, Ruskin, Macaulay, Newman, Huxley, Arnold, Swinburne, the Rossettis, and others.

**4320. American Literature and Its Backgrounds. Cr. 3.**

The Puritan influence, the Age of Reason, the Romantic Movement up to Whitman.

**4321. American Literature and Its Backgrounds. Cr. 3.**

The works of Whitman and the rise of Realism and Naturalism. A continuation of 4320, but either part may be taken separately.

**4322. Life and Literature of the Southwest. Cr. 3.**

Study of the cultural and literary contributions of the Southwest to American life. This course may be counted as either English or history and is the same course as listed under History 4322.

**4326. Types of American Fiction. Cr. 3.**

Representative works of Brown, Irving, Cooper, Poe, Hawthorne, Melville, Mark Twain, and Howells.

**For Graduates****530. Middle English Literature. Cr. 3.**

Teutonic, Celtic, and Classical-Christian origins of medieval literature in English. Studies in the romance, allegory, and didactic verse, with special attention to the "Sir Gawain" poet, "Piers Plowman," and to problems in the interpretation of Chaucer.

**531. Bibliography and Methods of Literary Research. Cr. 3.**

Required of all English graduate students, preferably at the beginning of their graduate work. Compilation of bibliographies; examination and evaluation of primary and secondary sources; problems of style and organization presented by the research paper in the field of literary studies.

**532. English Literary History. Cr. 3.**

A survey of the development and continuity of English literature from Old English through the Nineteenth Century, designed to review significant authors, literary movements and genres, and to emphasize the noteworthy contributions and characteristics of each period.

**533. Elizabethan Drama. Cr. 3.****534. Old English. Cr. 3.****536. Studies in American Literature. Cr. 3.****537. Spenser. Cr. 3.****538. Studies in the English Romantic Poets. Cr. 3.****539. American Critical Theories. Cr. 3.****531. Literary Criticism. Cr. 3.****5319. Studies in Shakespeare. Cr. 3.**

The nature and content of the course will vary to meet the needs of the students enrolled.

**631-2. Master's Thesis.****731-2. Doctor's Thesis.****Family Relations**

(See Child Development and Family Relations)

**Finance**

(See Accounting and Finance)

## Foods, Nutrition and Institutional Management

PROFESSORS MICHIE, WEEKS. ASSOCIATE PROFESSORS LAMB, TWYFORD. ASSISTANT PROFESSOR BUTTRILL. INSTRUCTOR HATTOX. PART-TIME INSTRUCTOR SCHULZ.

In the Department of Foods and Nutrition, work is offered leading to the Degree of Bachelor of Science in Home Economics with a major in foods and nutrition.

The curriculum offers optional courses during the junior and senior years which will prepare the student for special phases of work in the field of foods and nutrition, i.e., homemaking, teaching foods and nutrition, appointments in dietetics, social welfare, commercial food service and research. These options are listed with the curriculum in this catalog.

In addition to work offered for the undergraduate degree, the Department of Foods and Nutrition gives graduate work leading to the Degree of Master of Science.

Discussion of graduate work including admission, divisions and departments offering graduate work, and graduate degrees given, will be found in this catalog under the Division of Graduate Studies.

### FOODS AND COOKERY

#### For Undergraduates

#### 131. Elementary Food Preparation and Serving. Cr. 3. (2-3).

The principles of cookery with an introduction to the planning and serving of meals in the home; a study of consumer problems as related to food.

#### 132. Elementary Food Preparation. Cr. 3. (2-3).

The scientific principles underlying food preparation; problems of buying, phases of production and manufacture as they relate to the cooking of foods. Some experimental work.

#### 135. Food Preparation and Selection (for Nurses). Cr. 3. (2-3).

Principles of food preparation, selection and service with emphasis on the nutritive value of foods. The course is based on normal family meals with applications to the needs of nursing.

#### 232. Meal Planning and Table Service. Cr. 3. (1-6).

Prerequisite: Foods 132. The planning and service of luncheons, suppers, dinners, buffet meals and teas. Food combinations in relation to the nutritive and aesthetic aspects of menu planning. Economics of food purchasing and compilation of food budgets.

#### 233. Food Selection and Serving. Cr. 3. (2-3).

The planning, preparation and serving of family meals including meals for special occasions as buffet meals, teas, and dinners. Food budgets and the economics of food purchasing. Open to men and women not registered as home economics students.

#### For Undergraduates and Graduates

When used for graduate credit these courses must be properly petitioned for and additional work on an added problem is required.

#### 311. History of Food Customs. Cr. 1.

Prerequisite: Junior standing. A study of the development of current food customs in America in relation to their cultural implications.

#### 331. Food Demonstration. Cr. 3. (2-3).

Prerequisite: Foods 232, Nutr. 334. Procedure in demonstrating before audiences of different sorts. Especially for prospective teachers and home demonstration agents.

#### 332. Food Purchasing. Cr. 3. (2-3).

Prerequisite: Foods 132. Food purchasing with emphasis on the relation of the producer to the consumer, on food legislation, and on methods of reducing food costs. Visits to local markets. Economy of time, labor, money, and equipment.

#### 333. Experimental Cookery. Cr. 3. (1-6).

Prerequisite: Foods 232, Nutr. 334, and junior standing in foods and nutrition. Experimental work in the field of cookery. Factors influencing food preparation. Testing recipes, developing proportions for new recipes.

#### 335. Food Preservation. Cr. 3. (1-6).

Prerequisite: Junior or senior standing in Department of Foods and Nutrition.

Adaptation of newer scientific methods to food preservation. Intensive practice in canning, preserving, and pickling meats, fruits, vegetables. Especially for home demonstration agents and vocational home economics teachers.

**431. Problems of the School Lunch Program. Cr. 3. (2-3).**

Prerequisite: Foods 232, Nutrition 334. A study of the problems of feeding children in the school lunchroom with emphasis on the planning and preparation of nutritionally adequate meals, and the factors of acceptability of foods by children.

**433. Advanced Food Preparation and Serving. Cr. 3. (1-6).**

Prerequisite: Foods 232, 332, Nutrition 334, and senior standing; open to juniors upon recommendation of Head of Department. Experience in preparation of unusual types of foods and meals for special occasions. Designed to develop a more cosmopolitan attitude toward food. Opportunity is given for practice in preparing and serving groups with ordinary home and laboratory equipment.

**For Graduates**

**531. Research Methods in Cookery. Cr. 3. (1-6).**

Prerequisite: Foods 333 and graduate standing. A study of some problems of food preparation and their solution. Laboratory experience in solving current problems in food preparation methods; egg and milk cookery, emulsions, jellies, preparation and freezing of batters and doughs, fats and oils, meals, special problems.

**NUTRITION AND DIETETICS**

**For Undergraduates**

**333. Elementary Nutrition and Food Selection. Cr. 3.**

Prerequisite: Sophomore standing or above. Fundamental principles of nutrition and the relation of food selection to health. Emphasis is placed on the planning of dietaries to meet the individual requirement and to the selection of foods from the standpoint of economics and physical efficiency. Open to men and women not registered in the Department of Foods and Nutrition.

**334. Elementary Nutrition. Cr. 3. (2-3).**

Prerequisite: Foods 132, Chem. 131-2, Zool. 235-6. The essentials of an adequate diet. The food requirements of persons of different ages and the nutritive values of common food materials. Experimental work with laboratory animals.

**For Undergraduates and Graduates**

When used for graduate credit these courses must be properly petitioned for and additional work or an added problem is required.

**431. Nutrition in Disease. Cr. 3. (2-3).**

Prerequisite: Nutr. 432 or parallel. Adaptions of diet to disorders of nutrition. Specific diseases, the prevention and care of which are largely influenced by diet.

**432. Nutrition. Cr. 3. (2-3).**

Prerequisite: Nutr. 334 and Chem. 341 or 343-4. Nutritive requirements from infancy to old age. Emphasis upon the functions of the nutrients and their relation to the chemistry and physiology of living tissues.

**433. Child Nutrition. Cr. 3. (2-3).**

Prerequisite: Foods 232 and Nutrition 334. A study of the principles of child nutrition; the methods of judging nutritional status; planning, preparation and service of food for children. Special emphasis on meals for the pre-school child.

**434. Methods of Teaching Nutrition. Cr. 3. (2-3).**

Prerequisite: Nutrition 333 or Nutrition 334; courses in education or experience satisfactory to the Head of the Department. A study of techniques unique to the teaching of nutrition. Field work in the elementary grades, the use of experimental animals, demonstrations.

**For Graduates**

**531. Techniques of Nutrition Research. Cr. 3. (1-6).**

Prerequisite: Nutr. 432 and graduate standing. Training in methods of research in nutrition; food analysis, dietary studies, bioassay methods.

**532. Studies in Energy Metabolism. Cr. 3. (1-6).**

Prerequisite: Nutr. 432 and graduate standing. Principles and techniques involved in studies of energy metabolism; practice in determining basal metabolism, computing the results and presenting the findings; experience in the determination of energy value of foods.

**533. Readings in Nutrition. Cr. 3.**

Prerequisite: Nutrition 432 and graduate standing. A critical study of the recent literature in the field of nutrition. Preparation and presentation of reports on selected topics. The purpose of the course is to acquaint students with recent researches in nutrition. May be repeated for full credit.

**631-632. Thesis.**

**INSTITUTIONAL MANAGEMENT****For Undergraduates****432. Large Quantity Cookery. Cr. 3. (1-6).**

Prerequisite: Foods 232 and junior standing. A study of menu making, preparation of food in large quantity cookery, and practical experience in food purchasing.

**435. Organization and Administration. Cr. 3. (1-6).**

Prerequisite: Foods 232 and Inst. Mgt. 432. A study of organization and administrative problems such as time study, management, employer-employee relationship, budget making, and other factors leading to the establishment of standards for effective management of institutions.

**436. Institutional Housekeeping. Cr. 3. (1-6).**

Prerequisite: Junior standing. Problems in the selection, operation, and arrangement of institutional household equipment. The cleaning and care of the building, sanitation, plumbing, ventilation, etc.

**Foreign Languages**

PROFESSORS QUALIA, GATES. ASSOCIATE PROFESSORS HAMILTON, HENNINGER. ASSISTANT PROFESSORS HAMLETT, REYNOLDS, STREHLI. INSTRUCTORS B. ALEXANDER, T. ALEXANDER, SADLER, TUCKER.

The Department of Foreign Languages offers instruction in German, French, Latin, Italian, Spanish, and Portuguese. Sufficient work is offered for a major in Spanish, French, and Latin. A minor may be earned in German. Courses leading to the Degree of Master of Arts are offered in Spanish.

Students following a major in one foreign language are strongly urged to pursue work in a second foreign language and in English. Other fields which may be effectively combined with a foreign language are speech, social sciences, and journalism.

Students majoring in a foreign language must offer 36 semester hours, if they satisfy the language requirements for a degree in the same language. Students are urged to satisfy their foreign language requirement in another language, however. In this case, 24 semester hours are sufficient for a major.

Those expecting to major in foreign languages should consult with the head of the department.

Students wishing to prepare for government service either at home or in foreign fields should consult with the head of the department. In addition to determining languages to be studied, it is necessary to select certain courses in literature, history, government, economics, typing, and shorthand.

**For Undergraduates****FRENCH****113. Oral work in pronunciation and diction. Drill with wire recorder. Cr. 1.****131-2. A Beginning Course in French. Cr. 3.**

Grammar, reading, and oral practice.

**231-2. Grammar, Reading, Composition, and Conversation. Cr. 3.**

Prerequisite: French 131-2, or two units of high school French.

**331-2. A Rapid Reading Course. Cr. 3.**

Prerequisite: French 231-2 or the equivalent. For third year science students and others who wish to acquire facility and ease in reading modern French. Enough grammar and composition to build a solid foundation.

**GERMAN****113. Oral work in pronunciation and diction. Drill with wire recorder. Cr. 1.**

**131-2. A Beginning Course in German. Cr. 3.**

Grammar, reading, and oral practice.

**231-2. Grammar, Reading, Composition, and Conversation. Cr. 3.**

Prerequisite: German 131-2, or two units of high school German or the equivalent. Reading of standard literary texts. Grammar review with written and oral practice.

**233-4. Scientific German. Cr. 3.**

Prerequisite: German 131-2, or two units of high school German or the equivalent. The reading of specially prepared scientific texts in German with grammar review to assist in the interpretations. For pre-medical and students in general.

**331-2. Contemporary Literature. Cr. 3.**

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.

**333-4. Intermediate Scientific German. Cr. 3.**

Prerequisite: German 233-4 or the equivalent. Advanced reading in various scientific fields to meet needs of students.

**ITALIAN****113. Oral work in pronunciation and diction. Drill with tape recorder. Cr. 1.****LATIN**

A student credited with four admission units in Latin should take Latin 331-2.

**131-2. A Beginning Course in Latin. Cr. 3.**

Forms, word formation, the fundamentals of syntax, and easy reading. Especially recommended for students preparing for law or medicine, as well as those electing Latin for degree requirements.

**133. Latin Terminology. Cr. 3.**

Practical Latin especially for students majoring in scientific or professional courses who have had no Latin. The minimum essentials of Latin grammar, emphasis on word analysis by study of root words, prefixes, and suffixes. Word lists, charts, and myths relative to special subjects.

**231-2. Reading and Composition. Cr. 3.**

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.

**PORTUGUESE****131-2. A Beginning Course in Portuguese. Cr. 3.**

Grammar, reading, and oral practice.

**231-2. Grammar, Reading, Composition, and Conversation. Cr. 3.**

Prerequisite: Portuguese 131-2. Grammar, reading, composition, and conversation, taught by reference to the history, geography, culture, and economic conditions of Portuguese-speaking countries with special reference to Brazil.

**SPANISH****131-2. A Beginning Course in Spanish. Cr. 3.**

Grammar, reading, and conversation.

**231-2. Grammar, Reading, Composition, and Conversation. Cr. 3.**

Prerequisite: Spanish 131-2, or two units of high school Spanish.

**331-2. Contemporary Literature. Cr. 3.**

Prerequisite: Spanish 231-2, or three or four units of high school Spanish. Spanish literature from the beginning of the Romantic Movement to the present. Reading of representative novels, dramas, and lyrics. Collateral readings and composition based on readings. Conducted chiefly in Spanish. Spanish 331-2 and Spanish 333-4 may not both be counted toward a degree.

**333-4. Introduction to Latin-American Life and Literature. Cr. 3.**

Prerequisite: Spanish 231-2, or three or four units of high school Spanish. The history, geography, literature, customs, and economic conditions of Spanish-American countries. Conducted chiefly in Spanish. Spanish 331-2 and Spanish 333-4 may not both be counted toward a degree.

**\*For Undergraduates and Graduates****FRENCH****431-2. The Modern Drama. Cr. 3.**

Prerequisite: French 331-2 or its equivalent. The drama from 1636 to 1900. Offered in alternate years; not offered in 1951-52.

**433-4. The Literature of the Nineteenth Century. Cr. 3.**

Prerequisite: French 331 or its equivalent. A study of the prose and poetry of the nineteenth century, exclusive of the drama. Offered in alternate years.

**435-6. Readings in French Literature. Cr. 3.**

Prerequisite: French 331-2 or the equivalent. Directed study with individual conferences and written reports to enable students majoring in French to investigate those periods of French literature not treated in other courses. Required of student majoring in French.

**LATIN****331-2. Junior Readings. Cr. 3.**

Prerequisite: Latin 231-2, three or four units of high school Latin, or the consent of the instructor. The nature and content of this course will vary to meet the needs of the individual student. Credit given as often as the course is repeated.

**431-2. Senior Readings. Cr. 3.**

Prerequisite: Latin 331-2 or the equivalent. The nature and content of this course will vary to meet the needs of the individual student. Credit given as often as the course is repeated.

**SPANISH****431-2. The Modern Novel. Cr. 3.**

Prerequisite: Spanish 331-2 or its equivalent. Certain nineteenth century novels representing the various tendencies and regions. Lectures. Written reports. Conducted chiefly in Spanish. Offered in alternate years; not offered in 1951-52.

**433-4. The Modern Drama. Cr. 3.**

Prerequisite: Spanish 331-2 or its equivalent. The drama from the Romantic Movement to the present. Conducted chiefly in Spanish. Offered in alternate years; offered in 1951-52.

**435. Teachers' Course in Methods of Teaching Spanish. Cr. 3.**

Prerequisite: Spanish 331-2 and 6 semester hours of education. Preparation for teaching Spanish in high school. Scientific and practical methods with as much practice work as possible. Required of those preparing to teach Spanish.

**436-7. Advanced Grammar, Composition, and Style. Cr. 3.**

Prerequisite: Spanish 331-2, or its equivalent. Recommended for those who intend to teach Spanish.

**438. The Drama before Lope de Vega. Cr. 3.**

Prerequisite: Spanish 331-2 or the equivalent. The development of drama in Spain from medieval times to Lope; emphasis on the immediate predecessors of Lope. Offered at intervals, when demand justifies.

**4310-11. Spanish Civilization. Cr. 3.**

Prerequisite: Spanish 331-2 or the equivalent. A study of the various phases of Spanish civilization in Mexico; history, arts, language, literature. Offered in summers in Mexico City.

**4312-13. The Prose of the Golden Age. Cr. 3.**

Prerequisite: Spanish 331-2. The important prose writers from 1499 to 1650. Reading of representative works, lectures, collateral reading, and reports. Conducted chiefly in Spanish. Offered in alternate years; not offered in 1951-52.

**4314-15. The Drama of the Golden Age. Cr. 3.**

Prerequisite: Spanish 331-2 or its equivalent. The drama of the seventeenth century. Reading of representative plays, lectures, discussions, collateral reading, and reports. Conducted chiefly in Spanish. Offered in alternate years; offered in 1951-52.

**4316-17. A Survey of Spanish Literature. Cr. 3.**

Prerequisite: Spanish 331-2. The history of Spanish literature from the twelfth to the nineteenth century. Emphasis upon the principal movements and the works of outstanding writers. Readings, lectures, and written reports. Conducted chiefly

\* Credit may be received for either semester of all courses listed in this category without the completion of the other.



in Spanish. Especially recommended for students who expect to teach Spanish. Required of all candidates for the Master of Arts Degree with Spanish major.

**4318. Contemporary Drama. Cr. 3.**

Prerequisite: Spanish 331-2 or the equivalent. Intensive study of some representative dramas of living authors and rapid reading of others. Written reports. Offered at intervals, when demand justifies.

**4320. Contemporary Novel. Cr. 3.**

Prerequisite: Spanish 331-2 or the equivalent. Intensive study of some representative novels of living authors and rapid reading of others. Written reports. Offered at intervals, when demand justifies.

**4324-25. Readings in Latin-American Literature. Cr. 3.**

Prerequisite: Spanish 333-4 or its equivalent. Lectures, collateral readings, reports. Conducted mainly in Spanish. Offered at intervals, when demand justifies.

**4326-27. Survey of Spanish-American Literature. Cr. 3.**

Prerequisite: Spanish 333-4 or its equivalent. The history of Spanish-American literature from colonial days to the present. Readings, lectures, reports. Conducted chiefly in Spanish.

### For Graduates

#### SPANISH

**5312-13. Studies in Spanish and Spanish-American Literature. Cr. 3-6.**

Prerequisite: The consent of the Head of the Department. The nature and content of this course will vary to meet the needs of the individual student. Credit given for either semester of this course as often as course is repeated.

**631-2. Thesis.**

## Geography

(See Geology)

## Geology

PROFESSORS SIDWELL, PATTON, \*ROBINSON, ALEXANDER. ASSOCIATE PROFESSORS BOND, \*BRAND, DENNIS, MEADE.

ASSISTANT PROFESSORS HOLT, WARN, WEART.

INSTRUCTORS IRVIN, KEESEE, UNDERWOOD.

The functions of the Department of Geology are twofold: first, 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, 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.

The chief objective of the department is to train students for petroleum industry. Students who wish to enter geological work in petroleum geology should follow the curriculum outline in the catalog.

Geology majors should consult with department chairman concerning graduate courses.

### For Undergraduates

**131-2. General Geology. Cr. 3. (3-2).**

Physical and historical geology. Present day geologic processes followed by application of these principles to the interpretation of the geologic record. A formation course for additional work in geology. May also serve for cultural purposes.

**233. General Geology for Engineers. Cr. 3. (2-3).**

Prerequisite: Sophomore standing. Similar to Geol. 131-2 but a shorter course adapted to the special needs of engineering students other than petroleum students; especially for students in civil engineering.

\* On leave 1950-51.

**235. Advanced General Geology. Cr. 3. (2-3).**

Prerequisite: Geol. 131-2. A study and analysis of land forms and of processes responsible for them.

**236. Advanced Historical Geology. Cr. 3. (2-3).**

Prerequisite: Geol. 131-2; Geol. 235. Historical geology of North American continent with emphasis on stratigraphy and life succession.

**For Undergraduates and Graduates****333-4. Petrography and Petrology. Cr. 3. (1-6).**

Prerequisite: Geol. 131-2. Study and classification of rocks without the use of the microscope. Methods of optical mineralogy in identifying rock-forming minerals by means of the petrographic microscope. Study and identification, by use of the petrographic microscope, of the mineral grains commonly occurring in sediments. Study of rocks in thin section under the microscope; methods of quantitative mineralogical classification of rocks.

**335-6. General Paleontology. Cr. 3. (2-3).**

Prerequisite: Geology 131-2, junior standing. The detailed structure, basis of classification and geologic history of the various groups of invertebrates. The vertebrates and plants studied similarly but less comprehensively.

**363. Field Geology. Cr. 6.**

Prerequisites: Geol. 235-6. Principles of stratigraphy, structural geology, and methods of geological surveys. Given in the field. For further details, see special announcements of the Department of Geology. Required of all majors in the department.

**433. Structural Geology. Cr. 3.**

Prerequisite: 18 hours in geology. Deformation and structure of rocks with special emphasis on the relation of these to economic problems. May be used as a major in economic geology.

**434. Geology of Oil and Gas. Cr. 3.**

Prerequisite: Geol. 433. Problems of the origin and accumulation of oil deposits; assembling and interpretation of data bearing on problems peculiar to certain fields. For students expecting to engage in the exploration and development of oil fields. May be used as a major in economic geology.

**435. Index Fossils. Cr. 3. (1-6).**

Prerequisite: Geol. 335-6. The stratigraphy and different horizon markers of the different systems with practice in making and identifying field collections.

**436. Micropaleontology. Cr. 3. (1-6).**

Prerequisite: Geol. 335-6. Foraminifera and other microfossils of the oil bearing strata of Texas; methods of collection and preparation.

**437. Sedimentology, Environments. Cr. 3.**

Prerequisite: 24 hours in geology. The origin, composition, textures and environments of sediments. Laboratory work with emphasis on subsurface methods. May be used as a major in economic geology.

**438. Sedimentology, Products. Cr. 3.**

Prerequisite: 24 hours in geology. Emphasis on classification, origin, sedimentary structures, color and alteration of sedimentary rocks. Laboratory study involves insoluble residues. May be used as a major in economic geology.

**4310. Elementary Vertebrate Paleontology. Cr. 3.**

Prerequisite: 12 hours in geology. A study of the classification and stratigraphic value of the vertebrates. Identification of fossil specimens. Techniques in the collecting and preparation of vertebrate fossils.

**4311. Advanced Vertebrate Paleontology. Cr. 3.**

Prerequisite: Geol. 4310. Advanced morphologic and stratigraphic studies of the vertebrate classes; identification and correlation of mammalian faunal assemblages.

**4312-13. Sedimentation for Petroleum Engineers. Cr. 3.**

Prerequisite: Senior standing in petroleum engineering. Study of sedimentation as applied to problems of petroleum engineering.

**4314. Stratigraphy (Paleozoic) of Mid-Continent Area. Cr. 3.**

Prerequisite: 24 semester hours in geology. Advanced studies in stratigraphic methods and techniques. Methods of correlation. Stratigraphic principles applied to detailed study of surface and subsurface formation of Texas, Oklahoma, New Mexico, Arkansas, Louisiana, and Kansas.

**4315. Stratigraphy (Mesozoic-Cenozoic) of Mid-Continent Area. Cr. 3.**

Prerequisite: 24 semester hours in geology. Refer to 4314 for description.

**4316. Aerial Photography. Cr. 3. (2-3).**

Prerequisite: Geol. 235-6. Use of aerial photographs in interpretation of soil

and vegetation patterns. Geomorphic, structural and relief features. Map making from aerial photographs.

### For Graduates

#### 511-2. Research Methods. Cr. 1.

Prerequisite: Graduate standing in geology and consent of head of the department. Methods of outline and attack; reconnaissance of the problem; main objective; tangential objectives; nature of evidence; status of knowledge; permissible conclusions. Preparation of effective reports and techniques of publication. Analysis of selected scientific articles. Practical experience with chosen problems.

#### 531-2. Advanced Sedimentation. Cr. 3.

Prerequisite: Graduate standing in geology and consent of head of the department. Individual investigation to determine the characteristics of sediments in the different environments; emphasis on relation of diastrophism and climate on origin of sediments.

#### 533-4. Structure of Oil and Gas Reservoirs. Cr. 3.

Prerequisite: Graduate standing in geology and consent of head of the department. One hour conference each week and six hours of library work. Detailed examination of the form and cause of selected productive structures. With a facts derived from published reports of field studies, the student will be encouraged to set up many hypotheses and to select those of greatest value.

#### 535-6. Advanced Work in Specific Fields. Cr. 3-6.

Prerequisite: Graduate standing in geology and consent of head of the department. Course and credit depend upon preparation and need of the student and the work done. Each course taken under these numbers will regularly carry a subtitle describing the course.

#### 537. Field Geology. Cr. 3.

Prerequisite: Graduate standing. Study of principles of field geology; topographic mapping; aerial photomapping. Offered in alternate years.

#### 538. Geology of Southwest. Cr. 3.

Prerequisite: Graduate standing. Reading and discussion on geology and physiographic evolution of the Southwest. Offered in alternate years.

#### 539. Advanced Invertebrate Paleontology of Paleozoic. Cr. 3.

Prerequisite: Geol. 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.

#### 5310. Advanced Invertebrate Paleontology of Mesozoic. Cr. 3.

Prerequisite: Geol. 335-6. Identification and study of faunas from Mesozoic and Cenozoic formations. Procedure is similar to Paleozoic faunas.

#### 5311. Paleozoic Micropaleontology. Cr. 3.

Prerequisite: Geol. 436. Foraminifera (especially Fusulines) bryozoa, conodonts and ostracods; emphasis on morphology and stratigraphic range. Offered in alternate years; offered in 1951-52.

#### 5312. Mesozoic-Cenozoic Micropaleontology. Cr. 3.

Prerequisite: Graduate standing in geology and consent of head of the department. A survey of formations of economic importance in the United States with study of the principles of correlation and their application.

#### 5313-14. Stratigraphy of the United States. Cr. 3.

Prerequisite: Geol. 436. Emphasis on foraminifera and other micro-fossils in Mesozoic and Cenozoic formations. Offered in alternate years.

#### 5317-18. Seismology. Cr. 3. (1-6).

Prerequisite: 24 semester hours in geology and graduate standing. Principles of seismology; operation and use of seismograph instruments; principles of interpretation of seismograms; operation of seismological observatory; study and interpretation of records of local and major earthquake shocks throughout the world as recorded by the instruments of the college seismological observatory; study and interpretation of data furnished by cooperating seismological stations affiliated with the U. S. Coast and Geodetic Survey.

#### 5319. Eolian Sedimentation Materials. Cr. 3. (2-3).

Prerequisite: Geol. 437-8. Results of past and present wind erosion and deposition. Includes sand dunes, loess, volcanic ash, desert and semi-desert topography.

#### 5320. Eolian Sedimentation Processes. Cr. 3. (2-3).

Prerequisite: Geol. 4316. Identification and characteristics of wind blown materials. Study of local dust storms.

#### 5321. Geochemistry of Sedimentary Processes. Cr. 3. (2-3).

Prerequisite: Graduate standing. Study of metasomatic and diagenetic processes of sediments.

**5322. Advanced Field Geology. Cr. 3. (1-6).**

Prerequisite: Graduate standing. Use of Brunton compass, hand level, alidade and aerial photos as applied to problems in the field.

**5324. Problems in Sedimentation. Cr. 3.****5326. Problems in Stratigraphy. Cr. 3.****5327. Problems in Micro-Paleontology. Cr. 3.****5328. Problems in Structural Geology. Cr. 3.****631-2. Thesis.****731-2. Thesis.****ECONOMIC GEOLOGY****For Undergraduates****231-2. Mineralogy. Cr. 3.**

Prerequisite: Geology 131-2. Chemistry 131-2. Methods of identification of minerals; blowpipe analysis; occurrence and properties of minerals.

**For Undergraduates and Graduates****337. Ground Water. Cr. 3.**

Prerequisite: Geology 231-2, 235-6. Principles of the occurrence, recharge, movement and discharge of ground water.

**338. Metallic Ores or Non-Metallic Deposits. Cr. 3.**

Prerequisite: Geol. 231-2, 235-6. Principles of the occurrence, processes, and structure of metallic ore deposits. Offered in alternate years; offered in 1951-52.

**339. Non-Metallic Deposits. Cr. 3.**

Prerequisite: 18 hours of geology including 231-2. Principles of the occurrence, processes and structure of non-metallic deposits exclusive of fuels. Offered in alternate years; offered in 1951-52.

**GEOGRAPHY****For Undergraduates****231-2. Principles of Geography. Cr. 3.**

Geographic factors especially as they affect the activities of man. Special emphasis upon relief, climate industries, communication, and political conditions. Not accepted in fulfillment of science requirement. Accepted in fulfillment of social science requirements.

**233. Economic Geography. Cr. 3.**

Distribution, origin, history and economic significance of mineral resources; emphasis on local mineral deposits.

**331. General Meteorology. Cr. 3. (2-3).**

Prerequisite: Geol. 131-2. Physics 131-2. Geog. 231. Descriptive meteorology: terrestrial, hydrospheric and atmospheric factors of weather and climate.

**332. Practical Meteorology. Cr. 3. (2-3).**

Prerequisite: Geog. 331. Use of meteorological instruments, charts and weather maps. Methods of weather observation.

**German**

(See Foreign Languages)

**Government**

PROFESSORS DAVIS, ABERNETHY, JACKSON. ASSISTANT PROFESSORS FULLER,\* KENNEDY.\* INSTRUCTORS ADAMS, DAULEY,\*\* MACK, ODEN.

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 Govern-

\* Temporary Appointment

\*\* Leave of Absence 1950-51

ment endeavors to give all students the basic understandings 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.

A major or a 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.

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)
- 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

#### 131. American Government, National. Cr. 3.

The constitution, principles, organizations, and actual working of the national government. Emphasis upon the duties and obligations of citizenship.

#### 132. American Government, State. Cr. 3.

The constitutions and framework of the governments of the states with emphasis on Texas.

#### 230. American Government, Organization. Cr. 3.

A study of the constitutions and organization of the governments of the United States, the states in general, and Texas in particular. Required of students whose departments require only 3 hours of government. Credit will not be given for both Govt. 230 and 131.

#### 231. American Government, Functions. Cr. 3.

A study of the functions and services of the governments of the United States, the states in general, and Texas in particular. This course will follow the work given in

the first semester and will be taken by most students who take 6 hours in government.  
 232. Modern Governments. Cr. 3.

Prerequisite: 6 semester hours in American government. A comparative study of selected European governments.

### For Undergraduates and Graduates

331. Local Government. Cr. 3.

Prerequisite: 6 semester hours in American government. The machinery of city and county government: the forms—both new and old—of municipal government; inter-departmental relations and the relation of local government to state.

332. Local Administration. Cr. 3.

Prerequisite: 6 semester hours in American government. Chief problems of present-day local administration; special stress placed upon administration of Texas cities and counties.

334. American Political Parties. Cr. 3.

Prerequisite: 6 semester hours in American government. Party history, functions, organization, finance, campaign methods and elections.

335. American Foreign Relations. Cr. 3.

Prerequisite: 6 semester hours in American government. Control and conduct of the relations of the United States with the outside world.

336. American Diplomacy. Cr. 3.

Prerequisite: 6 semester hours in American government and 6 hours of history. Foreign policies of the United States.

337. Public Administration, Organization. Cr. 3.

Prerequisite: 6 semester hours in American government. Principles of administrative organization; structure of all units of government; powers, duties, and responsibilities of officers; administrative reorganization.

338. Public Administration, Procedure. Cr. 3.

Prerequisite: 6 semester hours in American government. Problems of national, state, and local units of government, including cost of government, budgeting, accounting and reporting, purchase and supply, personnel, promotion and demotion, and removal and retirement.

339. Government and Business. Cr. 3.

Prerequisite: 6 semester hours in American government. The role of government in the field of business and in the American economy.

3311. Political Institutions. Cr. 3.

Formerly 231. Prerequisite: 6 semester hours in American government. The origin, development, and functions of political institutions in connection with consideration of political theories.

3312. Government and Labor. Cr. 3.

Prerequisite: 6 semester hours in American government. The role of government in the field of labor. Legislative, administrative and judicial policies relating to labor problems and labor-management disputes.

431-2. American Constitutional Law. Cr. 3.

Prerequisite: 6 semester hours in American government. Interpretation of the Constitution of the United States based principally upon Supreme Court decisions. The leading cases in American constitutional law analyzed.

433. European Political Ideas. Cr. 3.

Prerequisite: 6 semester hours in American government. A study of the political ideas expressed by the greatest thinkers from ancient time to the present, with emphasis upon reading from the classics.

434. American Political Ideas. Cr. 3.

Prerequisite: 6 semester hours in American government. The lives and ideas of leading political thinkers of the United States from the colonial period to the present.

435. International Organization. Cr. 3.

Prerequisite: 6 hours of American government. A study of international organizations and agencies with emphasis on the modern time.

436. International Law. Cr. 3.

Prerequisite: 6 hours in American government and 3 hours in American or European history. The fundamental principles of international law with special emphasis upon American interpretations and American contributions to the growth of the law.

437. Political Geography. Cr. 3.

Prerequisite: 6 semester hours in American government. Geographic factors in political problems and in the development of political institutions; the main problems of politics in their relation to world geography.

## 438. World Politics. Cr. 3.

Prerequisite: 6 semester hours in American government. Problems and issues which have arisen in the family of nations; organizations and efforts to cope with these problems; the principles of international conduct.

## 439. Modern Political Ideas. Cr. 3.

Prerequisite: 6 semester hours in American government. An analytical study of the ideas of modern political writers.

## For Graduates

## 531. Seminar in American Government and Politics. Cr. 3.

## 532. Seminar in Political Theory. Cr. 3.

## 533. Seminar in Public Administration. Cr. 3.

## 534. Seminar in Public Law. Cr. 3.

## 535. Seminar in International Relations. Cr. 3.

## 536. Seminar in Comparative Governments and Institutions. Cr. 3.

## 601. Thesis.

## History, Anthropology, and Sociology

PROFESSORS HOLDEN, EAVES, KINCHEN, McKAY, WALLACE.

ASSISTANT PROFESSORS DUPREE, MOORE, PEARCE,

VERNON.\* INSTRUCTOR SMITH.

## HISTORY

Candidates for the Degree of Doctor of Philosophy in History will be accepted subject to the general requirements of the Division of Graduate Studies and may major in either American history or European history (British, Modern Continental-British). If a student majors in American history, European history should be his first minor; if he majors in European history, American history should be his first minor. Requests for further information should be addressed to the Head of the Department.

All courses numbered above 300 are advanced. Prerequisites for such courses for history majors are Hist. 131-2, or 133-4, and 231-2. For students wishing to take advanced courses in history as electives no prerequisites are required unless specified. Thirty-six hours, including Anthro. 231 and 232, are required for majors.

## For Undergraduates

## 131-2. Basic Social Science: Development of Civilization. Cr. 3.

Man in the social world; a study of economic, political, religious, and intellectual aspects of culture and their relation to modern society.

## 133-4. Economic and Political History of England. Cr. 3.

Economic, legal and cultural development of the English people.

## 231-2. Economic and Political History of the United States. Cr. 3.

Prerequisite: for pre-law majors, Hist. 133-4; for history majors, either Hist. 131-2 or 133-4. Discovery, colonization, colonial institutions; Revolution; Confederation; Constitution; growth of nationalism; slavery; expansion; sectionalism; Civil War; Reconstruction; new industrial and social problems; domestic and foreign problems.

## 330. Teaching History in High Schools. Cr. 3.

Modern technique of teaching history in junior and senior high schools. Credited either as history or education.

## For Undergraduates and Graduates

## 331. Greek Civilization. Cr. 3.

Especially emphasis on Greek contributions to Western civilization.

## 332. Roman Civilization. Cr. 3.

Especially emphasis on Roman contributions to European culture.

\* On leave, 1950-51.



333. Renaissance and Reformation. Cr. 3.  
Emphasis on the emergence of modern thought and institutions.
334. French Revolution and Napoleon. Cr. 3.  
Nationalism: enlightened despotism: the Metternich system.
335. Geopolitics of World War II. Cr. 3.  
History of events leading to the present world situation.
336. Tudor England. Cr. 3.  
Establishment of a strong monarchy; break with the Roman Church; rise of sea power.
337. Stuart England. Cr. 3.  
Contest between king and Parliament; civil war; Commonwealth and Restoration; supremacy of Parliament; colonial policies.
338. Eighteenth Century England. Cr. 3.  
Rise of the cabinet; colonial supremacy; Whig versus Tory; industrial revolution.
339. Nineteenth Century England. Cr. 3.  
Napoleonic struggle; reforms; Irish question; development of the Commonwealth.
3311. The Canadian Dominion. Cr. 3.  
Evolution of the Dominion; relationship with the other dominions in the British Empire.
3312. Recent History of Russia. Cr. 3.  
Czarist Russia, the Revolution, political, economic and social changes, World War II and its aftermath.
3313. Europe from 1815 to 1918. Cr. 3.  
Congress of Vienna to Treaty of Versailles.
3314. Europe since 1919. Cr. 3.  
World War I and its aftermath.
3315. Japan and China. Cr. 3.  
Japan's imperialistic policy; World War II and its aftermath in the Far East.
3316. British Empire. Cr. 3.  
Evolution of the British Empire, and its recent transformation in the present Commonwealth of British Nations.
3319. Twentieth Century Britain. Cr. 3.  
Political and social reform; education; labor movement; effect of World Wars I and II.
430. English Colonial America. Cr. 3.  
Exploration; settlement; development of American institutions and culture.
433. The American Revolution. Cr. 3.  
Causes; progress; French aid; Loyalists; finances; Treaty of 1783.
434. Early American Constitutional Development. Cr. 3.  
Confederation; Constitution; governmental organization; amendments.
435. Anglo-American Diplomacy. Cr. 3.  
Relationships from independence to the present.
436. The Federalist and Republican Periods. Cr. 3.  
Rise of nationalism; economic and political issues.
437. The Jacksonian Period. Cr. 3.  
Rise of Jacksonian democracy; social and economic movements.
438. History of Texas to 1846. Cr. 3.  
Exploration; colonization; revolution; the Republic.
439. History of Texas, 1846-1900. Cr. 3.  
Social and economic movements; emphasis on development of West Texas.
4310. Expansion of the United States. Cr. 3.  
Purchase of Louisiana; acquisition of Florida; annexation of Texas; Oregon controversy; Mexican cession; Gadsden Treaty; purchase of Alaska; acquisition of our insular possessions.
4311. The Civil War. Cr. 3.  
The Old South; slavery; secession; economic resources; foreign relations, military movements.

**4312. Reconstruction. Cr. 3.**

Economic status of South; reconstruction policies; radical rule and overthrow.

**4313. History of the United States, 1877-1898. Cr. 3.**

Social adjustments; rise of big business; tariff.

**4314. History of the United States, 1898-1918. Cr. 3.**

Spanish-American War; progressivism; World War I.

**4315. Constitutional Development in Texas. Cr. 3.**

Detailed study of the six constitutions of Texas.

**4316. History of the United States, 1919-1932. Cr. 3.**

Post-war readjustment; Republican rule; economic policies; agricultural life in the 1920's.

**4317. History of the United States since 1933. Cr. 3.**

Election of 1932; New Deal; life in the 1930's.

**4319. Latin American Diplomacy. Cr. 3.**

From Latin American independence to the present.

**4320. Social History of Texas, 1821-1860. Cr. 3.**

Amusements; architecture; religion; transportation; immigration; journalism; dueling; temperance and literature of the colonial period; the republic and early statehood.

**4321. Recent History of Texas, 1900-1940. Cr. 3.**

Emphasis on social and economic movements.

**4322. Life and Literature of the Southwest. Cr. 3.**

This course is also listed as English 4322.

**4323. History of South America. Cr. 3.**

Exploration; colonization; independence.

**4324. History of South America. Cr. 3.**

Political development; social and economic problems; recent movements.

**4325. History of Spanish North America. Cr. 3.**

Exploration; colonization; independence.

**4326. History of Spanish North America. Cr. 3.**

Politics; church and state; reforms; present trends.

**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. Frontier and the Indian.

**4328. The Trans-Mississippi West, 1803 to Present. Cr. 3.**

Development of territories, traders and trappers, blazing trails, Indian problems, livestock industry, railroad, new farming techniques, rise of cities, the modern era.

**For Graduates****530. Seminar in Southwestern History. Cr. 3.****531. Seminar in Texas History. Cr. 3.****532. Seminar in American History. Cr. 3.****533. Seminar in Latin American History. Cr. 3.****534. Seminar in English History. Cr. 3.****535. Technique of Research. Cr. 3.****536. Seminar in European History. Cr. 3.****631-2. Master's Thesis. Cr. 6.****731-2. Doctor's Dissertation. Cr. 6.****ANTHOPOLOGY**

Anthropology 231 and 232 are prerequisites for all majors in anthropology. For students wishing to take advanced courses in anthropology as electives, no prerequisites are necessary unless specified. Other courses which may be applied on a major in anthropology are: Clothing and Textiles 311 and 433; Sociology 332, 334, 336, 431, 436; and Philosophy 436.

**For Undergraduates****231. The Nature of Man. Cr. 3.**

The physical development of man from his origin.

**232. Cultural Anthropology. Cr. 3.**

Origin of races, social concepts and institutions.

**For Undergraduates and Graduates**

**330. Cultures and Peoples of the Southwest. Cr. 3.**

A survey of the prehistoric cultures and living Indian groups.

**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 cultural areas, linguistic groups, physical types, and social customs.

**335. Archaeology in America North of Mexico. Cr. 3.**

A survey of prehistoric sites and cultures.

**336-7. Mexican Archaeology. Cr. 3.**

A field course in Old Mexico. Lectures, reading, research, excavation, and visits to archaeological ruins in the vicinity of Mexico City.

**430. Races, Peoples, and Languages of South America. Cr. 3.**

Cultural areas, physical types, languages, and social customs.

**431. Field Archaeology. Cr. 3.**

Mapping, excavations, and preparation of reports.

**433-4. Southwestern Archaeology. Cr. 3.**

A field course; lectures, research and excavation.

**For Graduates**

**531. Seminar. Cr. 3.**

Consideration of selected anthropological problems.

**532. Seminar. Cr. 3.**

Review and discussion of recent anthropological literature.

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

**SOCIOLOGY**

Sociology 230 and 233 are prerequisites for all majors and minors and Anthropology 231 and 232 for all majors in sociology. For students wishing to take advanced courses in sociology as electives, no prerequisites are necessary unless specified. Other courses which may be applied on a major in sociology are: Anthropology 330 and 335; Philosophy 436, Psychology 434; Rural Sociology 431 and 432. A minimum of 30 hours are required of sociology majors.

**For Undergraduates**

**211. Problems in Community Health. Cr. 1.**

Prerequisite: Sophomore classification. Health problems as they affect the community, the family, or the individual. Additional work in this field is offered in Soc. 212.

**212. Problems in Community Health. Cr. 1.**

Prerequisite: Sophomore classification. Health problems as they affect the community, the family, or the individual. Additional work in this field is offered in Soc. 211.

**230. Introduction to Sociology. Cr. 3.**

Prerequisite: Sophomore classification. The underlying principles of social science.

**233. Current Social Problems. Cr. 3.**

Prerequisite: Sophomore classification: Survey and analysis of current social problems.

**For Undergraduates and Graduates**

**332. Marriage. Cr. 3.**

Prerequisite: Junior classification. History, present status, current problems, and future of the marriage institution.

## 333. American Minority Problems. Cr. 3.

Socio-cultural backgrounds of the American minority groups. Majority-minority group relations; problems of the "hyphenated" American.

## 334. Patterns of Cultural Traditions. Cr. 3.

The origin of social institutions in Europe.

## 336. Social Life and Culture of Mexico. Cr. 3.

Prerequisite: Junior classification and a course in sociology or consent of instructor. Comparison of social institutions and problems of Mexico with those of the United States.

## 337. Social Organization. Cr. 3.

A sociological analysis of the organization of social relations: institutions, groups, and societies; positions, roles, and statutes in modern division of labor, caste, class, race, and other social divisions.

## 338. The Sociology of the Person. Cr. 3.

An examination of the significant effects of group membership on individual behavior: the study of symbolic environments, internalization of group values, development of the "self," role-playing and status personalities in relation to personal organization; the socio-dynamics of abnormal behavior.

## 339. Collective Behavior. Cr. 3.

An analysis of the kinds of collective action arising in crowds, mobs, strikes, mass movements, and social movements.

## 3310. Social Control. Cr. 3.

The concept of social control; forms of social control involved in the maintenance of social systems, problems of social control in modern society.

## 3311. Population Problems. Cr. 3.

Theories of population; implications of size, composition, and growth of population; qualitative aspects of the social population; policies of control.

## 3312. Community Organization. Cr. 3.

An analysis of the community in its ecological cultural, and social aspects. Emphasis is given to practical problems of community organization in both rural and urban settings.

## 431. Patterns of Rural Life in the United States. Cr. 3.

Rural life as exemplified in New England villages, southern plantations and farms, in the eastern woodlands, in lumber camps, on ranches of the Southwest, and mining camps of the West.

## 432. Problems in Social Work. Cr. 3.

Prerequisite: Soc. 331. Basic principles, problems, and practices of social case work; supervised training with local agencies.

## 433. Criminology. Cr. 3.

Prerequisite: Senior classification or consent of instructor. Study of the causes and remedies of delinquency and crime.

## 435. Human Ecology. Cr. 3.

The description, measurement, and analysis of the spatial, temporal, and functional distribution of social phenomena. Practical applications made with reference to city planning, community, regional, and world organization.

## 436. Development of Sociological Thought. Cr. 3.

A survey of the leading theories as to the nature of society and social progress, from classical times to the present.

## 437. Social Change. Cr. 3.

Stability, continuity, and social change; external factors of social change; the locus and social elements of change; theories of social change and progress; contemporary social trends.

## 438. Seminar in Social Problems. Cr. 3.

Prerequisite: Senior classification and major or minor in sociology. Independent research in sociological problems.

## 439. Contemporary Sociological Theory. Cr. 3.

An examination of contemporary sociological thought in certain selected areas: sociology of religion, ethics, law, knowledge, fine arts, war, economics, and social psychiatry.

## 4310. Research Methods (Nonstatistical). Cr. 3.

A survey and analysis of proposed methods and techniques of sociological research; supervised field training and work.

## 531. Research Methods (Statistical). Cr. 3.

Elementary statistical methods of analyzing sociological data; interpretation and

presentation of statistical data; practical application of statistics in selected areas of research.

**532. Seminar in Systematic Sociological Theory. Cr. 3.**

The function of theory with reference to research. The relation between systems and hypotheses; referential principles of sociology; the significance of concepts; methodological problems and issues in sociology.

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

## Home Economics Education

PROFESSOR ADAMS. ASSOCIATE PROFESSOR CLEWELL.  
ASSISTANT PROFESSOR NESBITT.  
INSTRUCTOR GRAVES.

The curriculum in the Department of Home Economics Education meets the requirements for the Certificate of Approval for Homemaking Education (vocational), the six-year high school certificate, and the special certificate to teach home economics.

Candidates for the Certificate of Approval for Homemaking Education (vocational) must have some actual homemaking experience.

### For Undergraduates

**111. Introduction to Home Economics. Cr. 1.**

A basic course for all curricula in the Division of Home Economics. Units offered include the relationship of the student with her college; the development of good habits of study; student budgeting of time and money; special emphasis on individual counseling and vocational guidance. Required of all home economics freshmen.

**331. Principles of Teaching Home Economics. Cr. 3.**

Prerequisite: Junior standing in the Division of Home Economics and the approval of Department Head; Ed. 234 or parallel. An introduction to teaching home economics; professional development principles of learning; methods and techniques in presenting the various types of lessons; collection and organization of teaching materials; the year-round program and its relation to the community. Home experiences; opportunities to visit selected types of home economics programs.

**411. Home Economics Lectures. Cr. 1.**

Prerequisite: Senior standing in home economics. Reports and discussions on assigned topics based on recent literature and research. Counseling; occupational guidance. Aspects of professional preparation and development.

**412. Supervised Observation in Home Economics. Cr. 1.**

Prerequisite: 90 hours in home economics curricula and the approval of department head. Guided observation of vocational homemaking programs as a basis for analyzing the application of educational principles to homemaking instruction. Evaluation of methods used in teaching.

**431. Methods of Teaching Home Economics. Cr. 3.**

Prerequisite: Ed. 234: H.E. Ed. 331, senior standing. Philosophy of homemaking education; national vocational acts; the vocational homemaking program in Texas; current influences and needs; the whole school program and the community; planning space and equipment; business management; records and reports; evaluation of teaching; the FHA program; extra-class activities. Visiting selected types of vocational homemaking programs.

**433. Methods of Teaching Home Care of the Sick and Home Safety. Cr. 3.**

Prerequisite: Junior standing. H.E. Ed. 331. Designed to help teachers meet the need for applying techniques in teaching home care of the sick, home safety and the common home health emergencies. Study of community resources as they affect home, health, and sanitation.

### For Undergraduates and Graduates

When used for graduate credit, these courses must be properly petitioned for and additional work or an added problem is required.

**432. Problems in Teaching Clothing. Cr. 3.**

Prerequisite or parallel: H.E. Ed. 431; Cloth. 334 or 431, senior standing. Methods used in teaching clothing. Demonstrations and projects. Preparation of illustrative materials, scales, exhibits.

**434. Methods of Teaching Applied Art in the Homemaking Curriculum.**

**Cr. 3.**

Prerequisite: H.E. Ed. 331. Methods of incorporating the teaching and application

of art into the vocational homemaking program.

**435. Methods for Adult Leadership. Cr. 3.**

Prerequisite: Senior standing; H.E. Ed. 331, 431. A survey of community programs for home and family life education. Emphasis on the techniques and problems in the promotion and organization of programs of homemaking education for adults, out-of-school youth and parents. Interpreting homemaking to the community.

**441. Student Teaching in Home Economics. Cr. 4. (2-10).**

Prerequisite: H.E. Ed. 431; Nutr. 334; Cloth. 232. Supervised observation and teaching and participation in the various phases of vocational homemaking programs.

### For Graduates

**532. The Development of the Homemaking Program. Cr. 3.**

Prerequisite: Graduate standing. Philosophy and development of the home economics movement; the curriculum; major trends in the field; evaluation of current home economics literature; administrative problems in developing the program and the place of homemaking education in life adjustment education.

**534. Techniques of Research. Cr. 3.**

Prerequisite: Graduate standing and the consent of the Head of the Department. Registration in this course enables the graduate student to carry on such research as will qualify for a required master's thesis.

**536. Problems. Cr. 3.**

Prerequisite: Graduate standing; H.E. Ed. 431 and H.E. Ed. 441. Study of individual and group problems according to special interests and needs of the class.

**537. Techniques of Supervision in Home Economics. Cr. 3.**

Prerequisite: Graduate standing. Responsibilities and techniques of supervision with special reference to democratic procedures in an education program. Designed for teachers of successful experience. Field contacts with various types of programs.

**631. Thesis. Cr. 3.**

**632. Thesis. Cr. 3.**

## Home Management

PROFESSOR WEEKS. ASSOCIATE PROFESSOR DREW.

The Department of Home Management aims to give students an appreciation of the value of good management in the various phases of home life, as well as to provide means of developing skill in homemaking activities. Residence in the Home Management House gives opportunity for securing experiences in the managerial and social problems of homemaking.

### For Undergraduates

**332. General Home Management. Cr. 3.**

Prerequisite: Junior or senior standing in any division of the college. Development of a philosophy of home management, management of time and energy, work simplification, finance, housing and other home management problems.

**432. Residence in Home Management House. Cr. 3.**

Prerequisite: H. Mgt. 332, 12 hours in Department of Foods and Nutrition. Living in Home Management House for a minimum of six weeks and under supervision. Food preparation and service, housekeeping, household finance, entertaining and group relationships, including care of an infant. Students pay a fixed sum for room and board.

### For Undergraduates and Graduates

When used for graduate credit these courses must be properly petitioned for and additional work or an added problem is required.

**431. Housing, House Care, and Management. Cr. 3. ((2-3)).**

Prerequisite: H. Mgt. 332. Housing as it affects the family and community; problems relating to the physical care of the house including cleaning, storage, home safety, laundering, operation and maintenance.

**433. Household Equipment. Cr. 3. (2-3).**

Prerequisite: H. Mgt. 332. Selection, operation and care of household equipment, both large and small, including electric, non-electric and gas.

**434. Consumer Problems. Cr. 3.**

Prerequisite: Eco. 231, junior or senior standing. A survey of the forces which today affect consumer choices. Development of practical principles for better buying and use of household commodities. Evaluation of agencies concerned with this movement.

## Horticulture and Park Management

PROFESORS URBANOVSKY, YOCUM. ASSISTANT PROFESSOR ELLE\*. INSTRUCTORS GWINN, SAMCHOK.

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. The physical facilities of this department provide a means of starting plant materials from seed or cuttings and caring for these plants through all the steps in propagation and growing until they are finally planted in a suitable location on the campus. The orchard facilities include different varieties of grapes, peaches, plums, apples, pears, cherries, and other fruits. The vegetable gardens are equipped with irrigation facilities and permit year-round growing of suitable species of vegetable crops.

### HORTICULTURE

#### For Undergraduates

131. Principles of Horticulture and Plant Propagation. Cr. 3. (2-3).

Fundamental principles and practices of orcharding, gardening; propagation by seeds, cuttings, division, budding, and grafting.

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.

321. Apiculture. Cr. 2. (1-3).

Prerequisite: Junior standing. Introduction to practical beekeeping. Value of bees in production of horticultural and agronomic crops.

322. Landscape Appreciation. Cr. 2. (2-0).

Prerequisite: Junior standing. History of gardening. Basic principles of landscape design for city and farm homes. Practice work on landscape problems. The principal trees and shrubs.

331. Trees and Shrubs. Cr. 3. (3-0).

Prerequisite: Junior standing. Identification characteristics, and use of shrubs, deciduous and evergreen trees of economic and ornamental importance.

332. Annuals and Perennials. Cr. 3. (2-3).

Prerequisite: Junior standing. Identification, characteristics, culture and uses of annuals, perennials, bulbous crops, and outdoor roses.

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.

- 334-5. Principles of Floriculture. Cr. 3. (2-3).

Prerequisite: Hort. 131. Junior standing. Greenhouse construction, heating and management. Culture of special greenhouse crops. Retail management, flower arrangement and nursery management.

- 336-7. Landscape Design. Cr. 3. (1-6).

Prerequisite: E. Dr. 131, Arch. 121-2, junior standing. Principles of landscape design, the city home, country estates, gardens, small city parks, and playgrounds. Field trips are included for practical applications.

338. Plant Propagation. Cr. 3. (2-3).

Prerequisite: Horticulture 131, Biology 133, Chemistry 142, Agronomy 241. A study

\* On leave 1950-51.



of the principles and practices involved in propagation of horticultural materials. To acquaint the student with commercial methods followed by nurserymen and florists.

**339. Plant Insects and Diseases and Their Control. Cr. 3. (3-0).**

Prerequisite: Junior standing in agriculture or biology. The most important fruit, vegetable, and crop insects and diseases—and their control. Sprays, methods of spraying, and spray calendars.

**3310. Functions of Horticultural and Agronomic Crop Plants. Cr. 3. (3-0).**

Prerequisite: Junior standing Agro. 131, Biol. 133 and Hort. 131. The behavior, growth processes, temperature relations, moisture relations, drought resistance, nutrition and food reserves, pollination, fertilization, and fruit setting, and permanent effects resulting from insect and fungus invasion of horticultural and agronomic crop plants.

**410. Seminar. Cr. 1. (1-0).**

Prerequisite: Senior standing in horticulture. Assigned readings, current advances and thought. Informal discussions, oral reports, and papers.

### For Undergraduates and Graduates

**421. Citriculture. Cr. 2. (2-0).**

Prerequisite: Junior standing. Commercial production of citrus fruits, adaption, soil requirements, temperature, orchard heating, and irrigation.

**422. Design and Operation of Parks and Recreation Systems.**

Cr. 2. (2-0).

Prerequisite: Junior standing and consent of instructor. Park management, operation, planning, financing, legislation, and use.

**423. Design and Operation of Parks and Recreation Systems.**

Cr. 2. (2-0).

Prerequisite: Junior standing and consent of instructor. Park structures and planning of structures.

**425. Horticulture Problems. Cr. 2. (2-0).**

Prerequisite: Open to senior students having satisfactory scholastic record and background. An investigation of a problem in the field of special interest to the individual student concerned.

**430. Horticultural Problems. Cr. 3. (3-0).**

Prerequisite: Open to senior students having satisfactory scholastic record and background. An investigation of a problem in the field of special interest to the individual student concerned.

**431-2. Pomology. Cr. 3. (3-0).**

Prerequisite: Hort. 333, or registration in Hort. 433. The principles underlying fruit production. Temperature, moisture, irrigation, nutrition, fruit setting of pomological fruits.

**433. Systematic Pomology. Cr. 3. (2-3).**

Prerequisite: Hort. 333, or registration in Hort. 431. Nomenclature, variety, description, classification, climatic and regional adaption. Practice in describing and identifying varieties of fruits.

**434. Landscape Planning. Cr. 3. (3-0).**

Prerequisite: Junior standing. Design of farmstead, small schoolgrounds, care and maintenance of trees, shrubs, etc. Elementary general landscape maintenance.

### For Graduates

**512, 513, 514. Horticulture Seminar. Cr. 1, 2, or 3.**

Prerequisite: Graduate standing in agriculture or equivalent. Review and discussion of current literature in the field.

**531, 532, 533. Horticultural Problems. Cr. 3, 6, or 9.**

Prerequisite: Graduate standing and consent of major professor and Head of Department. Credit to vary depending upon problem outlined. The work will consist of an outline of a specific problem in line with the major interest of the student and dealing with a phase of specialized study not included in regular course work.

**631-2. Thesis.**

## Industrial Engineering and Engineering Drawing

PROFESSORS ST. CLAIR, PERRYMAN. ASSOCIATE PROFESSORS PENICK, GREEN, ASSISTANT PROFESSORS ATKINSON, JENKINS. INSTRUCTORS HUGHES, KIGER, MACKENZIE.

### INDUSTRIAL ENGINEERING

Industrial engineering is that branch of engineering which specializes in the location, design, construction, operation, and equipment of industrial plants.

The demand for graduates in this branch of engineering has greatly increased during the past few years and the need for such training was emphasized during World War II.

The curriculum covered by this major enables a graduate to enter the employ of the average industrial concern on the same basis as a graduate in electrical or mechanical engineering. After his basic training he is in a position to enter any one of a number of fields such as production, purchasing, personnel, time study, design, etc.

The student obtains instruction in the basic branches of electrical, civil, mechanical, and chemical engineering, as well as the more special branches of industrial engineering.

An examination of the curriculum indicates that emphasis is placed on plant design, location, type of building and machinery, safety, methods of organization, and the proper personnel for operation of a particular industry.

Courses which may be used for graduate credit:

In addition to all courses numbered in the 500 series, courses in this department which may be taken for graduate credit are: I. Engr. 331, 332, 333, 336, 337, 411, 423, 432-3, 435, and 436, if properly petitioned for and provided additional work or an added problem is done in each course numbered in the 300 or 400 series, which otherwise carry no graduate credit.

#### 321. Personnel Administration. Cr. 2. (Formerly I.E. 316).

Prerequisite: Junior standing. Principles and methods involved in selecting, testing, training, and maintaining an efficient, co-operative working force. Procedure of interviewing, hiring, transferring, promoting, and discharging. Course content especially adapted for engineering majors.

#### 331. Time and Motion Study. Cr. 3. (2-3).

Prerequisite: Junior standing or permission of Head of Department. Methods of taking and analyzing time and motion studies; setting of standard times; calculation of wage incentives; analysis of studies of representative processes. Technique of stop watches studies—allowances—fatigue—problems.

#### 332. Management. Cr. 3.

Prerequisite: Junior standing. A study of the principles of management as applied to organization, departmentalization, plant layout, production control, wage and incentive systems. Course content especially adapted for engineering majors.

#### 333. Manufacturing Methods. Cr. 3.

Prerequisite: Junior standing in engineering. Methods of manufacture used in various industries such as paper, Portland cement, steel and iron, sulphur, automobiles, airplanes, petroleum, meat packing, etc. Study of types of machines, character of buildings. Brief history of each industry up to most modern methods, also nature of working conditions, hazards, annual value of product. Centers of each industry.

#### 336. Tool Design. Cr. 3. (1-6).

Prerequisite: Junior standing in engineering and at least parallel registration in C.E. 333; and 7 hours credit in engineering drawing. Study of types and characteristics of tools best suited for work in different metals. Speeds most satisfactory for various metals—depth of cuts. Tools for various types of machines and jobs will be designed—also jigs, fixtures, dies, gauges, etc.

#### 337. Industrial Control. Cr. 3.

Prerequisite: Junior standing. System of quality and quantity control in the produc-

tion of goods. Methods of controlling personnel, machines, materials, and quality of products by means of scheduling, dispatching, routing, and statistical methods.

#### 411. Industrial Engineering Problems. Cr. 1. (0-3).

Prerequisite: Senior standing in engineering. The practical solution of problems which engineering students may encounter in their daily work in industry. Problems will involve operating efficiencies, estimating of electric power bills, determination of proper sizes of power transmission equipment, figuring indicator diagrams, and application of principles of strength of materials.

#### 423. Purchasing. Cr. 2.

Prerequisite: Junior or senior standing. General methods of purchasing; specifications; quotations; relation of price and quality; sources of supply; organization of the purchasing department; qualifications of the purchasing agent.

#### 432-3. Industrial Plant Design. Cr. 3. (1-6).

Prerequisite: Senior standing in industrial engineering and C.E. 333 or parallel registration. In the form of a seminar. A complete industrial plant will be designed, covering location, capacity, material routing, type of buildings, machinery, shipping, sanitary and safety working conditions.

#### 435. Industrial Safety Engineering. Cr. 3.

Prerequisite: Senior standing in engineering, or experience in industry covering at least six months. History of safety movement especially as applied to industry. Cost of accidents; methods of teaching and enforcing safety; fundamentals of machine guarding; safety organization; accident rates; accident investigations and reports; protective equipment; fire protection; health hazards; first aid. Reports required from students on observed hazards.

#### 436. Principles of Engineering Economics. Cr. 3.

Prerequisite: 3 hours, principles of fundamentals of economics. Available means from which to judge the trend of business as indicated by government reports; planning economy studies to solve engineering problems; interest—the time element in economy techniques for economy studies; getting results from economy studies; problems in application of principles of engineering economy.

### ENGINEERING DRAWING

The courses offered in engineering drawing are fundamental for all courses in engineering. The aim of these courses is to prepare the student to use, intelligently and skillfully, standard drawing instruments and equipment of a design and plant layout man.

Approved drawing equipment is required in all courses.

#### 111. Engineering Drawing. Cr. 1. (0-3).

This course is for students who have completed only 2 semester hours of engineering drawing in a junior college, or other college where the course content has been equivalent to only 2 semester hours of E. Dr. 131. Course content will cover those subjects ordinarily not covered in his previous work.

#### 121. Engineering Drawing. Cr. 2. (0-6).

Prerequisite: E. Dr. 131, or equivalent. Intersections, developments, dimensioning, slant lettering, oblique drawings, 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, isometric drawings. In lecture, problems are given in solid geometry.

#### 134-5. Graphic Arts. Cr. 3. (1-6).

The use of instruments, lettering, architectural geometry, geometry in design, orthographic projection, sections, auxiliary views, the meaning of "scale," dimensioning, elementary application of graphic arts, intersections, developments, mechanical pictorial methods, working drawings.

#### 221. Machine Drawing. Cr. 2. (0-6).

Prerequisite: E. Dr. 121, or the equivalent. Application of the graphic language to engineering purposes, engineering sketches, machine fastenings, conventional practice, machine details, detail and assembly drawings.

#### 222. Descriptive Geometry. Cr. 2. (1-3).

Prerequisite: E. Dr. 131, or the equivalent. Theory of engineering drawing which provides training in exact thinking. Point, line, and plane problems, tangent planes, intersections and developments, single and double curved surfaces, and warped surfaces; practical problems.

### Institutional Management

(See Foods and Nutrition)

## Italian

(See Foreign Languages)

## Journalism

PROFESSOR HEITMAN. ASSISTANT PROFESSORS ALLEN  
AND NELSON. INSTRUCTOR WEAKS.

Students majoring in journalism are required to complete 36 semester hours including Journalism 231, 232, 335, 336, 337, 430, and 333 or 434; for a minor in journalism, a minimum of 18 semester hours is required, of which 6 hours must be Journalism 231 and 232. An English minor for a journalism major requires 24 hours. Minor subjects must be approved by the Head of the Department. Sophomore classification is prerequisite for any course in journalism. A knowledge of typewriting is necessary before students are admitted to Journalism 231.

### For Undergraduates

#### 231. Newspaper Reporting and Writing. Cr. 3.

An introduction to journalism; problems and methods of gathering and writing news. Practice assignments. Prerequisite to all other journalism courses, for majors and minors.

#### 232. Newspaper Reporting and Writing. Cr. 3. (1-6).

Prerequisite: Journalism 231. Reporting and writing for publication in college newspaper. Putting into practice principles learned in 231. Prerequisite to all higher journalism numbers, for majors and minors.

#### 330. Typography. Cr. 3.

Mechanics of printing and publishing; choice of type and its arrangement; type harmony and readability; copy fitting; make-up of newspaper and magazine pages; engravings, duplicating processes, and presses. Individual study and research.

#### 331. Special Feature Articles. Cr. 3.

The newspaper feature story. Sources for subjects, collection of facts, writing and slanting the story for particular markets.

#### 335. History of American Journalism. Cr. 3.

Origin and growth of the American newspaper as affected by social, economic, and political forces; biographical study of American journalists; contemporary journalistic problems and affairs. Individual study and research.

#### 336-7. Advanced Reporting. Cr. 3. (1-6).

Reporting and writing for college newspaper. Consideration of complex news stories, interpretative pieces. In second semester, reporting of public affairs.

#### 338-9. News Editing. Cr. 3. (1-6).

Laboratory course in newspaper desk work, including copyreading, the writing of headlines, make-up and proofreading. Desk assignments on college newspaper.

#### 3310. Agricultural and Home Economics Journalism. Cr. 3.

Prerequisite: Junior standing. A course designed to give agricultural and home economics students brief preparation in the principles of gathering and writing news stories, feature stories, and magazine articles in their respective fields. Lectures on editing and marketing copy, and on use of radio by county agents included.

#### 3312. Basic Photography. Cr. 3. (1-6).

History of photography. Lecture and laboratory course covering the fundamentals of photographic processing, including developing, printing, and enlargement. Introduction to news and feature pictures.

#### 3313. Press Photography. Cr. 3. (1-6).

Varied assignments of picture coverage, stressing staff photography work. Lecture and laboratory course covering picture processing and technical training in the use of the press camera.

#### 3314. Advanced Press Photography. Cr. 3. (1-6).

Reportorial duties with the camera for newspaper and magazine publication. Study of picture markets and practice and study in picture editing. Prerequisite: Journalism 3312 and 3313.

#### 3315. Advanced Press Photography. Cr. 3. (1-6).

Advertising and layout studied in connection with photography. Editing news and feature pictures. Prerequisite: 9 hours of photography.

## 3318. Radio News. Cr. 3.

Prerequisite: Junior standing and completion of Journalism 231 and 232. Training in radio news writing and practice in preparation of copy for both wire and local news reports; interviews; news dramatizations. Speech 335 recommended.

## 3319. Radio Advertising and Continuity Writing. Cr. 3.

Prerequisite: Junior standing. A study of network and station organization. Application of techniques of advertising to radio presentation. Preparation and presentation of radio advertising copy. Speech 335 recommended.

## 431. Critical Writing. Cr. 3.

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 publication. 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; what to write about; where and how to get facts and how to arrange them; preparation of the whole article; study of markets.

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

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 the press to society.

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

Prerequisite: Senior standing in journalism. The problems confronted by a publications supervisor in organizing and maintaining high school newspapers and year-books, 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 editorial writing; a study of contemporary editorial pages and of editorials, with analysis of style, content, and purpose; technique and much practice.

## 435-6. Newspapers Advertising Problems and Methods. Cr. 3.

Prerequisite: Senior standing in journalism. Advertising and a free press; selling and servicing newspaper advertising; rate structures; newspaper advertising make-up; procedure in newspaper advertising departments.

## Latin

(See Foreign Languages)

## Management

PROFESSOR MIZE. ASSISTANT PROFESSORS FOX,  
HARDING. INSTRUCTOR HUBBARD.

Management has become an important field of specialization in modern industry. The courses offered in this department provide basic training for those students desiring to enter this comparatively new and growing profession.

## For Undergraduates

## 110. Professional Careers in Business. Cr. 1.

An introduction to formal preparation for business occupations. A survey of employment and promotional opportunities, duties and qualifications of personnel, preparation, compensation, employment regulations, and other information pertinent to a student's planning to prepare for a life in business.

## 231. Business Organization and Management. Cr. 3.

Prerequisite or corequisite: Economics 231-2 and Accounting 244-5. The course is an introduction to management; a study of the fundamental principles of business management, including the organization and promotion of an enterprise, operation, managerial controls, and external relations.

## For Undergraduates and Graduates

**331. Industrial Management. Cr. 3.**

Prerequisite: Economics 231-2. (Management majors should have Management 231.) The course deals with the executive problems of production, types of executive control, and principles of scientific management; problems in plant location, selection of physical properties, layout, methods of control, and policies of manpower management.

**332. Management of Small Business Enterprise. Cr. 3.**

Prerequisite: Economics 231-2. (Management majors should have Management 331.) This is a problems course involving the application of fundamental principles of management to small-scale enterprise situation; organization, financing, property control, production control, management of manpower, advertising and sales management, and coordination of activities.

**333. Labor Problems. Cr. 3.**

Prerequisite: Economics 231-2. A study will be made of the major labor problems of this country and the measures designed to meet them. Emphasis will be given to the social security movement and to the place of labor organizations in the solutions of problems of workers.

**334. Personnel Administration. Cr. 3.**

Prerequisite: Economics 231-2. (Management majors should have Management 231 or Management 331.) A study will be made of the principles and problems of personnel administration; employee selection, training, placement, service-rating, promotion and transfer, and employee services. Special attention will be given to problems of wages and incentive plans, working hours, and labor turnover. (Formerly Management 432.)

**335. Purchasing, Stores, and Inventory Control. Cr. 3.**

Prerequisite: Management 331. A study of the organization and functions of purchasing departments. Problems of purchasing policies and procedures, sources, price policies, speculation, contract negotiation and adjustment, quality control, transportation, receiving, stores control, salvage, disbursing, budgets, and legal status.

**336. Industrial Traffic Management. Cr. 3.**

Prerequisite: Economics 335 and Management 331. Problems in keeping tariff files, obtaining and quoting rates, routing, expediting and tracing shipments, making claims, and auditing freight bills.

**410. Employment Guidance. Cr. 1.**

Prerequisite: Senior standing. A study of current employment conditions, criteria for judging job opportunities, and effective techniques for making applications, meeting interviews, and carrying out proper follow-up on prospective positions. Objective will be development of practical individual programs for obtaining positions in business and industry.

**431. Office Management. Cr. 3.**

Prerequisite: Economics 231-2 and Accounting 244-5. The course is a study of the standard of office practice, wage payment plans, selection and training of office workers, office planning, techniques of office methods, and duties and responsibilities of the office manager.

**432. Advanced Personnel Management. Cr. 3.**

Prerequisite: Management 333, Management 334, and Psychology 330. Problems in personnel management are developed through consideration of cases, experiences, and research in various employer-employee relationships. Emphasis is upon analysis of typical problems and requires the student to draw, to considerable extent, upon his previous knowledge of the principles of personnel management. Development of programs for representative business organizations will be used as projects.

**433. Labor Relations. Cr. 3.**

Prerequisite: Management 333. A study will be made of the problems of labor relations with particular emphasis on labor legislation; background of labor legislation by Federal Government, Sherman Act, Railway Labor Act, National Labor Relations Act, Fair Labor Standards Act, other federal laws, state laws, and collective bargaining standards and practices.

**434. Job Evaluation and Wage Administration. Cr. 3.**

Prerequisite: Management 334. The course will deal with various methods of job evaluation for worker placement and wage determination, principles of compensation methods, types of wage incentives, wage plans, and control of labor costs.

**435. Employee Supervision. Cr. 3.**

Prerequisite: Management 334. The relation of the supervisor to his subordinates and to higher management will be studied; cooperation, loyalty, leadership, planning of group work, and the use of the tools of supervision. Particular attention will be given to introducing and training new employees, rating discipline, problems of absenteeism, and maintenance of morale.

**436. Problems in Office Management. Cr. 3.**

Prerequisite: Management 431. Intensive study will be made of office organization and administration; the standardization of offices 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. Human Relations in Industry. Cr. 3.**

Prerequisite: Management 334 and Psychology 330. A study of problems of morale and cooperation among employees and worker-supervisor groups, with special attention to the mutual interest approach. Systematic presentation of the human structure of industry and the stresses and strains in human relationships that result in inefficiencies, and that are not readily revealed by the usual technological and economic analyses.

**438. Interviewing, Selecting, and Counseling Employees. Cr. 3.**

Prerequisite: Management 334 and psychology 330. Techniques of interviewing and uses of the interview in selecting, placing, and supervising employees. Principles of employee counseling and the use of interview in discovering and dealing with the problem employee.

**439. Personnel Tests and Rating Scales. Cr. 3.**

Prerequisites: Management 334, Marketing 336, and Psychology 330. The use and interpretation of psychological tests. Vocational tests, and rating scales in the selection, administration, and supervision of personnel. Examination of typical tests now in use by Civil Service commissions and personnel departments in industry with emphasis on interpretation and efficient methods of using results.

**4310. Industrial Management Problems. Cr. 3.**

Prerequisite: Management 331, Management 334, and senior standing. The course will deal with problems of organization and management of an industrial enterprise. The student will be required to make plant inspections to observe first-hand industrial organization at work. Industrial films will be used to supplement the work.

**For Graduates****531. Research in Management. Cr. 3.**

Prerequisite: Graduate standing in management. Scientific research in an appropriate field of business management or personnel administration. Individual study and presentation of an approved problem.

**532. Research in Management. Cr. 3.**

Prerequisite: Graduate standing in management. Scientific research in an appropriate field of business management or personnel administration. Individual study and presentation of an approved problem.

**631-2. Master's Thesis. Cr. 6.****Marketing**

**PROFESSOR HEATHER. ASSOCIATE PROFESSOR GOLDEN.  
INSTRUCTORS BLACKWELL, DYKES, FRIEDBERG.**

The curriculum in marketing is primarily designed to provide professional training for careers in the realm of merchandising 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 and Graduates****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 middlemen and marketing institutions. Current marketing practices. Distribution of raw materials and finished products.

**333. 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.

**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. (Formerly Marketing 432.)

**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. (Formerly Marketing 436.)

**336. Introduction to Business Statistics. Cr. 3.**

Prerequisite: Mathematics 137. A study of sources, presentation, and interpretation of statistical data as applied to business.

**337. Intermediate Business Statistics. Cr. 3.**

Prerequisite: Marketing 336. A continuation of the study of the principles of business statistics with special emphasis on practical applications in forecasting, budgeting, production, labor, marketing analysis, real estate analysis, investment analysis, banking and finance, and executive control and management. This course is particularly advantageous to students in accounting, finance, management, and marketing.

**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. (Formerly Marketing 433.)

**421. Advertising Copy. Cr. 2.**

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.

**431. Commodity Marketing. Cr. 3.**

Prerequisite: Marketing 332. A specialized study of problems involved in marketing commodities. Individual assignments will be made.

**434. Trends in Wholesale Distribution. 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, manufacturers' agents, brokers, jobbers, commission firms, service and special wholesalers, other intermediary marketing institutions, and consignments.

**435. Business Cycles and Forecasts. Cr. 3.**

Prerequisite: Marketing 336. Theories of cycles. The causes and proposed remedies. Examination of forecasting services available and technique employed by them. Problems in specific commodities and securities.

**437. Advanced Business Statistics. Cr. 3.**

Prerequisite: Marketing 337. Further training in statistical methods and their uses in business institutions. A more extended study of some phases of statistics including sampling, averages, dispersion, index numbers, linear and nonlinear correlation, multiple and partial correlation, estimates, variance, and their use in business forecasting.

**438. Display. Cr. 3.**

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 Administration. 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 organization, selection, training, equipping, and remunerating sales personnel; sales control, embodying sales territories, routing, expense accounts, quotas, costs and budgets; sales promotion; and sales policies.

**4310. Trends in Retailing Systems. Cr. 3.**

Prerequisite: Marketing 335. Modern trends in retailing. Newer types of retail distributors; chain systems; super-markets; voluntary chains; cooperatives; and direct to consumer buying.

**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.

**4316. Graphic Analysis. Cr. 3.**

Prerequisite: Marketing 337. The use of graphs in modern business analysis. Includes the construction, interpretation, and application of all types of business graphs including the various line graphs, bar charts, two and three-dimensional charts, pictograms, component parts charts, and statistical maps.

**4317. Advertising Layout. Cr. 3.**

Prerequisite: Marketing 421. 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 department store, and an outdoor advertising plant.

**For Graduates****531. Research in Marketing. Cr. 3.**

Prerequisite: Graduate standing and permission of instructor. The student will select an appropriate subject for personal study and will present an acceptable term paper.

**532. Advanced Marketing Problems. Cr. 3.**

Prerequisite: Graduate standing and permission of instructor. Analysis of specific marketing problems of interest to the student. Individual problems will be assigned to members of the class.

**534. Problems in Advertising. Cr. 3.**

Prerequisite: Graduate standing and permission of instructor. Study of special problems in advertising which are of interest to the student. Individual problems will be assigned.

**539. Problems in Sales Administration. Cr. 3.**

Prerequisite: Graduate standing and permission of instructor. Analysis of specific problems in sales administration of interest to the student. Individual problems will be assigned.

**631-2. Master's Thesis. Cr. 6.****Mathematics**

PROFESSORS HAZLEWOOD, FULLER, HEINEMAN, SPARKS, UNDERWOOD. ASSOCIATE PROFESSOR MOSER. ASSISTANT PROFESSORS MAY, PARKER, WOODWARD. INSTRUCTORS HOLLAND, LINDSAY, McGLOTHLIN, ROBERTS, ROWLAND, SMITH, THOMAS.

**For Undergraduates****121-2. Algebra. Cr. 2 for each one.**

Primarily for engineering and science students.

Prerequisite: 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; variation; progressions; binomial theorem; graphs; inequalities; complex numbers; elementary theory of equations; exponential equations; determinants.

**130.\* Algebra. Cr. 3.**

Prerequisite: One unit of high school algebra. Review of high school algebra; quadratic equations; variation; progressions; graphs; binomial theorem; logarithms.

**131. Trigonometry. Cr. 3.**

Prerequisite: One unit of high school algebra, one unit of plane geometry, and Math. 121 or 130, or concurrent registration in Math. 121. Trigonometric functions; radians; logarithms; solutions of triangles; functions of composite angles; identities; trigonometric equations.

**132. Analytic Geometry. Cr. 3.**

Prerequisite: Math. 121 or 130, and 131. The straight line and conic sections; transformation of coordinates; polar coordinates; parametric equations; introduction to solid analytic geometry.

**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 or Math. 137.

**137.\* Commercial Algebra. Cr. 3.**

Primarily for students of business administration.

Prerequisite: One unit of high school algebra. Review of high school algebra; simple equations; exponents; quadratic equations; progressions; graphs; logarithms; simple interest.

**138. Mathematics of Finance. Cr. 3.**

Prerequisite: Math. 137 or its equivalent. Compound interest; discount; annuities; amortization; depreciation; sinking funds; evaluation of bonds; introduction to statistical methods.

**230. Agricultural Mathematics. Cr. 3.**

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 for each one.**

Prerequisite: Math. 132 or concurrent registration. Differentiation; rates; maxima and minima; curvature; formal integration; definite integrals; areas; lengths; volumes.

**234. Algebra. Cr. 3.**

Prerequisite: Math. 130 or 121. Inequalities; complex numbers; elementary theory of equations; permutations and combinations; probability; determinants; partial fractions; mathematical induction.

**238. Statistics. Cr. 3.**

Prerequisite: Math. 130 or 137. Collection and tabulation of data; bar charts; line graphs; sampling; averages; dispersion; correlation; index numbers; normal curve; probability; applications to various fields.

**251. Calculus. Cr. 5.**

Primarily for engineers.

Prerequisite: Math. 122 or 234, and 132. Differentiation; rates; maxima and minima; curvature; formal integration; areas.

### For Undergraduates and Graduates

**321. Differential Equations. Cr. 2.**

Prerequisite: Math. 232 or Math. 251. Solutions of elementary types of differential equations, with applications.

**331. Applications of Calculus. Cr. 3.**

Prerequisite: Math. 232 or Math. 251. Lengths; surfaces; volumes; centroids; moments of inertia; pressure; work; partial differentiation; series; multiple integrals; indeterminate forms; hyperbolic functions.

**332. Differential Equations. Cr. 3.**

Prerequisite: Math. 232 or 251. Solutions of differential equations, with geometric and physical applications.

**333. Advanced Algebra. Cr. 3.**

Prerequisite: Math. 234 or 122. Mathematical induction; 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.

\* Credit will not be allowed for both Math. 137 and 130.

**339. Statistical Methods. Cr. 3.**

Prerequisite: Math. 238 or its equivalent. 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.

**431. Teaching of Secondary Mathematics. Cr. 3.**

Prerequisite: Twelve semester hours of college mathematics or consent of the instructor.

**432. Advanced Differential Equations. Cr. 3.**

Prerequisite: Math. 332 or 321. 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; systems of linear equations.

**434, 5.\*\* Advanced Calculus. Cr. 3 for each one.**

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.

**436. Introduction to Finite Groups. Cr. 3.**

Prerequisite: Math. 232 and the consent of the instructor. Substitution groups; Lagrange theorem; Galois theory; groups of an equation; gamma groups; series of composition.

**437. Theory of Numbers. Cr. 3.**

Prerequisite: Math. 232 or 251. Prime numbers; congruences; theorems of Fermat, Euler, and Wilson; residues; reciprocity law; Diophantine equations.

**438. Solid Analytic Geometry. Cr. 3.**

Prerequisite: Math. 132 and the consent of the instructor. Direction angles and cosines; the equations of space curves, lines, and surfaces.

**439. Vector Analysis. Cr. 3.**

Prerequisite: Math. 232 or 251. Scalar and vector products; gradient; divergence; curl; applications.

**For Graduates****533. Advanced Topics in Analysis. Cr. 3.**

Prerequisite: Math. 332 or 321. Partial differential equations; boundary value problems; related topics.

**534. Synthetic Projective Geometry. Cr. 3.**

Prerequisite: Consent of the instructor. Fundamental theorems of projective geometry treated synthetically.

**535. Analytic Projective Geometry. Cr. 3.**

Prerequisite: Math. 438. Analytic treatment of the projective properties of the straight line and the conic sections.

**536, 7.\*\* Modern Algebra. Cr. 3 for each one.**

Prerequisite: Math. 433. Numbers; sets, groups; rings; fields and polynomials; Galois theory.

**539. Special Topics in Number Theory. Cr. 3.**

Prerequisite: Math. 437. Distribution of primes and problems in additive number theory.

**5312, 13.\*\* Functions of a Complex Variable. Cr. 3 for each one.**

Prerequisite: Math. 435. The algebra of complex numbers and their geometric representations; conformal mapping; power series and properties of analytic functions; differentiation and integration; special definite integrals and infinite products.

**5314, 15.\*\* Functions of a Real Variable. Cr. 3 for each one.**

Prerequisite: Math. 5313. The real number system; set theory; Borel-Lebesgue measure; Riemann, Lebesgue, and Stieltjes integrals.

**631-2. Thesis.****ASTRONOMY****For Undergraduates****111. Survey of Astronomy. Cr. 1.**

Prerequisite: College standing. The main features of the known universe and the

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

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 for each one.**

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.

Note the general regulations for the B.A. degree, and the curriculum for the Bachelor of Science in Mathematics.

## Mechanical Engineering

PROFESSORS GODEKE, HARDGRAVE, POWERS. ASSOCIATE  
PROFESSORS NEWELL, WILLIAMS. ASSISTANT PRO-  
FESSORS MASON, MONASCH. INSTRUCTORS  
HELMERS, LAUDERDALE, FORD, POWELL,  
McDONALD, MARTIN.

Mechanical engineering deals with the generation, transmission and utilization of power; the design, construction, operation, and testing of machinery; and the management of shops and factories. The course of study is designed to prepare the student for entrance into these fields. Shop and laboratory courses are used to familiarize the student with methods used in the industries. An approved slide rule is required for all but shop courses.

Electives offered in the senior year may be chosen only with the approval of the department. A curriculum in Mechanical Engineering, Aeronautical Option is offered for those who desire to enter this field.

### COMBINATION COURSE PETROLEUM ENGINEERING— MECHANICAL ENGINEERING AND PETROLEUM ENGINEERING

The Departments of Petroleum Engineering and Mechanical Engineering are cooperating in offering a five-year curriculum. At the successful completion of four years of this curriculum the Degree of Bachelor of Science in Petroleum Engineering, Production of Natural Gas Option, will be awarded. At the successful completion of the additional courses prescribed for the fifth year the Degree Bachelor of Science in Mechanical Engineering will be awarded.

The work of the first four years will include the courses shown in the curriculum for the Petroleum Engineering Option chosen, with the following changes: Petroleum students will omit: Fin. 3310, Chem. 336, Acct. 231, and add E.D. 221, M.E. 241, M.E. 322, and M.E. 337. The fifth year will include Chem. 336, M.E. 311, 312, 313, 314, 315, 316, 341, 431, 434, 436, 437 and C.E. 439.

Courses which may be used for graduate credit are M.E. 322, 330-1, 423-4, 432, 437, 438-9, 4310, 4311, Engr. Seminar 411 and Engr. Seminar 412. These must be petitioned for and approved by the head of the department.

**211. Sheet Metal Work. Cr. 1. (0-3).**

Prerequisite: Registration in E. Dr. 121. The fundamental operations of sheet metal work, developing patterns and laying out work; hand and machine operations; rolling, forming, crimping, wiring, seaming, grooving, cutting, turning, bending, riveting, soldering of brass, copper, tin, galvanized iron, and steel.

**221. Engineering Problems. Cr. 2. (1-2).**

Prerequisite: Registration in Math. 251. Study and practice of slide rule operations. Application of dimensional analysis, mechanics, pressure measurement, and perfect gas laws to elementary engineering problems. Curve drawing and presentation of engineering computations.

**241. Mechanism and Dynamics. Cr. 4. (2-6).**

Prerequisite: E. Dr. 121, registration in C. E. 331, M. E. 221. Study of the functions, geometrical properties, and relative motions of common mechanisms. Graphical analysis of displacements, velocities, accelerations, static forces, and dynamic forces in common machines.

**311. Pattern Shop. Cr. 1. (0-3).**

Prerequisite: E. Dr. 121. Methods and principles of pattern making, various woods,

tools, and machines used. Shrinkage, glue joints, core boxes. Various construction such as one-piece patterns, laminated, segmental, and stove construction, end and cross lap, dado, and rabbet joints. Individual instruction in the use of machine and hand tools.

### 312. Foundry Practice. Cr. 1. (0-3).

Prerequisite: Registration in M. E. 311. Foundry materials and products; bench, floor and pit molding; mixing, melting and pouring of ferrous and non-ferrous metals; small foundry layout; making and testing of dry sand cores; green sand testing; microscopic examination and physical testing of non-ferrous metals; various methods of cleaning castings.

### 313. Machine Shop. Cr. 1. (0-3).

Prerequisite: E. Dr. 121. The various types of lathes, planers, millers, cutting tools, drills, reamers, abrasives, grinding machines, turret lathes, gear cutting machines, automatic screw machines, gauges, and inspection as applied to shop work. Bench work, such as chipping, filing, tapping, reaming, and fitting.

### 314. Machine Shop. Cr. 1. (0-3).

Prerequisite: M.E. 313. A continuation of M.E. 313. Standardization; routing of materials; die casting; press metals and presses; cutting fluids. Each student given advanced operation on machines, such as taper turning, internal and external threading, grinding, shaping, milling machine, calculations, and operations.

### 315. Heat Treating of Steel. Cr. 1. (0-3).

Laboratory work in the heat treating of plain carbon and alloy steels. Carburizing, cyaniding, nitriding, hardening, tempering, normalizing, annealing; various methods of forging, welding, and rolling steel and wrought iron; destruction tests and microscopic examination of heat-treated steels; heat-treating furnaces and materials used; thermit welding and its application.

### 316. Welding Practice. Cr. 1. (0-3).

Welding practice; electric arc, resistance, oxy-acetylene, and thermit welding, application of welding in construction of machines and structural steel; repairing of machine parts; care and operation of oxy-acetylene and arc welding equipment; butt, lap, and tee welding; welding methods; pipe cutting and welding; welding of various metals.

### 317-18. Heat Engineering Laboratory. Cr. 1. (0-3).

Prerequisite: Registration in M. E. 334-5. Mechanical measurements, heat transmissions, and heat transfer equipment. Tests of power plant equipment, internal combustion engines, pumps, blowers, and air equipment. For chemical, electrical and textile engineering students.

### 322. Elementary Machine Design. Cr. 2.

Prerequisite: M. E. 241 or C. E. 332, registration in C. E. 333. Friction and lubrication. Elementary stress analysis and functions of bearings, brakes, clutches, shafting, fastenings, gearing, springs, columns. Energy loads.

### 330-1. Thermodynamics. Cr. 3.

Prerequisite: Phy. 236, Math. 251, M. E. 221. Thermodynamics principles governing the action of steam engines and turbines, internal combustion engines, air compressors, and refrigeration machines. Properties of air, steam, ammonia, gaseous mixtures and other heat media. Heat transfer. For mechanical engineering students.

### 332. Mechanical Measurements and Thermodynamics Laboratory.

Cr. 3. (0-6).

Prerequisite: M. E. 330 and 341. Correlation of the parts of various kinds of heat engines and of methods and instruments used in mechanical engineering measurements. Methods of calibrating various instruments. Applications of properties of steam, flow of fluids, heat transmission. Simple tests of power plant equipment. Outside work required. For mechanical engineering students.

### 333. Kinematics of Machinery. Cr. 3. (2-3).

Prerequisite: E. Dr. 121, registration in C. E. 332. Kinematics and dynamics for non-mechanical engineering students. Motions of fundamental parts of machinery, such as link work, cams, gears, and flexible connections. Static and inertia forces, analysis and balancing. Graphic treatment used when possible. For textile and electrical engineering students. Given only when sufficient demand exists.

### 334. Elementary Thermodynamics. Cr. 3.

Prerequisite: Phys. 236, Math. 251. The theory of heat as applied to heat power machines. Properties of air, steam and other media, gas laws, reversibility, cycles and processes, refrigeration, flow in nozzles, mixtures of vapors and gases. For architectural, chemical, civil, electrical, industrial, and textile engineering students.

### 335. Heat Engines. Cr. 3.

Prerequisite: M. E. 334. Application of the principles of thermodynamics to power generating equipment. Steam engines, boilers, air compressors, refrigeration machines, internal combustion engines, auxiliary equipment. For chemical, civil, electrical, industrial, and textile engineering students.

### 337. Metallurgy. Cr. 3.

Prerequisite: Chem. 220. The manufacture of iron, steel and non-ferrous metals.

Extraction of metals from their ores. Blast furnaces, open hearth. Bessemer, and crucible methods. Refining. Ferrous and non-ferrous alloys and their properties. Metallography and effect of heat treating.

### 338-9. Thermodynamics. Cr. 3.

Prerequisite: Phys. 236, Math. 251, M.E. 221. Thermodynamic principle governing transformation of heat energy into power energy or work. Study of perfect and imperfect vapor and gas cycles. Transmission of heat under various conditions. Similar to M.E. 330-1, except that more emphasis is placed upon imperfect gases and less upon vapors. For petroleum engineering students.

### 341. Steam Power Plant Engineering. Cr. 4.

Prerequisite: Registration in M.E. 330. Equipment of modern steam power plant including boilers, economizers, superheaters, air preheaters, pumps, feed water heaters, draft producing equipment, coal handling machinery, boiler room accessories, engines, turbines, condensers, pipe layouts, combustion of fuels, heat balance calculations.

### 423-4. Internal Combustion Engines. Cr. 2.

Prerequisite: M. E. 331, 335 or 339. Ideal and actual cycles, combustion, detonation, fuels, mixture requirements, and performance of spark ignition and compression-ignition engines. Gas turbine cycles and performances. No credit for 423 without 424.

### 431. Power Plant Laboratory. Cr. 3. (0-6).

Prerequisite: M. E. 332. Continuation of tests on steam power plant equipment; turbines; fans, pumps. Tests on internal combustion engines using various fuels. Tests on refrigeration equipment. The analysis of data and their proper presentation in the form of an engineering report. Outside work required. For mechanical engineering students.

### 432. Power Plant Design. Cr. 3.

Prerequisite: M.E. 341 and 331, 335 or 339. The design of a modern power plant to meet a given situation. Load curves. Selection for location. Choice of equipment for most economical service. Layout for the best operating conditions. Power costs.

### 434. Industrial Engineering. Cr. 3.

Prerequisite: Eco. 232. The modern industrial system and the application of scientific knowledge to the management of industry, standardization, time studies, personnel relations. Plant layout, planning, scheduling, and inspection. Safety engineering.

### 436. Machine Design. Cr. 3. (0-9).

Prerequisite: M. E. 322, 337, E. Dr. 221. Complete code design of welded and riveted vessels. Complete design of one or more additional machines. Lecturers on theory pertinent to design problems.

### 437. Machine Design. Cr. 3.

Prerequisite: M. E. 436, Math. 321. Introductory course in mechanical vibrations. Free and forced vibrations without damping, damped vibrations, systems with several degrees of freedom, balancing of machines, vibration isolation and absorption, equivalent systems.

### 438-9. Heating, Ventilating and Air Conditioning. Cr. 3.

Prerequisite: M.E. 331, or 334. Thermodynamics of air-steam mixtures, heating and cooling calculations, design of elementary heating systems, vapor refrigeration, air conditioning calculations, flow of gases, fan theory and performance, ventilation requirements and distributing systems, theory and application of air conveying and dust removal, as applied to various types of buildings and industries. No credit for 438 without 439.

### 4310. Aerodynamics. Cr. 3.

Prerequisite: M. E. 331 or 334, Math. 321. Airfoil theory, airplane performance, longitudinal stability, wing air-load analysis.

### 4311. Aerodynamics. Cr. 3.

Prerequisite: M. E. 4310; registration in M. E. 424. Propeller theory, performance, and load analysis. Rotary wing theory, jet propulsion.

## Music

PROFESSORS HEMMLE, WILEY. ASSISTANT PROFESSORS  
ELLIOTT, HADDON. INSTRUCTORS COLVIN, SCHANTZ,  
VAN APPELDORN. PART-TIME INSTRUCTORS  
SHORT, WILSON.

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); Music Literature 121, 122, 431, 432; Music Ensemble 010-1 (Tech Choir), 010-2 (Girls' Glee Club), 010-3 (Men's Glee Club), 010-4 (Festival Chorus), 011-1 (Orchestra), 013-A (Tech Concert Band), 013-B (Tech "B" Band).

### APPLIED MUSIC

Additional fees for Applied Music are shown under *Expenses*. (See Index.)

#### For Undergraduates

##### 112. Diction. Cr. 1.

Correct habits of utterance, pronunciation, phonetics and tone syllables as applied to singing.

##### 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.

##### 117, 118. Class Instruction in Applied Music. Cr. 1.

More than one section may be taken concurrently.

Section I. Class Voice. Correct posture and studies for breath control; development of resonance; study of vowel formation; vocalization. Simple songs.

Section II. Class Piano. Sight reading and repertoire of simple piano material. 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.

##### 217, 218. Class Instruction in Applied Music. Cr. 1.

More than one section may be taken concurrently.

Section I. Class Voice. A continuation of Applied Music 117-1, 118-1.

Section II. Class Piano. A continuation of Applied Music 117-2, 118-2. Emphasis on use of piano for classroom work in general school music.

##### 313, 314. Brass Instruments. Cr. 1.

Prerequisite: Theory 248. Ability to play scales on trumpet, French horn, trombone, and tuba. Laboratory ensemble experience. Formerly Band 315, 316.

##### 413, 414. Woodwinds. Cr. 1.

Prerequisite: Theory 248. Ability to play scales on flute, oboe, clarinet, and bassoon. Laboratory ensemble experience.

### PIANO

##### 115, 116, 215, 216. Piano. Cr. 1.

The technical work and repertoire recommended by the State Department of Education in Bulletin 449, pages 64 to 72.

##### 125, 126, 135, 136. Piano. Cr. 2 or 3.

Czerny, Op. 299, School of Velocity, or studies of similar difficulty; Heller Studies, Op. 47 (More difficult); Bach, Two-Part Inventions; Sonatas: Haydn, Mozart, and Beethoven; romantic and modern compositions.

##### 225, 226, 235, 236. Piano. Cr. 2 or 3.

Bach, Two and Three Part Inventions; Sonatas: Haydn, Mozart, and Beethoven, Op. 49; romantic and modern compositions; studies; Cramer; others of similar difficulty.

##### 325, 326, 345, 346. Piano. Cr. 2 or 4.

Bach, Well-Tempered Clavichord; Czerny, Op. 740, or studies of similar difficulty; Sonatas: Scarlatti, Haydn, Mozart, Beethoven, Op. 10, No. 1, or Op. 14; romantic and modern compositions.

#### For Undergraduates and Graduates

##### 425, 426, 445, 446. Piano. Cr. 2 or 4.

Bach, Well-Tempered Clavichord; Beethoven, Sonatas equivalent in difficulty to Op. 31; Chopin; Preludes, Mazurkas, Waltzes, and Nocturnes; Schumann, Op. 12 and 15; romantic and modern compositions.

4215, 4216, 4415, 4416. Piano. Cr. 2 or 4.

A continuation of Applied Music 425, 426, 445, 446.

## VOICE

### For Undergraduates

115, 116, 215, 216. Voice. Cr. 1.

For course description, see Applied Music 117, 118, Section I.

125, 126, 135, 136. Voice. Cr. 2 or 3.

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, 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.

4215, 4216, 4415, 4416. Voice. Cr. 2 or 4.

A continuation of Applied Music 425, 426, 445, 446.

## ORGAN

### For Undergraduates

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, Chorals Preludes; Guilman, 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

### For Undergraduates

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; Dancs, 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 Soussman 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 Melodies. Representative solos including Handel, B flat Concerto.

**225, 226. Oboe. Cr. 2.**

Barrett Studies continued; Sellner, Etudes for 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.**

Lazarus, Method, Part II; Baerman, 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.

**225, 226. 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. Calliet, 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 of 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; Bellstedt; 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; Scholassbert Drills. Studies in double and triple tonguing. Clef reading (Sachs, Vol I). Representative solos.

**325, 326. Cornet or Trumpet. Cr. 2.**

Williams, Book III; Gullbaut, Conservatory Studies; Clark,<sup>1</sup> 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 I.

**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, sonatas, and shorter solos.

**TROMBONE****For Undergraduates****115, 116. Trombone. Cr. 1.**

Development of embouchure, breath control, articulation. Buchtel, 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 articulations, added range, clef reading, flexibility, breath control, surety of attack. Continuation of Cimera, Muller studies; completion of Arban Book I; Book II; Kopprasch Studies, 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 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, Tyrell. 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, Tyrell, 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 Graduates****325-6. Junior. Cr. 2.****425-6. Senior. Cr. 2.**

Required courses for a band major on the degree, Bachelor of Science in Education. (Not open to entering freshmen or transferring sophomores.)

**MUSIC LITERATURE****For Undergraduates****121, 122. Introduction to Music Literature. Cr. 2.**

Through directed listening, music of various form 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, 331. Voice Repertoire. Cr. 3.**

Prerequisite: Applied Music 226 or 236 (Voice). Survey of song repertoire for all voices. Class performance and listening.

**332, 333. 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.

**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.

**232. Elementary Music Principles, Practices, and Materials. Cr. 3.**

Prerequisite: Music Education 231 or equivalent. For primary or elementary

education majors. Not open to music majors. Music for elementary school children. Emphasis upon various music activities at this level.

**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. 2.**

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 Materials. Cr. 3.**

Prerequisite: Junior standing and Applied Music 228. Study of instruments other than student's principal instrument. Study of repertoire for public school instrumental groups. Formerly Band 432 and Music 432.

**337. Elementary School Teaching and Supervision of Music. Cr. 3.**

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.

**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.

**339. Secondary Instruments and Methods. Cr. 3.**

Prerequisite: Junior standing and Applied Music 226. Study of instruments other than student's principal instrument. Study of organization and administration of public school instrumental groups. Formerly Band 431 and Music 431.

**421, 422. Band Conducting and Methods. Cr. 2.**

Prerequisite: Senior standing in music. Reading of band literature. Directing band accompaniments and advanced concert forms. Methods of teaching band instruments and groups.

### For Undergraduates and Graduates

**433, 434. 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, 438. 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.

### For Graduates

**521. Instrumental Conducting. Cr. 2.**

Study and performance of works from all periods.

**522. Choral Conducting. Cr. 2.**

Prerequisite: Graduate standing in music education. Study of representative choral works of all periods.

**530, 531. Seminar in Music Education. Cr. 3.**

Prerequisite: Permission of Head of Department of Music. Open by permission to any interested graduate student. 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.

### 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 practice. 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.

**424. 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 their inversions, keys, cadences, modulation techniques, harmonization of melodies at sight at keyboard, comprehension of rhythmic, melodic, and harmonic construction of Classical Period examples.

**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.

**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. 1. Tech Choir. Cr. 1.**

Prerequisite: Audition.

**010. Sec. 2. Tech Girls' Glee Club. Cr. 1.**

Prerequisite: Audition.

**010. Sec. 3. Tech Men's Glee Club. Cr. 1.**

Prerequisite: Audition.

**010. Sec. 4. Festival Chorus. Cr. 1.**

Open without audition 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 or Class)**

(See Expenses)

**Nutrition**

(See Foods and Nutrition)

## Petroleum Engineering

PROFESSOR DUCKER. ASSISTANT PROFESSOR LAMONT.  
INSTRUCTOR JOHNSON.

The Petroleum Engineering curricula offered by this department are designed to equip the graduate with a knowledge of the fundamentals of mathematics, physics, chemistry, mechanical sciences, geology, economics, business, and specialized courses specifically related to petroleum. With this background of undergraduate work and a sound knowledge and understanding of its application, he is equipped to enter the field of petroleum engineering, to attack the problems that will be met with in the petroleum industry, and to advance and develop in the profession of petroleum engineering.

Although the emphasis of this department is at all times placed on a sound foundation in the fundamentals of engineering, the technology of petroleum has made such advances in recent years that it is no longer possible adequately to cover all of its phases in a four-year engineering course. The work towards a Bachelor of Science Degree in Petroleum Engineering has been divided into the following options, each containing special courses that direct the emphasis 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 identical with 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

#### 330. Introduction to Petroleum Industry. Cr. 3. (3-0).

Prerequisite: Junior standing in Geology or Engineering. Historical development, exploration, development and production methods, transportation and refining of petroleum and its products, general economics, leasing and royalty methods, proration and regulation.

### For Undergraduates and Graduates

#### 310. Drilling Fluid Laboratory. Cr. 1. (0-3).

Prerequisite: Pet. E. 331. Test methods, characteristics, field problems; special drilling fluids.

#### 331. Petroleum Development Methods. Cr. 3. (3-0).

Prerequisite: Math. 331, junior standing in Petroleum Engineering. Exploration methods; standard and rotary drilling methods; cementing and well completion methods; well surveying; drilling hazards, directional drilling; field trips.

#### 333. Petroleum Production Methods. Cr. 3. (2-3).

Prerequisite: Pet. E. 331 and junior standing in Petroleum Engineering. Flowing wells; gas-lift methods and equipment; pumping methods and problems; water emulsion problems; gathering and storage system; field trips; laboratory.

#### 410-11. Seminar. Cr. 1. (1-0).

Prerequisite: Senior standing in Petroleum Engineering. Discussion of current engineering and petroleum problems.

**412. Production Laboratory. Cr. 1. (0-3).**

Prerequisite: Registration in Pet. E. 433. Theory and application of tests of petroleum, petroleum products, materials of the petroleum industry; advanced gas-lift problems; and other production techniques.

**413. Natural Gas Laboratory. Cr. 1. (0-3).**

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.

**433. Advanced Production Engineering. Cr. 3. (3-0).**

Prerequisite: Pet. E. 333. Continuation of Pet. E. 333 covering advanced oil production methods and problems: well-logging methods; secondary recovery problems; pipe-line transportation systems; power sources and transmissions; equipment specification.

**434. Natural Gas Engineering. Cr. 3. (3-0).**

Prerequisite: M.E. 339, M.E. 318. Study of the methods of production, treating, compression, distribution, measurement, analysis and utilization of natural gas, and the thermodynamic principles related thereto.

**435. Advanced Natural Gas Engineering. Cr. 3. (3-0).**

Prerequisite: Petr. Engr. 434. Study of distillate wells and distillate reservoir behavior. Extraction methods and techniques of natural gasoline production. Liquefied petroleum gases.

**436. Reservoir Engineering. Cr. 3. (2-3).**

Prerequisite: C.E. 339, Pet. E. 433. Study of the fundamental forces in reservoirs and the evidence of these forces as expressed in mathematics relationships; behavior of reservoir fluids; flow of fluids in reservoirs; productivity indices, prediction of the reservoir behavior; laboratory analysis of reservoir fluids; solubility, shrinkage, viscosity; sample and pressure methods; displacement experiments, capillary pressures and advanced core analysis.

## Physical and Health Education For Men and Women

**PROFESSORS KIREILIS, JENNINGS. ASSOCIATE PROFESSORS  
PHILBRICK, RAINEY, ROBISON. ASSISTANT PROFESSORS  
MORRIS, RICHARDS. INSTRUCTOR HULL.**

A student seeking a major or a minor in Health and Physical Education will fulfill the general requirements for the Bachelor of Science Degree in Education (page 101).

### HEALTH AND PHYSICAL EDUCATION FOR MEN

Physical Education major requirements may be satisfied by completion of the following courses:

Physical Education: 230, 231, 232, 3310, 3311, 431, 432, and 438. Three courses from the following: 123, 323, 324, 423, and 425. Zoology 235-6 must be completed by Physical Education majors in satisfying the science requirements for this degree.

Students seeking a minor in Physical Education will be required to pass the following courses: 231, 232, 3310, 3311, 437, and 438.

Elementary Education majors (men) will take the following courses: 230 and 233.

### 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		
012. Beginning Swimming	0120. Tennis	0140. Volley Ball
013. Advanced Swimming	0121. Handball	0141. Touch Football
014. Life Saving	0122. Badminton	0142. Basketball
015. Elementary Tumbling	0123. Wrestling	0143. Soccer
017. Golf	0124. Fencing (Foil)	0144. Speedball
018. Archery	0125. Social Dancing	0145. Softball
019. Track and Field	0126. Fencing (Saber-Epee)	0146. Folk Dance
0110. Fly and Bait Casting		
0111. Bowling		
0112. Weight Lifting		

### INTRAMURAL SPORTS

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 capabilities. Participation is entirely voluntary.

The intramural sports now offered are: badminton, basketball, bowling, golf, handball, ping pong, softball, swimming, tennis, touch football, track, volley ball, and weight lifting.

### PROFESSIONAL COURSES FOR MEN

#### For Undergraduates

Each student who plans to major in Physical Education must bring from his family physician a complete physical examination report. This must be submitted to the Head of the Men's Physical Education Department.

#### 123. First Aid. Cr. 2. (1-1).

American Red Cross first aid course leading to a standard first aid certificate. This includes lectures, demonstrations, and practice in first aid measures for wounds, suffocation, poisons, etc.

#### 231. Theory and Practice of Individual Sports. Cr. 3. (3-3).

Meets three hours each week in lecture and three in laboratory. Course is designed to teach future Physical Education teachers the rules and fundamentals of tennis, handball, and badminton. These sports are practical for use in Physical Education programs in junior and senior high schools, college, and community recreation programs.

#### 232. Theory and Practice of Team Sports. Cr. 3. (3-3).

Meets three hours each week in lecture and three hours in laboratory. Continuation of P.E. 231 but is designed to teach students the rules and fundamentals of volley ball, softball, speedball, and soccer.

#### 323. Sports Officiating. Cr. 2. (1-1).

Prerequisite: P.E. 0141, 0142, 0145, 231 and 232, or consent of instructor. Designed to prepare qualified teachers as officials of interscholastic sports. Covers the ethics, rules, and mechanics involved.

#### 324. Athletic Training and Care of Injuries. Cr. 2. (1-1).

Prerequisite: Zoology 235 and 236. Methods of conditioning men for athletic contests, together with an analysis of common athletic injuries, their care, and prevention.

#### 3311. Methods of Teaching Physical Education in High School.

Cr. 3. (3-0).

Prerequisite: 6 semester hours of Physical Education and 6 hours in Education. Aims and methods of teaching Physical Education in high school.

#### 431. Theory and Practice of Coaching. Cr. 3. (3-0).

Football and baseball. Study of various systems and techniques commonly used. A course designed for those who plan to coach major sports.

#### 432. Theory and Practice of Coaching. Cr. 3. (3-0).

Basketball and track and field. Continuation of P.E. 431.

#### For Undergraduates and Graduates

#### 423. Organization and Administration of Interscholastic Athletic Program. Cr. 2. (2-0).

A study of methods in organizing and administering the interscholastic athletic program. Study is given the following items: staff, program, budget, health and safety, facilities, publicity, history, duties of an athletic director; national, state and local controls.

**425. Organization and Administration of Intramural Sports. Cr. 2. (2-0).**

Intramural sports for elementary, junior, and senior high schools. A study of objectives, organization, administration, rules, organization of playdays, tracks meets, schedule making, drawing up of tournaments, and problems of officiating in the high school and college intramural sports programs.

### **HEALTH AND PHYSICAL EDUCATION FOR WOMEN SERVICE COURSES FOR WOMEN**

Physical Education is required of all women students during the freshman and sophomore years. One hour credit is given each semester.

**FRESHMAN YEAR:**

- 111. Body Conditioning and Rhythms.
- 112. Country Dance and Sports.

**SOPHOMORE YEAR: (Any two of the courses listed may be selected).**

- 210. Tap Dance
- 211. Riding
- 212. Tennis
- 215. Basketball
- 216. Soccer and Speedball
- 217. Folk Dance
- 218. Volley Ball
- 219. Stunts and Tumbling
- 2110. Archery
- 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 (open to men and women)
- 2117. Recreational Games
- 2119. Softball
- 2120. Modern Dance

### **PROFESSIONAL COURSES FOR WOMEN**

Each student who plans to major or minor in Physical Education must bring each year, from her family physician, a complete physical examination report. This must be submitted to the Head of the Women's Physical Education Department during the registration period.

Physical Education majors and minors complete the requirements for the Bachelor of Science in Education, with the following special requirements: 30 semester hours of Physical Education are required for a major, including P.E. 131, 132, 230, 233, 338, 339, 3313, 4310, 4311, 4312, and all of the service courses, except 211, 2113, and 2117.

A minimum of 18 hours is required for a minor in Physical Education, including the following courses: 131, 230, 233, 338-9, 3313, and the service courses required for a major in Physical Education.

The following courses meet the State requirements for six hours of Health and Physical Education for women education majors: P.E. 230 and 233.

#### **For Undergraduates**

**131-2. Introduction to Physical Education. Cr. 6. (3-0).**

Brief introduction to the field of Physical Education, its philosophy, aims, objectives, principles, potential values, and history.

**338-9. Technique of Sports. Cr. 6. (3-0).**

Prerequisite: Junior standing in Physical Education; Physical Education 212, 215, 216, 218, 2115, and 2119. Emphasis on skills and officiating.

**3313. Theory and Practice of the Dance. Cr. 3. (3-0).**

Prerequisite: Physical Education 210, 217, 2120. Rhythm analysis, practice, and procedure in dance.

**4311-2. Methods in Physical Education for the Secondary School. Cr. 6. (3-0).**

Prerequisite: Junior standing in Physical Education. Modern trends in teaching Physical Education in the secondary school.

## THEORY COURSES FOR MEN AND WOMEN

### For Undergraduates

**230. Methods and Materials in Health Education for Elementary and Secondary Schools. Cr. 3. (3-0).**

Basic principles of health education and their application to school health programs.

**233. Methods in Physical Education for the Elementary School. Cr. 3. (3-0).**

A method and content course dealing with the theory and practice of Physical Education in the elementary school.

**331. Recreational Methods. Cr. 3. (3-0).**

Material appropriate for small and large groups, different age levels, and various situations. Consideration of philosophy and method; practice in planning and leading recreation.

**337. History of Physical Education. Cr. 3. (3-0).**

Historic survey of Physical Education from ancient to modern times.

**3310. Personal and Community Health. Cr. 3. (3-0).**

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.

**3312. First Aid and Safety. Cr. 3. (3-0).**

Red Cross standard, advanced, instructors, and safety courses.

**3315. Health Examination in the Elementary School. Cr. 3. (3-0).**

Prerequisite: Junior standing and 6 hours in Methods in Education or Physical Education. A study of methods and techniques of administering "screening test," organizing the pre-school "round up," and methods of referral and follow up.

**3316. Curriculum Development in Physical Education (Elementary School). Cr. 3. (3-0).**

Prerequisite: Junior standing and 6 hours in Methods in Education or Physical Education. A study of criteria and principles utilized in constructing elementary school Physical Education courses of study.

**4310. Physiology of Exercise. Cr. 3. (3-0).**

Prerequisite: Biology 133, 134; Zoology 235, 236. The effect of muscular activity on the processes of the body.

### For Undergraduates and Graduates

**434. Principles of Physical Education. Cr. 3. (3-0).**

Discussion of the aims and objectives of Physical Education, including historical development, relation to the general field of education, and analysis of present day programs and methods in terms of objectives.

**435. Modern Trends in Physical Education. Cr. 3. (3-0).**

A discussion and evaluation of current trends in the field of Health, Physical Education, and Recreation.

**436. Physical Examinations in Physical Education. Cr. 3. (3-0).**

Organization, purpose, and techniques of the physical examination; types of records, interpretation of findings.

**437. Measurements in Physical Education. Cr. 3. (3-0).**

Techniques in physical measurement. Survey of tests used in Physical Education and methods of administering tests and using data.

**438. Curriculum Development in Physical Education. Cr. 3. (3-0).**

Principles of curriculum planning in Physical Education.

**439. Community Recreation. Cr. 3. (3-0).**

Study of community recreation, its significance, leadership, facilities, and organization of programs with special consideration of the contribution of Physical Education.

**531. Administration of Physical Education. Cr. 3. (3-0).**

Prerequisite: Major in Health and Physical Education or B.S. in Education with Physical Education minor, including P.E. 436, 437, and 438. A study of principles, problems, and procedures for administering Physical Education programs. This course is especially designed for school administrators, athletic directors, Physical Education directors, and city directors.

**532. Supervision of Physical Education. Cr. 3. (3-0).**

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. (3-0).**

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. (3-0).**

Prerequisite: Same as P.E. 531. A course for teachers, coaches, and school administrators who desire an understanding of a well-balanced health program.

**Physics**

PROFESSOR SCHMIDT. ASSOCIATE PROFESSORS MERRYMON, GLASER. ASSISTANT PROFESSORS DAY, McKINNEY, GOTT, STEFFY. INSTRUCTOR MATTHEWS.

Students majoring in physics for the Bachelor of Arts Degree should take Phys. 131-2 or 141-2, 235-6, 215-6 and select at least 18 hours of courses in physics of junior or senior rank. Majors for the Bachelor of Science Degree see that section of this catalog.

**For Undergraduates****131-2. Elements of College Physics. Cr. 3. (3-2).**

A course for beginning students covering: mechanics, heat, sound, electricity, magnetism, and light.

**137-8. Physical Basis of Speech and Music. Cr. 3.**

For students majoring in speech and music.

**141-2. General Physics. Cr. 4. (3-3).**

Prerequisite: Two units of high school algebra and one unit of plane geometry or Math. 130. A general course in physics designed to meet pre-medical requirements, but may be taken by others.

**215-6. Physical Measurements. Cr. 1. (0-3).**

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 Phys. 215-6.

**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. Cr. 3.**

Prerequisite: One year of physics and calculus.

**333-4. Electricity and Magnetism. Cr. 3.**

Prerequisite: One year of physics and calculus.

**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.

**411-2. Physics Seminar. Cr. 1.**

Prerequisite: 12 hours of physics and calculus. Offered in alternate years.

**413-4. Physics Seminar. Cr. 1.**

Prerequisite: 12 hours of physics and calculus. Offered in alternate years.



**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.

**431. High School Physics Teaching. Cr. 3.**

Prerequisite: Physics 131-2 or equivalent.

**435. Mechanics. Cr. 3.**

Prerequisite: 12 hours of physics and calculus.

**For Graduates****531-2. Theoretical Physics. Cr. 3.**

Prerequisite: Graduate standing.

**533-4. Quantum Mechanics, Atomic and Molecular Physics. Cr. 3.**

Prerequisites: Differential equations and graduate standing.

**535. Nuclear Physics. Cr. 3.**

Prerequisite: Graduate standing.

**536. X-Rays. Cr. 3.**

Prerequisite: Graduate standing.

**539-10. Geometrical and Physical Optics. Cr. 3.**

Prerequisite: Calculus and Physics 331.

**601. Thesis.****Plant Industry**

(See Horticulture and Park Management)

**Portuguese**

(See Foreign Languages)

**Poultry Husbandry**

(See Animal Husbandry)

**Psychology**

PROFESSORS HUTCHINS, BARNETT. ASSOCIATE PROFESSOR TRUE. ASSISTANT PROFESSOR RICHARDS. INSTRUCTOR GUESS.

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, Industrial Psychology, Clinical Psychology, or Counseling and Guidance.

Major students are expected to offer 30 semester hours in psychology; these must include Psy. 230, 233, 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 Division of Graduate Studies. 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 and 438. Psy. 537 is 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 of Philosophy or Doctor of Education in Counseling and Guidance.

### For Undergraduates

#### 230. Introduction to Psychology. Cr. 3.

Prerequisite: Sophomore classification. Introduction to the scientific study of the fundamental problems of human behavior.

#### 233. Fields of Psychology. Cr. 3.

Prerequisite: Psy. 230 or equivalent. Problems in selected fields of psychology, such as experimental, physiological, social, abnormal, clinical and industrial psychology.

#### 234. Psychology for Engineers. Cr. 3.

Prerequisite: Sophomore classification. Open only to those enrolled in the Division of Engineering. An introduction to psychology adapted to meet the needs of the students in engineering. Credit may not also be received for Psy. 230.

#### 330. Psychology in Business and Industry. Cr. 3.

Prerequisite: Psy. 230 or 234. Psychological principles and methods applied to representative problems in business and industry, with particular reference upon personnel selection, effect of conditions and methods of productivity. Psychological factors in advertising and selling.

### For Undergraduates and Graduates

#### 331. Child Psychology. Cr. 3.

Prerequisite: Psy. 230 or Ed. 231 and junior 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.

#### 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.

#### 335. Adolescent Psychology. Cr. 3.

Prerequisite: Psy. 230 or Ed. 231 and junior 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 zoology. The relation between psychological processes and physiological activity. The neuro-physiological mechanisms involved in emotions, motivation, learning, preception and motor-coordination.

#### 337. Introduction to 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. (Formerly Education 337.)

#### 431. Tests and Measurements. Cr. 3. (3-2).

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. Trade and Aptitude Testing. Cr. 3. (2-3).

Prerequisite: Psy. 230 or equivalent and Psy. 333 or equivalent. This course provides for the study of and laboratory practice in the use of industrial tests. Fee: \$2.00.

#### 433. Mental Hygiene: The Psychology of Personal Adjustment. Cr. 3.

Prerequisite: Psy. 230 or equivalent and junior classification. The application of mental hygiene principles which promote adequate individual adjustment and group participation in daily life situations of the family, school, and community.

#### 434. Social Psychology. Cr. 3.

Prerequisite: Psychology 230 or equivalent and junior 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. An experimental course dealing with emotion, motivation, thinking 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. 230 or 234 and Psy. 233 or 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.

**4310. Methods in Clinical Psychology. Cr. 3.**

Prerequisite: 6 semester hours in psychology. A study of the use and interpretation of psychological tests, case studies, and related methods as applied in a clinical setting.

**For Graduates****530. Advanced Educational Psychology. Cr. 3.**

Prerequisite: 18 semester hours in education and psychology. The trends of psychology as related to problems of education. Such topics as learning, motivation, emotions, adjustment, measurement, personality are reviewed.

**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. (Formerly Psy. 530).

**535. Introduction to the Rorschach Test. Cr. 3.**

Prerequisite: 12 advanced semester hours in psychology. Technique of administration, scoring and fundamentals of interpretation of normal Rorschach records. Review of the literature on the Rorschach in the clinical situation.

**537. 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.

**539. Vocational Information. Cr. 3.**

Prerequisite: Psy. 337. The sources, techniques of collecting, classifying and using educational, occupational and vocational information necessary in counseling.

**5310-11. Practicum in Techniques of Counseling and Guidance. Cr. 3 each.**

Prerequisite: Psy. 337 and 431. Methods of vocational, educational and personal counseling approached through case histories, observation, and interviews. Methods of counseling, directive and non-directive. (Formerly Education 537 and 5310).

**5312-13. Practicum in Advanced Psychological Testing. Cr. 3 each.**

Prerequisite: Psy. 5311. The interviewing of students and clients, the selecting of appropriate tests, reporting results, and recommending remedial procedures.

**5314. 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. Discussion of the application of the results of psychological research to problems in the field of professional education.

**5315. Seminar in Counseling and Guidance. Cr. 3.**

Prerequisite: Completion of first stage, or fifth year, of graduate program in education and approval by faculty committee for this seminar. Recent developments and current problems in vocational, educational and personal guidance in various types of agencies with particular reference to fields of professional education.

**560-1. Internship in Counseling and Guidance. Cr. 12.**

Prerequisite: Psy. 5313. 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.**

The following courses are listed, also under Educational Psychology in the Department of Education: 331, 333, 335, 337, 431, 433, 530, 531, 533, 534, 535, 537, 539, 5310-11, 5312-13, 5314, 5315, and 560-1.

**Rural Sociology**

(See Agricultural Economics)

**Secretarial Administration**

(See Business Education and Secretarial Administration)

**Spanish**

(See Foreign Languages)

**Speech**

PROFESSORS LARSON, PENDLETON. ASSISTANT PROFESSORS LINDELL, THOMPSON, UPSHAW. INSTRUCTORS THOMPSON, WARD.

A major function of this department is to service the student body of the college generally in aiding the student to achieve speech proficiency. Courses especially geared to this purpose are Fundamentals of Speech, Voice and Diction, and Business and Professional Speaking. Other courses of a more advanced nature in public speaking, discussion, theater, oral interpretation, radio, and speech correction are also available.

Requirements for a major in Speech include the following:

1. The general college requirements for the Bachelor of Arts degree.
2. Basic Speech 6 hours  
Additional 100 and 200 speech courses, at least 12 hours
3. Upper division speech courses, at least 18 hours
- \*4. Physics 137-8 and Zoology 135-6 12 hours
5. A minor in at least one of the following suggested fields:  
Applied art, architecture, clothing and textiles, economics, electrical engineering, English, foreign language, government, history, journalism, management, marketing, physical education, psychology, sociology, or other approved fields.

Speech majors should take Basic Speech during their first year in school. 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 advised subsequent to Basic

\* This may be included in the general college requirements for graduation.

Speech will be in terms of the needs and major interests of the individual students.

Speech minors are advised to take Basic Speech, and are urged to consult with the head of the speech department as early as possible concerning subsequent courses.

### For Undergraduates

#### 131. Fundamentals of Speech. Cr. 3.

Training in the basic principles of speech, with emphasis on discussion and original speaking.

#### 133-4. Basic Speech. Cr. 3.

This is a skills and survey course to give the beginning student an opportunity to explore the whole field of speech and to acquire some of the basic skills in all areas. It is intended to provide the beginning speech student a foundation for later specialization, and the staff a basis for recommending other courses in accordance with the student's needs and interests. Primarily for speech majors and minors.

#### 218. Forensic Activities. Cr. 1.

Opportunity is offered the student who wishes to participate extensively in forensic activities to secure credit for this laboratory work. (Student may repeat registration in this course once.)

#### 219. Theater Activities. Cr. 1.

Opportunity is offered the student who wishes to participate extensively in theater activities to secure credit for this laboratory work. (Student may repeat registration in this course once.)

#### 231. Principles of Acting. Cr. 3. (2-3)

Discussion of the nature of drama and developments in the art of acting. Study of stage terms and techniques. Analysis of characterization with practice in line reading and pantomime. Materials for illustrative exercises chosen from classical and current plays.

#### 232. Play Production. Cr. 3. (2-3)

Prerequisite: Speech 231 or equivalent. Continuation of application of principles of acting. Analysis of the problems of the director and other problems in play producing.

#### 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 controls for effective speaking.

#### 234. Introduction to Theater. Cr. 3.

A study of the historical background and traditions of the modern theater, considering the acting, directing, and staging of plays. Emphasis is placed on a better understanding of the social, cultural, and aesthetic significance of the theater.

#### 2350. 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 2350 or by permission of Head of Department. Continuation of discussions and debates. 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 and effective oral interpretation of good literature from the printed page.

#### 238. Introduction to Radio Speech. Cr. 3.

A study of the development of radio as a social and cultural force in modern society. Consideration is also given to the historical aspects of its development.

#### 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, 4H, and 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. (Student may repeat registration in this course once.) Only for students majoring or minoring in speech.

### 319. Theater Activities. Cr. 1.

Opportunity is offered the student who wishes to participate extensively in theater activities to secure credit for this laboratory work. (Student may repeat registration in this course once.) Only for students majoring or minoring in speech.

### 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. (2-3)

Prerequisite: Speech 231 or equivalent. Study of technical problems of play production, including design, construction and painting of scenery, special effects, and stage make-up.

### 334. Stagecraft. Cr. 3. (2-3)

Prerequisite: Speech 231 or equivalent. Continuation of study of technical problems of play production, with emphasis on stage lighting and costume design.

### 335. Radio Speech. Cr. 3. (2-3)

Prerequisite: 6 semester hours of speech or permission of Head of Department. Announcing, the radio speech, interviews, and discussions. Preparation and adaptation of scripts.

### 336. Radio Program Production. Cr. 3. (2-3)

Prerequisite: Speech 335 or permission of Head of Department. Studio organization. Planning and production of programs.

### 338. Business and Professional Speech. Cr. 3.

Formerly Speech 331 and 337. Prerequisite: Sophomore classification. Basic principles of speech applied to the speech needs of the professional man and woman. Practice in the construction and delivery of the various types of speeches and participation in group conferences, discussions, and interviews. For majors in the Divisions of Agriculture, Business Administration, Engineering and Home Economics. Open to natural science majors in the Division of Arts and Sciences. May not be taken for credit by students having had 131.

### 430. Advanced Public Speaking. Cr. 3.

Prerequisite: Speech 131 or 338 or equivalent. Intensive study and practice of different kinds of public speaking. Audience analysis and adaptation are given special emphasis.

### 436. Radio Program-Planning, Direction, and Production. Cr. 3. (2-3)

Prerequisite: Speech 336. Program planning and production.

## For Undergraduates and Graduates

### 4310. Advanced Stage Directing Methods. Cr. 3. (2-3)

Formerly Speech 423. Prerequisite: Junior classification; 18 semester hours in speech, including Speech 231-2 or equivalent. A study and analysis of the functions of the director as related to the principles of play production. Knowledge of the styles, conventions, and techniques of dramatic production as evidenced by student direction of representative plays. May also be taken as Education 4310.

### 4311. Advanced Stage Directing Methods. Cr. 3. (2-3)

Continuation of Speech 4310. May also be taken as Education 4311.

### 4312. History and Appreciation of Theater. Cr. 3.

Prerequisite: Senior classification; 24 semester hours of speech or by permission of Head of Department. A study of the origin, history, and development of the theater as a social institution.

### 4314. Speech Pathology. Cr. 3.

Prerequisite: Speech 4318, Physics 137-8, Zoology 135-6, or permission of head of department. Study of causes, symptoms, and diagnosis of major disorders of speech. Readings in current theories and recent experimental work. Practical work in the field by special arrangement. May also be taken as Education 4314.

### 4318. Speech Correction Methods. Cr. 3. (3-1)

Formerly 432. Prerequisite: Junior classification. A general survey of the speech correction field and classification of common speech disorders. Study of the nature and development of speech, including structure and controls of speech mechanism and the science of phonetics; emphasis on classification of speech disorders, fundamental

causes and basic problems of the field. Time for observation in the clinic required. May also be taken as Education 4318.

**4319. Speech Correction Methods. Cr. 3.**

Formerly 433. Prerequisite: Speech 4318. A background study of the causes and therapies of common speech disorders. Observation of hearing tests. Supervised work with cases in the Speech Clinic. May also be taken as Education 4319.

**4320 and 4321. Supervised Clinical Practice in Speech Correction. Cr. 3.**

35 Laboratory Hours per Credit Hour. Prerequisite: Speech 4318, concurrent registration in 4319, or permission of Head of Department. Required of teachers desiring special certificate for speech correction. (May be taken as 4220, 4221, or 4222 for two hours credit each semester.) May also be taken as Education 4320 and 4321, or 4220, 4221 and 4222.

**435. Interpretative Reading. Cr. 3.**

Prerequisite: Junior classification and 12 semester hours of English. Students are advised to complete Speech 233 before registering for this course. Consideration of the problems of transferring meaning from the printed page to the listener. Study of the types of literature for oral interpretation. Practice in interpretative reading of prose and poetry.

**437. Persuasion. Cr. 3.**

Prerequisites: 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.**

Prerequisites: Speech 2350 or 338. A study of the history and philosophy of discussion and their applications to specialized forms, with special emphasis on newer techniques in the educational and business conference, including a consideration of group dynamics.

**439. Methods of Teaching Speech. Cr. 3.**

Formerly Speech 421. Prerequisite: 18 semester hours of speech, 9 semester hours of education. Methods of teaching speech. Review of the areas of speech. A survey of texts in speech. Preparation of syllabi. May also be taken as Education 439.

### For Graduates

**531. Studies in the Field of Speech Therapy. Cr. 3.**

**532. Studies in the Field of Speech Therapy. Cr. 3.**

**533. Problems in Research. Cr. 3.**

Studies in speech areas other than that of correction.

**534. Problems in Research. Cr. 3.**

Studies in speech areas other than that of correction.

**631-2. Thesis. Cr. 3.**

## Textiles

(See Clothing and Textiles)

## Textile Engineering

PROFESSOR PARSONS. ASSOCIATE PROFESSOR BUNTON.  
ASSISTANT PROFESSOR SHAFTER

Training in the Department of Textile Engineering is intended to provide the proper background for those students who plan to enter the textile and allied fields. The work is aimed primarily at training for textile engineering, fabric design and production, dyeing and finishing; it also provides a sound background for the field of testing, research, dry-cleaning, laundering, sales, and general textile administration.

Although the work offered in the Department of Textile Engineering is practically the same for all students, some specialization may be achieved because of the choice of service courses incorporated in the curriculum and offered in other departments. To this end the curriculum is divided into three options: Textile Engineering Option; Chemistry and Dyeing Option; and Textile Production Option. The Production Op-



tion is designed for those students who expect to go into textile production and management fields. Past experience shows that most textile graduates go into this field. Because of the need for special industrial training in this field this option includes a number of Industrial Engineering courses, which it is felt will better prepare the student for labor and management problems in modern textile industry. The textile instruction consists of lectures, calculations, tests, investigations, and experimentation with various machines; the practical operation of machines by students; the principles underlying fabric structure, and the elements of woven design. The structure and cost of fabrics are ascertained by work in cloth analysis.

The carding and spinning areas of the textile plant and laboratories have complete equipment required to convert the fiber into the finished yarn. New and modern spinning equipment has recently been added for handling the longer synthetic fibers as well as cotton. This equipment is used in research and in advanced yarn manufacturing. All machines are standard mill size, and include vertical opener, picker, cards, (both roller and revolving flat), comb, drawing frames, roving frames and long draft spinning frames. The weaving area of the plant is equipped with machinery for the production of almost any type of cotton fabric. Upon these machines the students do practice work in the manufacture of many standard fabrics. Wide latitude is given the student in producing fabrics to illustrate different color combinations and weave effects of his own design. In the dyeing laboratory instruction which precedes practical dyeing on the machines, the students study the action of the alkalies and acids on various textile fabrics, and the application of dyes to silk, wool, cotton, rayon and other synthetic fibers. Full details of the processes employed in bleaching cotton yarn and cloth are followed, including water purification by chemical and mechanical means, with special reference to bleaching and finishing.

It is the policy of the Department of Textile Engineering to encourage and sponsor cooperative research work in the field of textiles. At the present time, both state-supported and industrial research is being carried on. This cooperation provides the student interested in research special opportunities in that field.

### COTTON RESEARCH OF TEXAS TECHNOLOGICAL COLLEGE

DR. L. E. HESSLER, RESEARCH ASSOCIATE. MR. J. D. TOWERY, RESEARCH ENGINEER. MR. B. K. POWER, TEXTILE TECHNOLOGIST. MR. J. W. LOCKE, TEXTILE TECHNICIAN, MISS FAY EVELYN FLETCHER, FIBER TECHNOLOGIST.

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 from time to time in conjunction with course work and research problems within the Department, even though the Research Committee functions as a autonomous unit.

#### For Undergraduates

##### 234. Cotton Classing and Marketing. Cr. 3. (2-3)

The grading, stapling, and marketing of cotton; special emphasis on the economics of the system. Practical laboratory work in classing of cotton.

##### 235. Textile Fibers and their Preparation for Yarn. Cr. 3. (2-3)

The physical and chemical properties of the common textile fibers with special

attention to their preparation for yarn manufacturing. Introduction to microscopy and photomicrography as applied to textile fibers.

**326. Wool. Cr. 2.**

A study of wool as raw material of the ranch and its commercial value are determined by its use as a textile material. Includes a study of the chemical and physical structure of the wool fiber, grading, sorting, scouring, and manufacturing into yarn.

**331-2. Yarn Manufacture. Cr. 3. (2-3)**

The principles of cotton yarn manufacturing and the practical operation, cleaning, picking, carding, drawing and roving processes. The calculations involved with drafting, speeds, production, and power transmission through the various processes.

**333-4. Bleaching and Dyeing. Cr. 3. (2-3).**

Prerequisite: Registration in Chem. 341 or Chem. 353. The chemistry and practicing of bleaching and dyeing animal, vegetable, and synthetic fibers in the principle forms—raw, material, yarn and fabric.

**335-6. Fabric Design and Weaving. Cr. 3. (1-6)**

Prerequisite: T.E. 235. Lectures and practical work on cam looms, dobbies and box looms, with special regard to the mathematics, weave design, cloth structure, and mechanical principles involved.

**420. Textile Testing. Cr. 2. (1-3)**

Prerequisite: T.E. 235, 331-2, 333-4, 335-6. Physical and chemical testing of fibers, yarns, and fabrics. A study of techniques and practices employed in laboratory testing and evaluating textile materials.

**421-2. Fabric Analysis, Weaving and Jacquard Design. Cr. 2. (1-3)**

Prerequisite: T.E. 335-6. Analyzing fabric construction. Advanced work in design of fancy woven fabrics. A continuation of the mechanics of operation of the various looms.

**423. Advanced Dyeing and Color Matching. Cr. 2. (0-6)**

Prerequisite: T.E. 433 and registration in T.E. 434. Advanced dyeing and color matching to specifications on yarns and fabrics.

**433-4. Dyeing and Finishing. Cr. 3. (2-3).**

Prerequisite: T.E. 333-4. Practical application of the principles taught in 333-4, a study of rayon technology, and a study of the various finishing processes as applied to textile fabrics.

**435. Advanced Yarn Manufacture. Cr. 3. (2-3).**

Prerequisite: T.E. 331-2. Basic principles of cotton and synthetic yarn spinning, systems other than cotton spinning, and laboratory work in spinning methods and practices.

**436. Yarn Preparation. Cr. 3. (2-3).**

Prerequisite: T.E. 435. The principles of twisting, winding, spooling, warping, and slashing.

**437. Textile Costing. Cr. 3.**

Prerequisite: 331-2, 335-6 and registration in 435. A thorough study of basic cost concepts, historical and predetermined costs applied to textiles as an aid to management.

**438. Mill Organization. Cr. 3. (2-3).**

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 are given on the duties of operating executives and technical staffs.

**411-2. Textile Engineering Seminar. Cr. 1.**

Credit for this course may be given as often as successfully repeated. The investigation and study of engineering problems of special interest and value to the students taking the course.

Offered only to students of senior standing and with permission of the head of the department.

## Biblical Literature

MR. CECIL RAYMOND MATTHEWS, THE METHODIST CHURCH.  
MR. W. F. ROGAN, PRESBYTERIAN CHURCH. MR.  
CARL SPAIN, CHURCHES OF CHRIST. MR. VES-  
TER WOLBER, BAPTIST GENERAL CON-  
TION OF TEXAS.

### 131. Survey of the Old Testament. Cr. 3.

A survey of the content of the Old Testament in relation to the history of the Hebrews and their religious outlook on life.

### 132. Survey of the New Testament. Cr. 3.

A survey of the content of the New Testament in relation to its historical background and basic Christian teachings.

### 133. New Testament Greek for Beginners. Cr. 3.

An introduction to the essentials of New Testament Greek, the language of the Koine period, with translation exercises from the Wescott and Hart text of the New Testament.

### 221. Book of John. Cr. 2.

A study of the background, authorship, and occasion for writing the book of John with emphasis on interpretation and major teaching.

### 222. Book of Revelation. Cr. 2.

A conservative study of the background and interpretation of the book of Revelation.

### 231. History of Christian Church. Cr. 2.

A study of the history and growth of the Christian Church from its earliest beginning to the present time.

### 232. Problems of Christian Leadership. Cr. 3.

A study of the problems of Christian leadership, with emphasis on the needs of those who plan religious vocations, and guidance in the interpretation of the Bible as it challenges Christlike living in all vocations.

### 223. The Book of Romans. Cr. 2.

Intensive study of the contents of the Epistle to the Romans, with emphasis on the spiritual and ethical teaching.

### 234. Selected Studies in the New Testament. Cr. 3.

The major spiritual and ethical themes of the New Testament are studied intensively. These will include such themes as: The Fatherhood of God, Sonship of Christ, the Holy Spirit, Marriage and the Home, the Ordinances of Christ, the Church, the Atonement, and Justification.

### 311. The Bible, Its Origin and Growth. Cr. 1.

Prerequisite: Junior classification. A study of the origin and growth of the Bible and its significant message for our generation.

### 313. The Book of James. Cr. 1.

Prerequisite: Junior classification or Bible 132. A study of the background, authorship, and occasion for writing the book of James, with emphasis on its message of practical Christian living.

### 338. The Spread of Christianity. Cr. 3.

The book of Acts is studied in its harmonic connection with epistles. The missionary program and message is traced through the historical records of the New Testament.

### 431. The Prophets. Cr. 3.

Prerequisite: Junior classification. A careful study of the Hebrew prophets, their place in history, and their message.

### 432. The Life and Teachings of Jesus. Cr. 3.

Prerequisite: Junior classification. A study of the life, teaching, and significance of Jesus as revealed in the gospels.

### 434. Comparative Religion. Cr. 3.

Prerequisite: Junior classification or Bible 132. This course includes a study of the origin and fruits of the chief world religions (Confucianism, Buddhism, Taoism, Hinduism, Mohammedanism, Zoroastrianism).

## ENROLLMENT

## Enrollment for the Long Session, 1950-51

Agriculture	273	165	188	207	60	893
Arts and Sciences	597	374	395	419	482	2267
Business Administration	511	198	243	253	75	1280
Engineering	302	243	262	412	45	1264
Home Economics	161	86	75	77	21	420
Totals	1844	1066	1163	1368	683	6124
Total men Students.....	4414	Total Women Students.....1710				

## Enrollment for Summer Session, 1950

Agriculture	19	36	59	129	103	346
Arts & Sciences	129	140	228	479	705	1681
Business Administration	5	50	111	182	31	378
Engineering	44	54	119	305	8	531
Home Economics	45	17	31	62	36	191
Totals	242	297	548	1157	883	3127
Total Men Students.....	2091	Total Women Students.....1036				

## EXTENSION

Individual enrollments in extension classes.....	492
Individual enrollments in correspondence courses.....	2344
Total enrollment for period June 1, 1950-May 31, 1951.....	2836

## Attendance 1925-1951

Year	Long Session	Summer Session	Extension	Totals
1925-26 .....	1043	336		1379
1926-27 .....	1535	677		2212
1927-28 .....	1682	965	386	3033
1928-29 .....	2088	1298	820	4206
1929-30 .....	2353	1316	1098	4767
1930-31 .....	2319	1556	1227	5102
1931-32 .....	2155	1606	1011	4772
1932-33 .....	2332	1288	833	4453
1933-34 .....	2361	1970	1236	5567
1934-35 .....	2684	1956	1403	6043
1935-36 .....	2748	1678	1522	5948
1936-37 .....	3010	1695	1255	5960
1937-38 .....	3494	1839	1067	6044
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			

## DEGREES CONFERRED 1927-1950

*Division of Agriculture*

	Conferred in 1950			Totals 1927-50
	Men	Women	Both	
Bachelor of Science in Agriculture .....	219		219	1179
Master of Science .....	21		21	75
Total for Division of Agriculture .....	240		240	1272

*Division of Arts and Sciences*

Bachelor of Arts .....	88	82	170	2945
Bachelor of Science .....	146	10	156	496
Bachelor of Science in Education .....	50	108	158	1136
Master of Arts .....	9	12	21	490
Master of Education .....	65	26	91	221
Master of Science .....	20	3	23	67
Master of Science in Education .....				1
Total for Division of Arts and Sciences .....	378	241	619	5356

*Division of Business Administration*

Bachelor of Business Administration .....	236	41	277	1572
Bachelor of Science .....	8	3	11	54
Master of Business Administration .....	4		4	17
Total for Division of Business Administration ....	248	44	292	1643

*Division of Engineering*

Bachelor of Architecture .....	25	2	27	64
Bachelor of Arts .....	12	7	19	93
Bachelor of Commercial Art .....	0	1	1	5
Bachelor of Science in Architectural Engr. ....	0	0	0	33
Bachelor of Science in Chemical Engr. ....	27	0	27	204
Bachelor of Science in Civil Engineering .....	54	1	55	279
Bachelor of Science in Electrical Engr. ....	82	0	82	383
Bachelor of Science in Geological Engr. ....	0	0	0	23
Bachelor of Science in Industrial Education ....	0	0	0	1
Bachelor of Science in Industrial Engr. ....	31	0	31	109
Bachelor of Science in Mechanical Engr. ....	64	0	64	339
Bachelor of Science in Petroleum Engr. ....	63	0	63	248
Bachelor of Science in Textile Engineering ....	15	1	16	114
Bachelor of Science in Textiles .....	2	0	2	19
Master of Science .....	2	0	2	15
Professional in Chemical Engineering .....	1	0	1	1
Total for Division of Engineering .....	376	12	388	1930

*Division of Home Economics*

Bachelor of Science in Home Economics .....	0	71	71	996
Master of Home Economics .....	0	0	0	1
Master of Science .....	0	2	2	19
Total for Division of Home Economics .....	0	73	73	1016

*Honorary Degrees*

Doctor of Laws .....	0	0	0	7
Doctor of Science .....	0	0	0	1
Total Honorary Degrees .....	0	0	0	8

## SUMMARY OF DEGREES CONFERRED 1927-1950

Total Bachelors' Degrees .....	10311	Total Men Receiving Degrees .....	6721
Total Masters' Degrees .....	906	Total Women Receiving Degrees ...	4504
Total Honorary Degrees .....	8		
Total Degrees Conferred .....	11225	Total Degrees Conferred .....	11225

## 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 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 the state a college for white students, to be known as the Texas Technological College, said college to be located north of the twenty-ninth (29th) parallel, and west of the ninety-eighth (98th) 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 manufacture of raw materials into finished products; and said college shall also have complete courses in arts and sciences, physical, social, political, pure and applied, such as are taught in colleges of the first class leading to the Degrees of Bachelor of Science, Bachelor of Arts, Bachelor of Literature, Bachelor of Technology, and any and all other degrees given by colleges of the first class; said college being designated to elevate the ideals, enrich the lives and increase the capacity of the people for democratic self-government and particularly to give instruction in technological, manufacturing, and agricultural pursuits, and domestic husbandry and home economics, so that the boys and girls of this state may attain the highest usefulness and greatest happiness and in so doing may prepare themselves for producing from the State its greatest possible wealth.

Sec. 2. The government, control, and direction of the policies of said Technological College shall be vested in a board of nine (9) directors to be appointed by the Governor, who shall hold office for a period of six (6) years, said board of nine (9) directors to be so divided that the terms of three (3) directors shall expire every two years and it shall be the duty of the Governor, in making the appointment of the first board of directors, to indicate in his appointment the name of the director whose term shall expire in two (2) years, the name of the director whose term shall expire in four (4) years, and the name of the director whose term shall expire in six (6) years; all of said directors to hold their office until their successors are qualified, unless a removal is made by the governor for inefficiency or inattention to their duties as members of such board.

The Board of Directors of the Texas Technological College shall provide a president therefor, who shall devote his entire time to the executive management of said school and who shall be directly accountable to the Board of Directors for the conduct thereof.

Sec. 3. In addition to the courses provided in technology and textile engineering, the said Texas Technological College shall offer the usual college courses given in standard senior colleges of the first class, and shall be empowered to confer appropriate degrees to be determined by the Board of Directors and shall offer four-year courses, two-year courses, or short-term courses in farm and ranch husbandry and economics and the chemistry of soils and the adaptation farm crops to the peculiar soil, climate and condition of that portion of the State in which the college is located, and such other courses and degrees as the Board of Directors may see fit to provide as a means of supplying the educational facilities necessary for this section of the State, and it shall be the duty of the Board of Directors to furnish such assistance to the faculty and students of said college as will enable them to do original research work and to apply the latest and most approved method of manufacturing and, in general, to afford the facilities of the college for the purpose of originating, developing, supporting, and maintaining all of these agencies (physical, mental and moral) for the development of physical, mental and moral welfare of the students who attend the college and for the further purpose of developing the material resources of the State to their highest point of value and usefulness by teaching the arts of commerce and manufacturing. All male students attending this college shall be required to receive such instruction in military science and tactics as the Board of Directors may prescribe which shall, at all times, comply in full with the requirements of the United States Government now given as prerequisite to any aid extended by the Government of the United States to State institutions of this character and all such white male students shall, during their attendance at such college, be subject to such military discipline and control as the Board of Directors shall prescribe.

Sec. 4. The chairman of the State Board of Control and the State Superintendent of Public Instruction, the President of the University of Texas, the President of the College of Industrial Arts of Texas, and the President of the Agricultural and Mechanical College of Texas shall constitute a board charged with the responsibility for the location of the Texas Technological College, a majority of whom shall be authorized to act under the terms of this in the location of said school; said board being restricted in the choice of location to the area mentioned in section 1 of this act and as soon after the passage and approval of this act as practical, said locating board shall make careful investigation of proposed sites for the said institution. Consideration shall be given to climatic conditions, supply of water, accessibility and such other matters as may ap-

propriately enter into the selection of the desirable location of an institution of this kind. It is further provided that the said locating board shall not be influenced to any degree in the determination of its selection of a location by offers and promises of bonuses and gifts, directly or indirectly, to the State of Texas, as a consideration for the location of said college at any particular place, but a primary consideration which shall outweigh all others in the minds of the members of the locating board, shall be to locate this college where it can, in the future, render the greatest service to the State and to the section of the United States for which it is especially intended; but this is not to be interpreted to mean that the Board of Directors shall not have authority to accept gifts of land, money for student loans, permanent improvement of any other objects of value when tendered for the purpose of more completely carrying out the purpose of this act; said gifts to be made after said school is located and established and if a suitable location for said college is offered by any city or community. The lands bought shall be so located that the administration building will be within convenient distance to the residence section of the town where located, or the place where the students reside.

Sec. 5. The said locating board shall have authority to select approximately two thousand (2,000) acres of land for the site of said college and agree with the owner or owners thereof upon the price to be paid therefor, which said agreement shall be reduced to writing and by the said locating board signed and delivered to the Board of Directors herein provided for, who shall thereupon have full authority to contract for the purchase of said land for said purpose, and upon approval of the title thereto by the Attorney General of the State of Texas, to pay for said land and any improvements thereon in any sum not to exceed one hundred and fifty thousand (\$150,000) dollars.

Sec. 6. It is further provided that, when said locating board has selected a site for said college, it shall be the duty of said board to make a full and complete report of all details connected with the selection of the site for the said college to the Governor of the State of Texas. The filing of this report with the Secretary of State shall legally constitute the establishing of the college.

Sec. 7. The Board of Directors of the said Texas Technological College is hereby vested with the powers of eminent domain to acquire for the use of said college such land as may be necessary for the purpose of carrying out its purposes by condemnation proceedings such as are now provided for railroad companies under the laws of the State of Texas.

Sec. 8. There is hereby appropriated from the general revenue of the State, not otherwise appropriated, the following sums, or so much thereof as may be necessary.

1. Twenty-five hundred (\$2,500) dollars of the available revenue of the State, or so much thereof as may be necessary to become available upon the passage and approval of this act, for the purposes of paying the expenses of the locating board in determining the location of said institution.

2. One hundred and fifty thousand (\$150,000) dollars of the available revenues of this State, or so much thereof as may be necessary, to become available September 1, 1923, for the purchase of the necessary lands for the location and establishment of said school, and any portion of which amount is not used for the purchase of lands shall be available for the purposes provided in the following sections thereof.

3. Five hundred thousand (\$500,000) dollars for the fiscal year ending August 31, 1924, for the purpose of providing necessary utilities, machinery, permanent improvements, equipment, and buildings for said college.

4. Three hundred and fifty thousand (\$350,000) dollars for the fiscal year ending August 31, 1925, for the purpose of providing necessary utilities, machinery, permanent improvements, equipment, and buildings for said college; and

5. In the event any portion of the sums hereby appropriated should not be used for and during the year for which they are hereby appropriated, such sums shall become available for the succeeding year, for the purpose herein provided, and for no other.

Sec. 9. The fact that Texas is producing annually millions of dollars worth of raw materials, which are being shipped to distant factories to be made into finished products, together with the fact that Texas has no adequate institutions for teaching technology and the art of textile manufacturing and the fact that the needs of that portion of the State where this college shall be located are inadequately supplied with educational institutions, create an emergency and an imperative public necessity for this act to take effect at once and for the suspension of the constitutional rule requiring bills to be read on three several days, it is therefore enacted that said rule be suspended and this act take effect and be in force on and after its passage.



## APPENDIX B

REGULATIONS OF STATE DEPARTMENT OF EDUCATION GOVERNING TEXAS  
STATE TEACHERS CERTIFICATES

**Four-Year Elementary or Two-Year High School Certificate.** On completion of five college courses (30 semester hours), including 6 semester hours in English, 6 semester hours in education, and the required courses in government, an elementary certificate valid for four years, or high school certificate valid for two years, may be issued.

**Six-Year Elementary or Four-Year High School Certificate.** On completion of 10 college courses (60 semester hours), including 12 hours in education, and the required courses in English and government, a four-year high school certificate, or six-year elementary certificate, may be issued. Any 12 hours in education will be accepted for the elementary certificates, valid for six years, but an applicant must have credit for 6 semester hours that bear wholly on high school education before the high school certificate may be issued. It is provided that the holder of the six-year elementary certificate shall, upon completion of five years of successful elementary teaching, be granted a permanent elementary certificate. It is provided further that the satisfactory completion of a year's college work (30 semester hours) may be substituted for a year's successful teaching, if attendance at the college takes place after the issuance of the certificate.

**Six-Year High School Certificate.** A six-year high school certificate may be issued on completion of three years of college work, including 18 semester hours of education. The courses in education must include at least 2 semester hours in observation and practice teaching and 6 semester hours in high school education.

**Permanent High School Certificate.** A permanent high school certificate may be issued on a bachelor's degree, including 24 semester hours in education. A part of the courses in education must include at least 2 semester hours in observation and practice teaching, 2 semester hours in high school methods and 6 semester hours in high school education.

A permanent high school certificate may be issued also on a bachelor's degree, which includes 12 hours in education (6 hours of high school), with the usual required courses in English and government, and three years' teaching experience subsequent to a degree.

**Special Certificates.** Special certificates authorizing the holders to teach the special subjects of agriculture, home economics, commercial subjects, public school drawing, speech, manual training, physical training, public school music, instrumental music, industrial training, or foreign languages may be granted by meeting the requirements set forth by the State Department of Education for the several certificates. Thus, also students who are registered in the Divisions of Agriculture, Home Economics, Engineering, or Commerce may take sufficient courses in education and psychology to meet the requirements for a state teacher's certificate and the usual special certificates in the designated fields, and thus may take their degrees in the division in which they are registered and qualify themselves to teach agriculture, home economics, shop work, industrial training, commercial subjects, or combination of these and other high school subjects.

The three-year special certificate may be issued on completion of two years' college work, which must include 6 semester hours in English, 6 semester hours in education, 6 semester hours in required courses in government, and 6 semester hours in the special subject in which the certificate is issued, and in addition thereto, one semester's work in methods of teaching the special subject.

The four-year special certificate may be issued on the completion of three years' college work, which must include 6 semester hours in English, 6 semester hours in education, 6 semester hours in required courses in government, and 18 semester hours in the special subject in which the certificate is granted, and in addition thereto, one semester's work in the methods of teaching the special subject.

The permanent special certificate may be issued on the completion of the requirements for a bachelor's degree, in which must be included the required courses of 6 semester hours in English, 6 semester hours in education, and 24 semester hours in the special subject, and in addition thereto, one semester's work in special methods of teaching the subject in which the certificate is issued.

Holders of special certificates in certain fields may secure a permanent special certificate in that field on the completion of three years of teaching this special subject during the validity of their certificate.

**Administrator's Certificate of Approval.** A statement of approval is issued those administrators who present the completion of at least 12 semester hours' credit in the field of advanced administration and supervision, and 6 semester hours of credit in the field of advanced methods. This document is not accepted in lieu of any legal certificate that may be required. It indicates that the holder has met the requirement concerning the training of superintendents and principals of accredited school systems in Texas. These courses are generally taken by people who have already been graduated. The number of education courses required for the Degree of Bachelor of Science in Education usually prevents a student from taking additional courses in education for the undergraduate degree.

**State Department of Education Rules for Teachers of Physical and Health Education.** Full-time teachers of physical education must have, in addition to the usual requirements for teachers' certificates, 24 semester hours of college credit in physical and health education, distributed as follows: 6 hours in methods and materials of health education; 6 hours in methods and materials of physical education; 6 hours in coaching team sports (methods), and 6 hours electives—principles of physical education, administration of health and physical education.

For the present the State Department of Education is asking that certain prescribed courses in physical and health education be required of all classroom teachers responsible for playground work.

**One Year Extension of Certificates of Any Grade.** Any certificates of any grade may be extended for a period of one year by completion of 6 semester hours in summer school, during the year in which the certificate expires. Work done in long sessions and by correspondence or extension work may not be used in lieu of summer school attendance for extension of certificate.

**Government Requirement.** A teacher's certificate issued by the State Department of Education based on college work requires courses in government covering the federal and Texas constitutions. Govt. 230 will satisfy the minimum requirements for this purpose. However, for degree purposes, 6 hours of government are required.

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