

*Texas*

of the

**COLLEGE OF MINES  
and METALLURGY**

(A Branch of The University of Texas)

El Paso, Texas

**LONG SESSION  
CATALOGUE  
NUMBER  
for  
1947-1948**

With Announcements for  
1948-1949

**TWO DIVISIONS . . . Arts and Sciences  
Engineering**

# College of Mines and Metallurgy

(A Branch of The University of Texas)

El Paso, Texas

Member of

Texas Association of Colleges  
Southern Association of Colleges



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*The benefits of education and of useful knowledge, generally diffused through a community, are essential to the preservation of a free government.*

*Sam Houston*

*Cultivated mind is the guardian genius of Democracy, and while guided and controlled by virtue, the noblest attribute of man. It is the only dictator that freemen acknowledge, and the only security which freemen desire.*

*Mirabeau B. Lamar*

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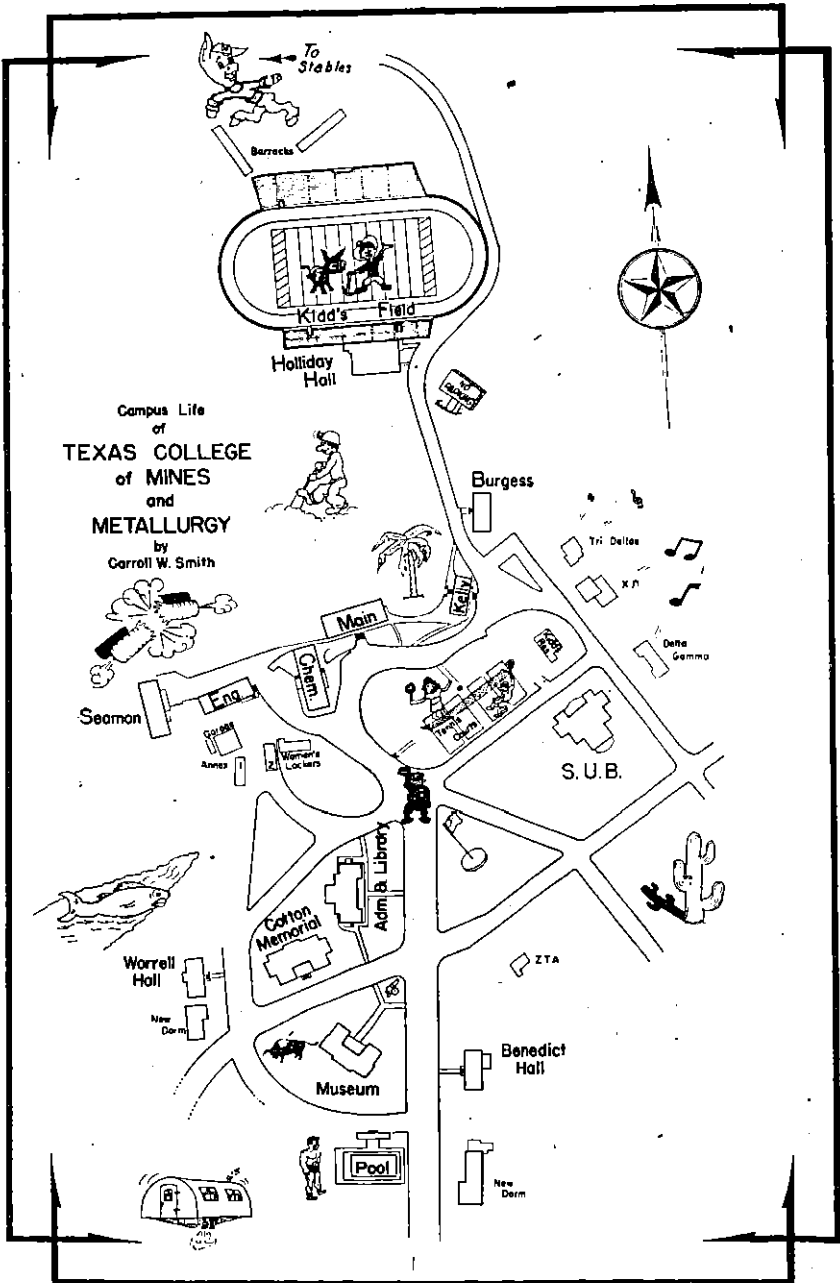
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## CALENDAR

1948

- SEPTEMBER 13, MONDAY. Condition, advanced standing, and postponed examinations. Requests must be in the office of the Registrar four days in advance.
- SEPTEMBER 16, THURSDAY. Faculty registration conference at 2 P.M.
- SEPTEMBER 17, FRIDAY. Freshman convocation, 9:00 A.M., Holliday Hall.
- SEPTEMBER 17, FRIDAY. Immediately following convocation, freshman compulsory examinations will be given (instructions regarding examinations will be given at freshman convocation).
- SEPTEMBER 18, SATURDAY. Continuation of freshman examinations, 8:30 A.M. and 1:30 P.M.
- SEPTEMBER 17-18, FRIDAY-SATURDAY. Physical examinations for transfer students. A physical examination is required of each student who is registering for the first time.
- SEPTEMBER 20-21, MONDAY-TUESDAY. Physical examinations for all beginning freshmen. Main 30 for women and Holliday Hall for men.
- SEPTEMBER 20, MONDAY. Registration of students who have 60 or more credit hours.
- SEPTEMBER 21, TUESDAY. Registration of students who have at least 30 but not more than 59 credit hours.
- SEPTEMBER 22, WEDNESDAY. Registration of students having less than 30 credit hours and all others who have not previously registered.
- SEPTEMBER 23, THURSDAY. Classes begin.
- NOVEMBER 12, FRIDAY. Mid-semester reports.
- NOVEMBER 25-27, THURSDAY-SATURDAY. Thanksgiving holidays.
- DECEMBER 18, SATURDAY. Christmas recess begins at the close of the last class on Saturday.

1949

- JANUARY 4, TUESDAY. Classes resumed.
- JANUARY 12-19, WEDNESDAY-WEDNESDAY. Preregistration conference period for second semester.
- JANUARY 20-27, THURSDAY-THURSDAY. Final examinations for first semester.
- JANUARY 28, FRIDAY. Freshman convocation, 9:00 A.M., Holliday Hall.
- JANUARY 28, FRIDAY. Immediately following convocation freshman compulsory examinations will be given.
- JANUARY 28, FRIDAY. Grade Day.
- JANUARY 28, FRIDAY. Physical examinations for transfer students. A physical examination is required of each student who is registering for the first time.
- JANUARY 31-FEBRUARY 1, MONDAY-TUESDAY. Physical examinations for beginning freshmen. Main 30 for women and Holliday Hall for men.
- JANUARY 31, MONDAY. Registration of students who have 60 or more credit hours.
- FEBRUARY 1, TUESDAY. Registration of students who have at least 30 but not more than 59 credit hours.
- FEBRUARY 2, WEDNESDAY. Registration of students having less than 30 credit hours and all others who have not previously registered.
- FEBRUARY 3, THURSDAY. Classes begin.
- FEBRUARY 5, SATURDAY. Condition, postponed, and advanced standing examinations. Requests must be in the office of the Registrar four days in advance.
- MARCH 26, SATURDAY. Mid-semester reports.
- APRIL 15-18, FRIDAY-MONDAY. Easter holidays.
- MAY 7, SATURDAY. Major examinations.
- MAY 20-27, FRIDAY-FRIDAY. Final examinations for second semester.
- MAY 28, SATURDAY. Grade day.
- MAY 30, MONDAY. Commencement.

## COLLEGE OF MINES AND METALLURGY

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Dorothy Grace Hahn, *Secretary to the Faculty.*  
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Mrs. Georgiana Hillyer, *Reference Librarian.*

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B.A., M.A., Texas College of Mines.

Mrs. Dora McCarver, *Social Director.*  
B.A., Baylor University.

Mrs. Joe Ramsey, *Social Director.*

#### Critic Teachers in El Paso Public Schools

Mr. John Bean  
B.S., M.S., Texas Agricultural and Mechanical College.

Mrs. Margaret Bivins  
B.A., Texas College of Mines.

- Mrs. Susan Buck  
B.S., Baylor University; M.A., University of Chicago.
- Mrs. Anne Canton  
B.S., Sul Ross State Teachers College.
- Mrs. Loula Dixon  
B.S., Sul Ross State Teachers College.
- Miss Fanny Foster  
B.A., Beloit College.
- Miss Annie Harper  
B.A., M.A., The University of Texas.
- Mrs. C. Jane Hawkins
- Mrs. Hortense Huey  
B.A., North Texas State Teachers College.
- Miss Anne Kelly  
B.S., The University of Texas.
- Mrs. Margaret Lundy  
B.S., Sul Ross State Teachers College.
- Mrs. Bernice Nanson
- Miss Beatrice Sims  
B.A., Texas State College for Women; M.A., Sul Ross State Teachers College.
- Mrs. Marie Stamps  
B.A., Baylor University.
- Miss Marjorie Thompson  
B.S., Virginia State Teachers College.



## GENERAL INFORMATION

### HISTORY

In 1913 the Thirty-third Legislature in regular session passed an act creating the State School of Mines and Metallurgy, to be located in El Paso. The act provided that the School of Mines should be placed *under the control* of the Board of Regents of The University of Texas. In 1919 an act of the Thirty-sixth Legislature made the school a branch of The University of Texas.

The location of the school at El Paso was conditioned upon the donation, by the city, of the former El Paso *Military Institute grounds and buildings*. This provision was met and the school was formally opened in September, 1914. On October 29, 1916, the Main Building of the College burned. It was then decided that the College should be moved to a new site to the west of Mount Franklin. The Thirty-fifth Legislature voted an emergency appropriation of \$100,000 for new buildings.

In 1927 the State Legislature provided for the enlargement of the program of the school to include the liberal arts. Following this provision, the Board of Regents in 1931 authorized the College to confer the degree of Bachelor of Arts. At the same time, the Board provided for a presidency for the College and vested direct administrative authority in that office. In 1940 the Board of Regents authorized the conferring of the degree of Master of Arts.

### LOCATION

Texas is the largest and most populous State which supports a separate college of mining and metallurgy. The location of the College of Mines and Metallurgy is *advantageous in several ways*. The City of El Paso stands at the crossing of several of the oldest highways established by white men on this continent. With a population of 120,000, more than 30 per cent of which is engaged in technical industries, it is the most important city south of Denver, between San Antonio or Fort Worth and Los Angeles.

El Paso's primary resources include mining, agriculture, livestock, and timber. The United States Government has spent \$10,000,000 on a great irrigation project to provide a cheap and unfailing water supply for the Rio Grande Valley above and below El Paso.

Its extreme dryness and medium latitude, combined with a moderately high altitude (3,800 feet), give El Paso a *delightful and healthful climate* all the year round.

Within a radius of from one to ten miles of El Paso are found in great variety those geological formations and structures that are usually associated with the mineral industry, not only in metal mining, but in coal mining, oil fields, and non-metallic deposits as well. In opportunity for geological study, no mining school in the United States is more favorably located.

One of the largest custom smelters in the world is situated near the College of Mines and Metallurgy. Within a short distance is also a most modern electrolytic copper refinery, which has a capacity of 20,000,000 pounds of copper in process. Nearby are located a large cement plant, several large brick plants, and three oil refineries. The manufacture of lime, tile, and other non-metallics is carried on in the immediate neighborhood of the College. There are other varied industries, such as cotton spinning and weaving mills, cotton oil mills, wood-working mills, etc.

### BUILDINGS AND GROUNDS

The campus proper includes approximately sixty acres. Its sixteen buildings include the Library and Administration Building, Main Building, Holliday Hall (the gymnasium), Burges Hall, Chemistry Building, Kelly Hall, Seamon Hall, Engineering Building, Museum Building, The Frank B. Cotton Memorial Building; two dormitories for women, two dormitories for men, and a small dressing-room for women, donated by the Woman's Auxiliary of the College of Mines. The architectural style of all the buildings is Tibetan and the construction is from native stone. The campus is most picturesque and blends beautifully into the mountainous background.

### LIBRARY

The main book collection of some 50,000 volumes is housed on the second floor and in the West annex of the Library-Administration building. The nucleus of the book collection was the library of the late W. H. Seamon, a mining engineer and member of the faculty. Recently, a cash gift fund has been made available by Mr. R. E. McKee for the purchase of scientific, engineering and technical books.

The selection of books and periodicals has been made with the curriculum in mind. As the curriculum has expanded, so has the subject material in the library. Consequently, the geological, mining, language, economic, literary and historical collections are especially strong. However, recreational reading has not been neglected and many popular fiction and non-fiction titles are available.

The Library receives a select group of government documents and has valuable files of United States Geological Survey and Bureau of Mines bulletins and reports. A constant effort is made to keep the book collection as current as possible so that students interested in advances in nuclear physics, for example, may find adequate up-to-date material here.

The reference collection is particularly good. The Library regularly receives about 500 periodicals—technical, general, literary and popular—and ten newspapers.

The facilities of the El Paso Public Library, the Teachers' Library of the El Paso Public Schools, and three or four private libraries are made available to students who wish to do specialized research. Active inter-library loan relations with other university and state libraries are maintained. This service is available to all students.

### MUSEUM

The El Paso Centennial Museum was allocated by the Commission of Control for the Texas Centennial Celebration. The museum building was located on the campus of the College of Mines and Metallurgy by authority of the El Paso County Advisory Committee and was erected in 1936.

The building, of Tibetan architecture, is readily accessible to both students and the public. The college is endeavoring to develop it as a great museum of the Southwest.

Permanent collections include an excellent display of minerals and rocks, with special emphasis on Southwestern varieties. Associated with the minerals is an interesting group of meteors. The archeological collections have likewise been assembled to show Southwestern cultures; the El Paso Polychrome and Chihuahua pottery are outstanding. Vertebrate and invertebrate paleontological material presents a good display of prehistoric life, the former with particular application to nearby localities.

Loan collections have been placed in the museum by individuals and organizations. Among the latter are the exhibits of the El Paso Volunteer Firemen's Association and the United Daughters of the Confederacy. Individual loans include a fine lot of rare old books, birds, bills and coins, widely varied cultural displays, minerals, pottery, and weapons.

The museum is being developed as an auxiliary instructional service, particularly in the science and history fields. The collections are therefore arranged to that end.

The general public and students alike are welcomed at the museum. Ordinarily the building is open from Monday to Friday from eight till five, and on Saturday morning and Sunday afternoon. Special arrangements are made during holidays.

### DORMITORIES

There are four modern and conveniently located residence halls, two for men and two for women. These four dormitories have a capacity of 300 students. The dining hall for both men and women is located between the two dormitories for women. Three meals per day are served here with the exception of Sunday night supper. All students residing in the dormitories are required to take their meals in the dining hall.

### DETERMINATIONS AND TESTS

**General principles.**—The College of Mines and Metallurgy is charged with teaching and research in mining, metallurgy, and allied subjects in order to further the safe and economical development and exploitation of the natural resources of the State. In order to advance this object the College is glad to receive gifts of materials for determinations or tests, whether or not they originate within the State. Such work will be done free of charge, but it should be borne in mind that the College will not compete with regularly established consultants, but rather direct, supplement,

and advance their work along new or more advanced lines. Persons shipping materials to the College must prepay all freight charges, and, upon agreement, the charges which they have to incur with outside consultants, such as charges for assays, etc. All such materials shipped to the College must be regarded as gifts to it, and become its property upon receipt. The determinative and testing work will be done largely by advanced students under the personal direction of a suitable professor in charge, and will be carefully checked to insure that the results are as precise as the material and tests warrant. Beyond this the College can not assume responsibility. Since all work done by students becomes part of their regular schedules, the rapidity of determinative and testing work depends upon the number of advanced students and the condition of their schedules. The College is glad to assist in the solution of any problem allied to its objectives, and to incorporate them in its regular instructional and research work. Shipments should be made, and correspondence and inquiries addressed, to the President, College of Mines and Metallurgy, El Paso, Texas.

**Rocks, minerals, fossils, ores, geological specimens.**—Rocks, minerals, fossils, ores, and other geological specimens will be received gladly for determination and incorporation in the Museum and working collections. Acknowledgment is always accorded to donors. Materials are generally studied first from a geological and mineralogical point of view before being referred to other departments as indicated below. Collectors and museums may find it advantageous to correspond with the College to arrange exchanges and sales of important material.

**Analyses and assays.**—The College will not make analyses or assays in competition with professional consultants. Those who have special reasons for wishing work done should write to the President explaining the circumstances.

**Metallurgical tests.**—Shippers of ores desiring tests for process of treatment should see to it that the material submitted is a representative or average sample of the part of the mineral deposit concerned; otherwise, the results of the testing will be commercially worthless.

## SCHOLARSHIPS, FELLOWSHIPS, LOAN FUNDS, AND EMPLOYMENT

### SCHOLARSHIPS

**Accredited School Scholarship.**—The College annually offers this scholarship to the valedictorian, boy or girl, graduating from an accredited secondary school located in the State of Texas, who meets specific requirements as to grades. The financial benefit is exemption from the tuition fee of \$25 per semester in the college for the two consecutive semesters of the first long session after graduation from high school (total \$50). The honor student must be certified through the Texas State Department of Education. Particulars may be obtained from high-school principals.

**B'Nai Brith Scholarship.**—The B'Nai Brith Lodge of El Paso in 1940 established an annual scholarship of \$50 to a student of junior or senior grade who is majoring in social sciences and who in the opinion of the President shows evidence of distinct ability in that field. The holder of the scholarship for 1947-1948 is Alice M. White.

**El Paso Branch of the American Association of University Women Scholarship.**—The El Paso Branch of the American Association of University Women offers a scholarship of \$50 cash to a senior girl. The awarding of this scholarship is based on need and on scholastic record, and the money may be used in any manner to further the recipient's education.

**Sigma Delta Pi Scholarship.**—Sigma Delta Pi offers one scholarship each year to an entering freshman from Juarez, Mexico, to be recommended by School Officials of Juarez, Mexico, in consultation with members of Sigma Delta Pi. The financial benefit amounts to \$25 per semester for one long session (total \$50).

**Sternglanz Scholarship.**—In 1944 Mr. and Mrs. Elias Sternglanz of El Paso, Texas, established a scholarship as a memorial to their son, Lt. Donald M. Sternglanz, who lost his life in a mission over St. Nazaire, France. This scholarship of \$75 is awarded annually to some promising student who is majoring in music. The holder of this scholarship for the year 1947-1948 is Harry Lee Plumbley of El Paso, Texas.

**El Paso Herald Post Scholarship.**—The El Paso Herald Post offers a scholarship to a worthy student majoring in journalism. The financial benefit covers tuition and required fees for both semesters of one long session.

**El Paso Times Scholarship.**—The El Paso Times offers a scholarship to a worthy student majoring in journalism. The financial benefit covers tuition and required fees for both semesters of one long session. The holder for the year 1947-1948 is Marietta Windsor.

**KROD Scholarships.**—KROD radio station of El Paso, Texas, offers scholarships to students interested in the field of Radio Education. The financial benefit covers tuition and required fees for both semesters of one

long session. The holder of this scholarship for the year 1947-1948 is Sue Jane Mayfield.

**KTSM Scholarships.**—In 1943 the KTSM radio station of El Paso, Texas, established scholarships at the Texas College of Mines to be awarded to students interested in the field of Radio Education. The financial benefit covers tuition and required fees for both semesters of one long session. Two scholarships are awarded by KTSM for the year 1947-1948. The holders of these scholarships are Murray Yeager and William McBee of El Paso, Texas.

**The Popular Dry Goods Company Scholarship.**—The Popular Dry Goods Company of El Paso, Texas, offers scholarships to worthy students interested in Advertising, Art, and Business Administration. One scholarship has been awarded for the year 1947-1948 to Catherine Burnett of El Paso, Texas.

### LOAN FUNDS

Unless otherwise specified, the following rules apply:

1. The maximum loan to any student (non-resident) will be \$100.
2. The maximum loan to any student (resident) will be \$50.
3. Endorsements required are those of the parent or guardian, and one other person suitable to the Committee.
4. A non-resident student will not be allowed to borrow money from the loan fund until he has been in residence at least two long semesters, or equivalent, unless he can furnish acceptable local signatures.
5. If the amount of the loan exceeds \$50, the signatures of two business men will be required, in addition to the signatures of the borrower and the parent.
6. Interest will be charged at the rate of six per cent per annum with a minimum charge of twenty-five cents. This interest is payable when the loan matures.
7. Repayment is required within the semester or term for which the loan is granted.
8. A student, generally, is expected not to apply for a loan until after one semester of attendance at the College of Mines.
9. Applications should be directed to Lloyd A. Nelson, Chairman of the Student Loan Committee.

**Academic Loan Fund.**—This fund is maintained for academic students who have been in attendance for at least one semester and who have achieved an average grade of *B* in at least twelve semester hours of work. The fund is administered by a faculty committee.

**Engineers' Loan Fund.**—This loan fund is maintained by the Engineering Department for the benefit of engineering students who have been in attendance at least one year and who meet other special requirements. The fund is administered by Lloyd A. Nelson, Chairman of the Student Loan Fund Committee, and applications should be directed to him.

**Ex-Students' Memorial Loan Fund.**—Under the will of the late William Clifford Hogg, \$25,000 was granted to the Ex-Students' Association and the College for the establishment of this loan fund. Only the income from the fund may be loaned. It is administered by a board of directors consisting of the administrative officers of the College and the Ex-Students' Association.

**Robert E. Lee Loan Fund.**—The Robert E. Lee Chapter, No. 1060, United Daughters of the Confederacy, offers an annual loan of \$150. Applicants must be mining engineering students, must have completed one full year of attendance at the College of Mines and Metallurgy, and must be direct descendants of Confederate soldiers or sailors.

The loan is paid the student as follows: \$50 at the time of the Fall registration and \$12 each month during the school year. The loan is repayable without interest to the Chapter one year after graduation. After the first year following graduation, the loan or the unpaid portion of it will draw three per cent interest.

Applications should be directed through Eugene M. Thomas, Dean of Engineering.

**Spanish-American Loan Fund.**—Establishment of and additions to this loan fund are made by residents of the region who are of Spanish descent. Loans are made to students of Spanish descent who are needy and of high scholastic standing. The fund is administered by a faculty committee.

## EMPLOYMENT

**Students' Employment Service.**—To a student who wishes to contribute to his income while at the same time attending college, El Paso offers a large field of opportunity. The Employment Service at the College of Mines acts as a clearinghouse to coördinate the efforts of the student and the employer. The service will make every endeavor to assist the student in securing employment, but other than this, the College assumes no responsibility. *In no case should the student enter the College for the first time without sufficient funds for at least the first semester.* Applications and correspondence should be directed to Chairman, Student Employment Service.

## EXPENSES

Average registration cost for resident liberal arts students per semester runs from \$47 to \$54. This charge covers required fees only and does not include students in the fine arts. Average registration cost for resident engineering students per semester runs from \$47 to \$63. This charge covers required fees only. Registration and laboratory fees are payable on a semester basis at the beginning of each semester. Students are not entitled to enter class or laboratory until their fees and deposits have been paid. Payment may be made by personal check for the exact amount due. Checks for larger amounts, the difference to be paid in cash to the student, cannot be handled. In paying fees by check, students are requested to exercise care.\*

### TUITION AND REGISTRATION FEES

#### Tuition—For Residents of Texas

Each resident student is required to pay tuition at the following rate for each semester:

12 or more semester hours.....	\$25.00
11 semester hours.....	22.92
10 semester hours.....	20.83
9 semester hours.....	18.75
8 semester hours.....	16.67
7 semester hours.....	14.58
6 semester hours.....	12.50
5 semester hours.....	10.42
4 semester hours.....	8.33
3 semester hours.....	7.50

#### Tuition—For Students Not Residents of Texas

*Registration and tuition for non-residents.*—Under the authority of House Bill No. 507, recently enacted into law by the Fiftieth Legislature, the Board of Regents of the College has fixed the following schedule of registration fees, effective the opening of the Summer Session on June 4, 1947:

- A. For each summer term (of six weeks), \$50. During the last week of the term, a student whose maximum registration during that term is less than four semester hours will be allowed a refund of \$12.50 for each semester hour by which said maximum registration is less than four semester hours.
- B. For each semester of the Long Session, \$150, except that each non-resident student who registers for less than twelve semester hours of work per semester is required to pay a sum proportionately less than that prescribed for non-resident students taking twelve or more semester hours per semester.

\*See Page 44.



**Definition of Non-Resident**

1. "A non-resident 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 the 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. In the absence of any grant of custody the residence of the father continues to control. Upon death of both parents, the legal residence of the minor continues to be that of the last surviving parent until he becomes twenty-one (21), unless he makes his home with his grandparents whereupon their residence is controlling.

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 non-resident student and shall pay the non-resident fee for all semesters subsequent to such change of residence by his parent. 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 non-residents. 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. "A student twenty-one (21) years of age or older who comes from without the State and desires to establish a status as a resident student must be a resident of the State for a period of at least twelve (12) months other than as a student in an educational institution and must have the intention of establishing a permanent residence within the State during the entire period.

7. "The residence of a wife is that of her husband; therefore, a woman resident of Texas who marries a non-resident shall be classified as a non-resident and shall pay the non-resident fee for all semesters subsequent to her marriage. A non-resident 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.

8. "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.

9. "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 Service 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 privilege 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.

10. "Appointment as 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.

11. "It shall be the responsibility of the student to pay the correct fee at the beginning of each semester or term for which he may register, and a penalty of Five (\$5.00) Dollars may be assessed for failure to pay the proper fee."

**Penalties for payment of wrong fee.**—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. Attempt on the part of a non-resident to evade the non-resident fee will be taken seriously and may lead to expulsion.

Any student who wrongfully pays the Texas rather than the non-resident fee is subject to a fine of five (\$5.00) dollars for each such violation.

**Refund of registration and tuition fee.**—Refund of the registration and tuition fee is made under the following conditions and no others:

Upon presentation of his receipt to the Business Manager showing payment of the fee any student withdrawing officially (a) during the first week of class work of a semester will receive a refund of 70 per cent of the applicable portion of the fee; (b) during the second week, 60 per cent; (c) during the third week, 40 per cent; (d) during the fourth week, 20 per cent; (e) during the fifth week and thereafter, nothing.

In no case shall the total refund exceed 70 per cent of the registration and tuition fees paid.

An immediate refund will not be made to a student who withdraws within fifteen days after the payment of his fees, but, upon request, a check covering all refunds due will be mailed to the address left with the Business Manager.

A student who enters the second semester, not knowing his first semester grades, and is required to withdraw because of failure in the work of the first semester will have all of his registration and tuition fee for the second semester refunded.

No refund provided for above will be granted unless applied for within one year after official withdrawal.

**Exemption of ex-service men.**—Men and women who are citizens of Texas and who served in the Armed Forces in World War I or World War II or in certain of the auxiliary services, and were honorably discharged therefrom (except those who were discharged because of being over the age of thirty-eight or because of a personal request), and who are not eligible for educational benefits provided for veterans by the United States Government, are exempted from all required fees but not from deposits. To obtain this exemption, the service record or discharge paper must be presented to the Business Manager each time the student registers. Exemption from fees described above also extends to children of members of the Armed Forces who were killed in action or died while in the service of World War II.

#### LABORATORY FEES PER SEMESTER

Art 301, 302, 303, 304, 305, 305K, 306, 307, 307K, 308, 309, 309K, 309L, 309N, 310, 311, 312, 315, 316, 317, 318, 322, 323, 324, 325, 326, 327.....	\$ 2.00
Bacteriology 29 .....	2.00
Biology 303, 306, 310, 311, 330.....	2.00
Botany 301, 302.....	2.00
Business Administration 10, 21, 302, 303, 311, 314, 332, 334.....	2.00
Chemistry 1, 21, 306, 311, 323, 362, 363, 368, 396.....	2.00
413, 415, 460, 461, 496, 596, 696, 801, 821.....	4.00
Drawing 203, 301, 302.....	2.00
Economics 329.....	2.00
Engineering 71, 220, 224, 243, 312, 316, 322, 344, 358, 370, 371, .....	2.00
415, 431, 434, 454, 466, 510, 515, 614, 857, 868.....	4.00
Geography 303, 304.....	2.00
Geology 217, 301, 302, 316, 317, 361 .....	2.00
418, 419, 421, 427, 463.....	4.00
Journalism 307, 308, 341.....	2.00
Metallurgy 264, 265, 324, 362, 364, 365.....	2.00
423, 473 .....	4.00
Mining 261, 262.....	2.00
Physics 1, 12, 222, 303, 304.....	4.00
438, 445, 801, 812, 834.....	4.00
Psychology 362 .....	2.00
Radio 314, 315, 320, 321, 330, 331.....	2.00
Zoology 14, 301, 302, 320, 321.....	2.00

## SPECIAL FEES PER SEMESTER

Geology 074 .....	50.00
Metallurgy 074 .....	50.00
Mining 074 .....	50.00

## COURSE FEES PER SEMESTER

Band 201, 211, 221, 231.....	2.00
Choir 202, 212, 222, 232.....	2.00
Gold Diggers 204.....	2.00
Orchestral and Band Instruments 325, 326.....	2.00
405 .....	10.00*
Organ 8, 18, 28, 38, 405.....	10.00*
Piano 9, 19, 29, 39, 406, 416, 426.....	10.00*
Violin 7, 17, 27, 405, 415.....	10.00*
Voice 4, 14, 24, 209, 212.....	10.00*
Physical Education 201, 202, 203, 204.....	2.00†
322 .....	2.00

## MISCELLANEOUS REQUIRED FEES

**Non-credit students.**—A student not registered for credit in a course or courses is required to pay the same fees and deposits as a regular student. Such registration does not permit the student to participate in the class for credit or to receive grades.

**Special Examination Fee.**—A fee of \$1.00 is required of persons who wish to take an advanced standing examination or to remove a *PX* or a condition by examination. Permission of the Dean and Registrar must be secured in advance.

**Diploma Fee.**—A diploma fee of \$5.00 is required of candidates for graduation. This fee must be paid 15 days before commencement.

**Student Activities Fee.**—A Student Activities Fee of \$15 without Federal Tax is required of all resident students, whether full time or part time, each semester of the long session.

The fee entitles the student to admission to all athletic events and to all social activities sponsored by the Student Association; hospitalization; *The Prospector*, college newspaper; *El Burro*, college magazine; *Student Handbook*; all intramural activities, dances, membership in the Co-Ed Association and Student Union Building privileges. Approximately fifty per cent of *The Flow-sheet*, college yearbook, is included in the fee. In addition, valuable training is given with respect to literary activities, publications, dramatics, current events, and advanced and special application in science and engineering.

Refund of the fee will be made only under the same condition as the Tuition and Registration Fee.

\*Additional fee for private instruction.

†If student elects horseback riding, \$10 additional per month.

## DEPOSITS

General Property Deposit.....	\$7.00
• Dormitory Room and Key Deposit.....	5.50

**General property deposit.**—Every student must make a general property deposit of \$7.00. This deposit is subject to charges for property loss or damages or breakage or violation of rules in any College library or laboratory, failure to return keys furnished by the College, or for damage to or loss of any other College property. If the charges incurred in any term or semester exceed fifty per cent of the deposit, the student, upon notice from the Business Manager, will be required to restore the deposit to the original amount by paying such charges immediately. Students having charges in excess of the deposit must pay the excess immediately; pending payment, no credit will be allowed on the work of that semester or term, and the student will be ineligible to re-enter the College. Loss and damage items charged against general property deposits shall be credited to the department or other unit in which the loss or damage occurred.

Deposits will be refunded only when a student ends his career at the College of Mines and Metallurgy. No refund will be made to a student who plans to continue his education here, either at the close of the Long Session or Summer Term.

**Dormitory room and key deposit.**—See paragraph on deposits under Housing.

## ROOM AND BOARD

Room Rent and Board per semester*.....	\$233.75
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## HOUSING

**Dormitories.**—The College considers it a distinct advantage for all boarding students to live in the dormitories on the campus. Every attention will be given for the improvement of the social and educational life of boarding students.

All students whose homes are not in El Paso are required to live in the dormitories on the campus to the full capacity of the facilities.

There are four very modern and conveniently located residence halls, two for men and two for women, and a central cafeteria for all students. The buildings are fireproof in construction, well-furnished, fully equipped with modern facilities for furnishing meals, and include proper recreational rooms for the social life of resident students.

Room reservations should be made in advance by sending a room and key deposit of \$5.50 to the office of the Director of Dormitories. This deposit is refunded at the close of the semester, provided the student does not withdraw from the dormitory before that time, and provided there is no deduction for

\*Subject to change on thirty days' written notice.

breakage. The deposit will be refunded to those students who cannot be accommodated or to those who cancel their reservations ten days prior to the opening of the session. A room reservation is cancelled and the room deposit is forfeited if the room is not claimed by 11:00 p.m. the last day of registration before classes begin. Room and roommate assignments are given out upon arrival.

The charge for room and board per person for a regular double room will be \$233.75 per semester. The entire amount may be paid on registration, or \$59.75 may be paid and the remainder in three installments of \$58 each. These payments are due on the first day of the month and there will be a penalty of 25c for the first day and 10c for each additional day if payment is made later than the tenth. The College reserves the right to change the charges for room or board or both by giving written notice of such increases thirty days before the change.

**Extra Dormitory Charges per Person per Semester**

Corner room .....	\$10.50
Single room (if available) .....	21.25
Single corner room (if available) .....	42.50

Detailed regulations governing student life in the dormitories, the payment for room and board, refunds, changes of residence, etc., are published in mimeograph form. Students concerned are held individually responsible for and charged with the knowledge of these regulations. Copies may be obtained upon request from the Director of Dormitories.

**Official Lists of Rooming and Boarding Houses.**—The College of Mines maintains annually official lists of rooming houses for men and for women. Any rooming house is eligible to a place upon one of these official lists and to receive the publicity through the College accruing therefrom, provided it complies with the College regulations.

In order to be placed upon this official list, the proprietor must be of good moral character and must be willing to cooperate with the College in carrying out its regulations. All houses on the official list are subject to inspection by representatives of the College of Mines Health Service or by the Dean of Student Life. The College reserves the right to remove at any time any house from the official list for cause deemed sufficient by the Committee on Student Living Accommodations.

The detailed regulations governing student life in boarding houses, standards to be met by proprietors, etc., are published in separate form. Students and proprietors concerned are held individually responsible for and charged with the knowledge of these regulations. Copies can be obtained upon request from the Registrar or the Chairman of the Committee on Student Living Accommodations.

## ADMISSION REQUIREMENTS

**Control over admission.**—*Admission to the College* is under the control of the Faculty and administered by the Registrar.

### GENERAL REQUIREMENTS

**Sex.**—Applicants of both sexes are admitted to all branches of the College on equal terms.

**Character.**—An applicant must furnish satisfactory evidence of good moral character.

**Physical examination.**—A physical examination by the College Health Officer is required of all students who have not previously attended the College of Mines. An applicant must either be vaccinated by the College Health Officer or he must present a certificate showing that he has had smallpox or has been successfully vaccinated or that attempts at vaccination have been made recently enough to satisfy the Health Officer.

**Hazing pledge.**—The Legislature having forbidden hazing and rushing in State educational institutions under penalty of fine and imprisonment, each applicant is required to sign the following pledge:

"I pledge upon my honor not to encourage nor participate in hazing or rushes during my attendance in the College of Mines and Metallurgy, a branch of The University of Texas, provided that contests among students, conducted according to the rules approved by the faculty, shall not be classed as rushes."

### GENERAL SCHOLARSHIP REQUIREMENTS

**Units.**—Entrance requirements are stated in terms of units. A unit represents nine months of study in a subject in a secondary school, constituting approximately a quarter of a full year's work. A four-year secondary school curriculum should be regarded as representing not more than sixteen units of work.

**Unit requirements.**—For admission fifteen units, with high-school graduation (see "Methods of Obtaining Admission Units"), are required as specified below. World history may not be counted if either ancient or modern European history or World geography is offered; and credit may not be allowed for biology if credit for either botany or zoology has been granted. A student may enter with a condition in any one subject or group except English, provided he has a total of at least fifteen acceptable units. In no case will more than four units be accepted from Section B.

	UNITS
1. English (required of every student) .....	3
2. From the Mathematics Group in Section A below.....	2
3. Two units from each of any two of the Foreign Language Group, Natural Science Group, Social Science Group in Section A below...	4
4. Additional from any group or groups in Section A.....	2
5. Additional from Section A, or from Section B, or from Sections A and B together .....	4
Total .....	15

### Section A

(The units column shows the number of units that may be offered in each subject.)

SUBJECT	UNITS	SUBJECT	UNITS
<b>English Group</b>		<b>Mathematics Group<sup>4</sup></b>	
English .....	3-4	Algebra .....	1-1½-2
<b>Fine Arts Group<sup>1</sup></b>		Plane Geometry .....	1
Art .....	1-3	Solid Geometry .....	½
Dramatics and Speech.....	½-2	Trigonometry .....	½
Music .....	1-4	General .....	1
Theory .....	1	<b>Natural Science Group</b>	
Harmony .....	1-2	Biology .....	1
History and Apprecia- tion .....	1	Botany .....	1
Applied Music <sup>2</sup> .....	1	Chemistry .....	1
Band, Orchestra, Chorus <sup>3</sup> .....	1-2	General Science .....	1
<b>Foreign Language Group</b>		Physics .....	1
Czech .....	2-3	Physiography .....	½
French .....	2-3	Physiology and hygiene.....	½-1
German .....	2-3	Zoology .....	1
Greek .....	2-3	<b>Social Science Group</b>	
Latin .....	2-3-4	Ancient history .....	1
Spanish .....	2-3	Modern European history.....	1
		World history or World geog.	1
		English history .....	½-1
		American history .....	½-1
		Civics .....	½-1
		Economics .....	½

<sup>1</sup>Not more than six units will be accepted in any combination of fine arts subjects.

<sup>2</sup>Applied music must be accompanied by music theory.

<sup>3</sup>Band, orchestra, and chorus must have been offered as curricular subjects and not as student activities. Less than one unit will not be accepted.

<sup>4</sup>From the combination of algebra and general mathematics, only two credits may be allowed: such as, Algebra 1 and General Mathematics or Algebra 1 and Algebra 2.



## Section B

The electives (4) may be chosen from any subjects other than drill subjects (such as penmanship, physical education, military training, etc.) accredited by the State Department of Education, though not more than four units may be counted in vocational subjects. A single unit in foreign language may be counted in this group.

## ENGINEERING

The unit requirements for admission to Engineering are as follows:

SUBJECT	UNITS
1. English .....	3
2. Mathematics	
Algebra ..... 2	
Plane Geometry ..... 1	
Solid Geometry ..... ½	
	} ..... 3½
3. Mechanical Drawing .....	1
4. Two units from each of any two of the Foreign Language Group, Natural Science Group, Social Science Group in Section A .....	4
5. Additional from Section A, or from Section B, or from Sections A and B together.....	3½
<b>Total</b> .....	<b>15</b>

Under 5, above, two units may be offered in manual training, or one unit in manual training, and one additional unit in mechanical drawing.

All other provisions with reference to admission to the College apply also to Engineering, except that the English, mathematics, and drawing requirements may not be absolved under "Quality Provisions."

**Quality provisions.**—Quality, however, is more important than quantity. A course thoroughly mastered is worth more than one completed with low or even medium grades. Therefore any applicant ranking in the highest quarter of his graduating class in any fully accredited secondary school and also ranking in the highest quarter of the freshman class in the scholastic aptitude test given by the College in September may enter without admission conditions.

Furthermore, any conditional first-year freshman student (but not an "individual approval student") who makes, in the College, in his first long session or its equivalent, at least thirty semester hours with an average grade of C will thereby absolve his admission condition. Otherwise it must be removed as provided under "How to Absolve Admission Conditions."

**Advice as to subjects in high school.**—The evidence is strongly in favor of the Group A subjects as giving the best preparation for college. High-school students expecting to go to college are therefore strongly advised to choose as nearly as possible all of their subjects from that group.

Students expecting to specialize in foreign languages in college should begin in high school. Those looking forward to college work in the sciences, mathematics, medicine, business administration, statistics, or law should take at least 1½ years of algebra and 1 year of plane geometry in high school. Students who plan to study engineering should have 2 years of algebra, 1 year of plane geometry, ½ year of solid geometry, and 1 year of mechanical drawing.

### STUDENTS FROM OTHER COLLEGES

A student seeking admission from another college must present an official transcript of his entire college record, including his admission units. Much trouble and time will be saved by sending this official record to the Registrar not later than September 1, as students are not allowed to register until this transcript is on file.

Students in other institutions who desire a degree from the College should not wait until their senior year to transfer. If they do, they may not be able to complete all remaining requirements in one year.

A student who has failed in his work at another institution and is not entitled to continue there will not be admitted to the College. Others who have failed may be refused admission, or may be admitted on scholastic probation or on any other condition that may seem desirable.

A student shall not receive credit for work done at another institution during a time when he is ineligible to attend the College of Mines and Metallurgy, nor will the College admit a student from another institution who is ineligible to continue there.

Inasmuch as students taking all their work in the College must have a C average for a degree, only such work completed in another institution as altogether averages the equivalent of our grade of C will be accepted here.

An applicant who has attended another collegiate institution is not at liberty to disregard his collegiate record and apply for admission to the College on the basis of his high-school record, but must submit his college record. This regulation applies whether the student attended another institution for only a brief period or if he finished one or more semesters; it also applies without regard to whether or not the student wishes credit here for college work done elsewhere.

### METHODS OF OBTAINING ADMISSION UNITS

The admission units specified are usually obtained by graduation from an accredited school, or by examination, or by a combination of the two. Limited opportunity is also offered by the University's Extension Teaching Bureau at Austin for units to be made by correspondence study. In addition, a teacher's certificate known as a high-school certificate of the second class yields the holder a few units, depending upon the number of acceptable subjects taken for the certificate.

(1) **Graduation from an accredited school.**—No credit may be obtained without graduation. Within the limits of the above list, graduates of schools on the approved list issued by the State Department of Education

are credited with the subjects they have completed in which the schools are accredited. In order to determine these units, they are required to present statements of their work made out by the superintendent or principal of the high school they attended. It is of the highest importance that the applicant send this blank, properly filled out, to the Registrar not later than September 1. Valuable time will be lost if he does not do so, and more if he has to send for it after he arrives. Without it he cannot be admitted at all.

In case of students from schools outside Texas, graduates of schools on the approved list, issued by the United States Department of the Interior, are accepted on the same basis as they would be accepted by the state university of that state; or, in the absence of such an institution, by another institution of recognized standing acquainted with the work of the school in question.

(2) **Examination.**—Any or all scholarship requirements may be met by passing the admission examinations. To obtain credit in any subject, the applicant must make a grade not lower than *D*. In grading papers in all subjects, account will be taken of the applicant's use of English. Excellence in one subject will not make up for deficiency in another.

Admission examinations are held twice a year, in September and in January.

The fall and winter series are held only at the College and begin on September 10, and January 21, respectively. Requests for full information in regard to these series should be addressed to the Registrar of the College.

**Junior-senior high-school graduates.**—Applicants who have passed through and graduated from a junior-senior high-school organization in which the usual type of college entrance subjects were not given in the junior school may be admitted on twelve acceptable units completed in the senior high school (the last three grades), including the unit requirements listed under "Unit Requirements," plus three unspecified units from the junior high school.

#### ADMISSION BY INDIVIDUAL APPROVAL

At the discretion of the Registrar, an applicant over 21 years old may be admitted without examination. Such admission does not confer special privileges but, on the contrary, puts the applicant under special obligations. Each applicant proceeds as follows:

1. He must make application on the official blank (to be obtained from the Registrar), giving the information there desired.

2. He must furnish evidence that he has substantially covered the ground of the units required of other candidates, and that he has sufficient ability and seriousness of purpose to do the work desired with profit to himself and to the satisfaction of the College.

3. He must show, by the writing of a composition, that he has an adequate command of English.

Applicants are advised to send their applications and credentials in advance of their coming to El Paso.

Admission by individual approval contemplates applicants who have not recently attended school and therefore could not pass the admission examinations.

Students so admitted may register for courses other than freshman courses only with the approval of the chairman of the department concerned and the Dean, given because of evidence of special fitness. This approval can rarely be granted, however, because most individual approval students have less preparation than any other students in the College.

Students admitted by individual approval cannot become candidates for degrees until they have satisfied the admission requirements. As to how to remove admission conditions, see the following section.

#### HOW TO ABSOLVE ADMISSION CONDITIONS

**General.**—Admission conditions may be removed by the following methods:

1. By taking, with the approval of the Registrar, the regular admission examination in subjects not studied by the student in the College.
2. By correspondence work (a few courses for this purpose are offered in the University Bureau of Extension Teaching).
3. By counting work done in the College.

If the second or third plan is used, the prescribed admission units must be satisfied by work in the corresponding subjects in the college; the elective admission units may be absolved by any College work.

For the purpose of satisfying admission conditions, a course of six semester hours counts as the equivalent of one and one-half units. Courses used to absolve admission requirements will not count also toward a degree.

**Individual approval students.**—Students admitted by individual approval to English I will, on completing that course be given credit also for three admission units in English. Similarly, students admitted to freshman mathematics will, on completing that course, receive credit also for two admission units in algebra and one in plane geometry.

Engineering students admitted without entrance credit to the College by individual approval and making during their first long session, or its equivalent, at least thirty-four semester hours with an average grade of *C* will in addition absolve the admission condition in six elective units. Other students admitted without entrance credit to the College by individual approval will absolve six elective units upon completion of thirty semester hours during the first long session, or its equivalent. If this average is not made, the elective units (see "Scholarship Requirements") must be made up by one or more of the methods given in the general paragraph at the beginning of this section. The penalties and restrictions of that paragraph also apply to individual approval students.

*Engineering*

- 3 English (by completing English 1).
- 3 Mathematics (by completing Mathematics 803).
- 6 Elective units (by completing thirty-four semester hours with C average).
- 1 Mechanical Drawing (by completing Drawing 203).
- ½ Solid Geometry (by completing Mathematics 208).
- 1½ units—loss of six college hours. For example: (Mathematics 305 and Chemistry 305).

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*Other students*

- 3 English (by completing English 1).
- 3 Mathematics (by completing freshman mathematics).
- 6 Elective units (by completing thirty semester hours with C average).
- 3 units—loss of twelve college hours.

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**INFORMATION FOR VETERANS**

The Texas College of Mines is prepared to serve the veterans of the war and has entered into the education training programs provided by Public Law 16 and 346 of the 78th Congress. Provisions have been made to help ex-servicemen or women to obtain the benefits entitled to them under the G. I. Bill as easily and effectively as possible. For this purpose, a training officer of the Veterans Administration is located on the campus to help veterans with problems, not only directly connected with education and training but also other problems, such as insurance, medical care and treatment, disability claims, etc.

The Office of the Registrar will gladly answer questions which fall under the heading of admission, credits for work done while in the armed services, courses and program of study. Veterans who are undecided regarding vocational plans will be referred to the veterans counseling service for expert vocational guidance by experienced counselors.

The Texas College of Mines is one of a group of colleges and universities throughout the country selected by the Veterans Administration to provide counseling service for returning veterans seeking further training under government provisions. All veterans eligible for rehabilitation training under Public Law 16 are required to undergo a period of interviews, testing and advisement before they begin a program of training. Any veteran who is eligible under

the provisions of Public Law 346 (C. I. Bill) may have the benefit of the testing and counseling if he so desires.

Prior to registration a veteran should obtain a Certificate of Eligibility and Entitlement or, if entitled to vocational rehabilitation, a letter approving training under Public Law 16 for presentation to the College of Mines at the time of registration. A special bulletin on educational opportunities for veterans at the Texas College of Mines may be obtained from the Registrar's Office.

## REGULATIONS AFFECTING STUDENT LIFE

### STUDENT GUIDANCE

Special attention is given to students entering college for the first time. A member of the faculty is assigned to each student as an adviser, so that the student will have a mature friend to whom he may go for advice. The adviser earnestly endeavors to know his advisee and to effect an expeditious adjustment of the student to his new environment. The advisory work of members of the faculty is considered one of their most important functions.

### HEALTH SERVICE

Under the direction of Dr. B. F. Jenness, Health Officer, an effort is made to guide the physical development and health of all students by examinations, compilation of records, advice, health bulletins, and lectures. The health officer also acts as adviser on campus sanitation, and minor medical and surgical treatment of an emergency nature is given in the health office. The health officer may examine students in verification of suitable vaccination prior to their admission and require acceptable certificates.

Special attention is given to all freshmen, who are subject to physical examination. A registered nurse is in attendance at the school clinic. She resides in the women's dormitory, attends to the health of resident students, supervises special diets, and gives talks on personal hygiene.

At the discretion of the student's Dean the physical education requirement may be waived in the case of students over 23 years of age.

Students whose physical examinations indicate that regular class work would be inappropriate for them may be given modified work.

Attendance in physical education is subject to the provisions under the heading Attendance and Absences, page 38, with the exception that a student who must be absent due to illness is required to report said case of illness to the Health Officer of the College immediately. Work missed in physical education due to illness may be made up, make-up cards to be secured from the instructor. Such absences must be made up within two weeks of return to class.

### INTRAMURAL ATHLETICS

A varied program of intramural sports for men and women offers competition and recreation for all students. The program is to be constantly expanded according to student interest and available facilities.

The program is sponsored by the Student Association and the Department of Physical and Health Education as represented by an Executive Committee made up of students and faculty. An Intramural Council for men and one for women, composed of student representatives from various participating organizations assist in planning and conducting the program.

**INTERCOLLEGIATE ATHLETICS**

Rules and regulations governing intercollegiate athletics at the College of Mines and Metallurgy are those effective in the Border Intercollegiate Athletic Conference. These rules and additional rules governing freshman participation in athletics are published in a booklet issued by the Border Intercollegiate Athletic Conference.

**OFFICIAL NON-ATHLETIC EXTRACURRICULAR ACTIVITIES**

**List of Organizations.**—It is the intention of the College of Mines to provide for its student population a group of non-athletic extracurricular organizations which will challenge the most diverse kinds of interest. Regardless of the field to which the student's specific interests run, he is likely to find one or more of the following organizations designed to stimulate those interests, and in which his participation is invited:

**General Organizations**

1. Academic Association
2. Academic-Engineering Force
3. Co-Ed Association
4. Independent Men's Association
5. Independent Women's Association
6. International Relations Club
7. Junior Pan American Round Table
8. 'M' Club
9. Phrateres
10. Scientific Club
11. Students' Association

**Departmental Organizations**

12. Band
13. Bandettes
14. Beaux-Arts Club
15. Bekas
16. College Players
17. El Burro
18. Flowsheet
19. Gazers
20. Gold Diggers
21. Kappa Kappa Psi
22. Mines Chorale
23. Pre-Law Club
24. Pre-Med Club
25. Press Club
26. The Prospector
27. Psychology Club
28. Radio Workshop Players
29. Varsitians



Religious Organizations

30. Baptist Student Union
31. Canterbury Club
32. Methodist Student Union
33. Newman Club
34. Students' Christian Association

Honorary Organizations

35. Alpha Chi
36. Alpha Psi Omega
37. Kappa Delta Pi
38. Sigma Delta Pi
39. Sigma Gamma Epsilon

Greek Letter Social Organizations

40. Alpha Phi Omega
41. Chi Omega
42. Delta Delta Delta
43. Delta Gamma
44. Inter-Fraternity Council
45. Kappa Sigma Kappa
46. Lambda Chi Alpha
47. Mu Epsilon Chi
48. Panhellenic Council
49. Sigma Alpha Epsilon
50. Zeta Tau Alpha
51. Phi Kappa Tau

**General Regulations.**—Each organization listed above is supervised by a faculty sponsor, who acts in capacity of counselor. The sponsor receives his appointment in accordance with the provisions of the constitution of his organization, which constitution also provides means whereby students may gain membership, provides means for the election of organization officers, and furnishes the framework for a continuing body. Rules and regulations governing the conduct of the affairs of all organizations listed above arise with the Faculty Committee on Student Activities.

Any question regarding the existence or the interpretation of regulations should be referred to the office of the Dean of Student Life. The rules printed herein and those which, because of the necessary flexibility, are annually printed in a Students' Handbook, published by the Students' Association, are so easily available (either in published form or through reference to the office of the Dean of Student Life) that each student is charged with knowledge and notice thereof.

**Rules for Participation.**—For enforcement of the following rules the faculty sponsors and the officers of the organizations are held responsible.

I. For Greek Letter Social Organizations: to preserve the flexibility which the Faculty Committee on Student Activities feels it necessary in the case of

these organizations, rules here are published annually in a Students' Handbook, and otherwise are available at the office of the Dean of Student Life.

II. For Honorary Organizations: regulations governing the gaining of membership and the continuing of participation are available at the office of the Dean of Student Life.

III. For General Organizations, Departmental Organizations, and Religious Organizations:

1. To become a member, a student must
  - a. Gain admittance in accordance with the constitution of the organization applied to,
  - b. At the time, be subject to no phase of disciplinary action (this rule does not apply to organizations numbered 1, 2, 3, 8, 11, 12, 30, 31, 32, 33, 34 above),
  - c. At the time be taking at least twelve semester hours in residence for credit (this rule does not apply to organizations numbered 1, 2, 3, 8, 11, 12, 30, 31, 32, 33, 34 above),
  - d. Be able to show that during his last semester in attendance he passed a minimum of nine semester hours for credit, two consecutive summer terms to count as one semester (this rule does not apply to organizations numbered 1, 2, 3, 8, 11, 12, 30, 31, 32, 33, 34 above),
  - e. Not be on Scholastic Probation (this rule does not apply to organizations numbered 1, 2, 3, 8, 11, 12, 30, 31, 32, 33, 34 above).
2. To retain membership:
  - a. Eligibility at the beginning of a semester holds good throughout the semester unless the student becomes ineligible under the above provisions. A student ineligible at the beginning of a semester by reason of the foregoing rules, becomes eligible upon removal of his disability. First year students are eligible immediately upon entering, provided they otherwise can qualify.

### CONDUCT

It is assumed that students come to the College for a serious purpose, and that they will cheerfully conform to such regulations as may be, from time to time, made by the Faculty.

It is the aim of the Faculty to so administer the discipline of the school as to maintain a high standard of integrity and a scrupulous regard for truth. The attempt of any student to present as his own the work of another, or any work which he has not honestly performed, or to pass any examination by improper means, is regarded by the Faculty as a most serious offense, and renders the offender liable to immediate suspension. The aiding and abetting a student in any dishonesty is held to be an equally serious offense.

On examination or quizzes the student is expected, (a) to remain in the examination room until his examination is finished, (b) to refrain from talking, (c) to refrain from bringing notes and books into the examination room.

The possession of any material not allowed by the instructor during an examination is considered *prima facie* evidence of intention to use such material illegally.

### DISCIPLINE

**General statement.**—1. Through matriculation at the College of Mines and Metallurgy, a student neither loses the rights nor escapes the responsibility of citizenship.

2. Obedience to the law being a primary duty of the citizen, the conviction of the student for violation of law renders him subject also to disciplinary action on the part of the College.

3. A jury indictment for a felony or other offense of serious character suspends the student, without prejudice, until acquitted.

4. Illegal conduct, such as the drinking of intoxicating liquors, gambling, and dishonesty, renders the student subject to discipline.

5. The College, in common with other institutions, has for its orderly and efficient conduct, special regulations additional to the laws of the land. These special regulations are so easily available to all students that each student is charged with notice and knowledge thereof.

6. Persons not registered in the College when accused of misconduct that affects college life and work, if former or prospective students, will have the known circumstances inscribed in their record as a presumption against their moral character. They will not be later admitted to the College unless they can prove moral desirability.

7. All students are expected to show respect for properly constituted authority and to observe correct standards of conduct. Conduct inconsistent with general good order, or persistent neglect of work, or failure to respond promptly to official notices, may subject the student to discipline.

Students are trusted to conduct themselves properly. If, however, it becomes apparent that any student, by misconduct or by neglect of studies is doing harm to himself, to others, or to the College, the Faculty will use appropriate means of discipline.

The following penalties may be imposed: admonition; probation; suspension of social rights and privileges; suspension of eligibility for official athletic and non-athletic extracurricular activities; suspension of eligibility for any student office or honor; publication of the name of the offender, his offense, and the penalty imposed; increase in the number of courses required for a degree; cancellation of credit for scholastic work done; suspension from the College; expulsion; or such other penalty as in the opinion of the Faculty Committee on Discipline seems proper.

**Probation.**—Disciplinary probation will be for a definite period and carries with it the following condition during the period of such probation: any further violation of College regulations during the time of probation will cause such student to be suspended for a period to be determined by the Faculty Committee on Discipline.

A student on probation may not hold office in any organization connected with the College, nor represent the College in any of its activities.

A student on probation who absents himself from any class exercise or neglects any class work, except for reasons considered imperative by his Dean, will thereby drop his name from the College rolls for the remainder of the session.

Absences and neglect on the part of such student, not explained to his Dean within one day—beforehand if possible—will be presumed to be without excuse and will effect the dropping above mentioned.

A student on probation may not be initiated into any social or honorary organization.

**Suspension from the College.**—A student suspended from the College shall remain off the campus of the College during the entire period of his suspension, excepting when summoned by an administrative official of the College, or when an appointment with an official has been previously arranged. A student while under suspension may not room or board in a fraternity or sorority house, dormitory, or rooming house where other students are living. He may not be initiated into an honorary or social organization. A student under suspension may not receive credit at the College of Mines and Metallurgy for college work done, by correspondence or in residence, at either this or any other institution during the period of suspension, except when allowed by the Faculty Committee on Discipline. This privilege shall not be allowed in cases involving cheating.

**Expulsion from the College.**—A sentence of expulsion means permanent severance from the College. A sentence of expulsion shall be reviewed by the administrative officers, who, when in doubt about its propriety, shall return the case to the trial committee with its reason for so doing.

These penalties may be imposed singly or in any combination upon individuals, or groups, or organizations.

In every case in which a student is found guilty of any offense by the Faculty Committee on Discipline and in any other matter in which an emergency arises, parents or guardians will be informed and asked to cooperate with the authorities.

**Debts.**—The College is not responsible for debts contracted by individual students or by student organizations, but the College will use all possible measures to force the payment of debts justly and regularly contracted by such persons. The College expects all students and student organizations to conduct themselves honorably in all commercial transactions.

**Hazing.**—A student who violates his pledge of hazing, or who engages in, instigates, or encourages any type of class rush not specifically approved by the College, will be liable to suspension or expulsion.

**Bad checks.**—A student who gives the College a bad check, the fault not being that of the bank, and who does not make it good within five days will be dropped from the College. The College will not accept a check from a student who has once given a bad check.

## SCHOLASTIC REGULATIONS

### ADDING, DROPPING, AND CHANGING COURSES

After registration for the session a student may add a course only with the approval of his Dean.

A change from one course to another course may be made only with the approval of the student's Dean. A change from one section of a course to another section of the same course must be approved by both the head of the department in which the change is being made and by the student's Dean.

For a weighty cause, a student may drop a course with the consent of his Dean. If the student is passing the course at the time that he drops it, the grade in the course will be entered as *Dr*. However, if the student is failing the course at the time he drops it, his grade will be entered as *Dr F*.

On the recommendation of the instructor concerned, approved by his Dean, a student may at any time be required to drop a course because of neglect, excessive absences, or lack of effort. In such case the grade is entered on the student's record as *F*.

### ATTENDANCE AND ABSENCES

a. Uniform and punctual attendance upon all exercises at which the student is due is strictly required. Absences will be considered as non-performance of work.

b. A student has no right to be absent from any exercise in a course in which he is registered, except (1) for serious illness, or (2) by action of College rule, or (3) for other unavoidable circumstances. Absences caused by serious sickness or other unavoidable circumstances, in case the work missed has been done to the satisfaction of the instructor, shall not count toward dropping a student from a course.

c. When, in the judgment of the instructor, a student has been absent to such a degree as to impair his status relative to credit for the course, the instructor shall report the absences and the student to the Dean, and upon recommendation from the instructor, the Dean may drop the student from the course.

d. Absences incurred by a student prior to registration are not to be charged against said student provided the work missed because of late registration is made up satisfactorily by the mid-summer report date.

**Absence from quiz.**—A student absent from an intra-semester examination or quiz is graded zero on that quiz, unless for urgent reason he is given by the instructor the privilege of taking a postponed examination at a time to be set by the latter.

**Tardiness.**—Serious or repeated tardiness will be considered as equivalent to absence, and reported as such.

### AMOUNT OF WORK

**Engineering students.**—Freshmen may not register for more than eighteen semester hours for each semester. Sophomores, juniors, and seniors may not register for hours in excess of those prescribed in the course of study except in accordance with the grade point rule (252 grade points during their preceding semester), and in no case whatever may they register for more than twenty-one semester hours.

**Arts and science students.**—The normal load for beginning freshmen is sixteen semester hours. The maximum load for beginning freshmen is seventeen semester hours.

Other students, with permission of the Dean, may register for eighteen semester hours if the grade score has been 252 points for the preceding semester and for more than eighteen semester hours if the grade score has been 297 for the preceding semester. A full summer session may be counted as a semester.

In no case may a student register for more than twenty-one semester hours.

### BULLETIN BOARDS

Official bulletin boards are maintained in the several buildings and departments. These are used principally for posting official notices of changes of regulations, class meetings, special official meetings, etc., as found necessary by the Regents and Faculty. Such notices have full official force and effect. Students are held responsible for knowledge of and compliance with such notices.

### CLASSIFICATION OF STUDENTS

Students are classified as credit and non-credit. *Credit students* are further classified as *regular students* who are taking 12 or more semester hours of work prescribed for a degree, and *irregular students* who are taking less than 12 semester hours. *Non-credit* students are those who are registered for courses with the understanding that credit for the course will not be received. No student will be registered non-credit except with the permission of the head of the department concerned. No student will be permitted to change from non-credit to credit after the close of the registration period.

They are further classified as first-year, second-year, and upper-division students, dependent on their time of residence at a college or university. A first-year student is one who has resided not more than two semesters; a second-year student is one who has resided two semesters and not more than four semesters; upper-division students are those who have resided more than four semesters. A term of the summer session is equal to one-half semester.

**Engineering students.**—Until the completion of thirty semester hours of prescribed work in addition to the full admission requirements, engineering students are freshmen; then, until sixty-six semester hours are completed,

sophomores; then, until one hundred and four semester hours are completed, juniors; then, seniors until graduation.

**Arts and science students.**—Until the completion of thirty semester hours in addition to the full admission requirements, a student is classified as a freshman; then, until sixty semester hours are completed, a sophomore; then, until ninety semester hours are completed, a junior; then, a senior until graduation.

### EXAMINATIONS

All of the written work handed in by students is considered to be their own product, prepared without unauthorized assistance. Students are invited to cooperate with their instructors in maintaining the integrity of examinations and are strongly urged to inform them, without specifying the offenders, if cheating goes on in their classes.

Students are expected (a) to remain in the examination room during the examination or quiz period; (b) to refrain from talking or smoking; and (c) to leave all notes and books where they will not be accessible during the examination or quiz, unless otherwise directed by the instructor.

**Final examinations.**—The Faculty has ruled that exemptions from examinations may not be given. To encourage preparation for examinations, the Faculty has further ruled that during the last seven days of each semester before examinations no written examination or review shall be given; and all essays, theses, synopses, and the like must be handed in before this period begins.

In all examinations, account is taken of the student's use of English and of the form of the paper in general, the grade being lowered because of deficiencies in these regards as well as in the subject-matter proper.

Examinations are three hours in length and at the end of three hours all papers are taken up.

A student absent from a final examination without an excuse from the Dean is graded *F* and required to repeat the semester's work if credit is desired for the course. However, if compelled to be absent from the final examination on account of illness or other imperative cause, the student is entitled to take a postponed examination. (See Postponed Examinations.)

**Postponed examinations.**—In case a student is compelled to be absent from a final examination because of illness or other imperative cause, permission should be obtained from the Dean, beforehand, if possible, to postpone the examination until another date approved by the Dean. During the period of postponement the student is given a grade of *PX*.

An examination officially postponed may be taken within a year of the date from which the examination was postponed. Regular dates are fixed by the Calendar for such examinations. A student may take one at another time only at a regular examination in a course and then only with the permission of the Dean. At any event, he must file an application for examination with the Registrar on or before the fourth day preceding the

first day of the examination period. A student who takes and fails to pass a postponed examination will be given a grade of *F* in the course.

Absence from a postponed examination, after a permit has been granted, will have the same effect as failure unless the student presents to his Dean within a week after the date set for the examination a satisfactory excuse for his absence.

**Removal-of-condition examinations.**—Removal-of-condition examinations are held at regular dates fixed by the Calendar. A student may take one at another time only at a regular examination in the course and only with the permission of his Dean. Application for this examination must be filed with the Registrar at least four days before the examination is to be given.

Removal-of-condition examinations may not be taken more than twelve months after the condition was received. A student who passes a removal-of-condition examination will be given a grade of *D* in the course. A student who fails the examination will be given a grade of *F* in the course and must take that semester's work over to secure credit for the course.

Absence from a condition examination, after a permit has been granted, will have the same effect as failure unless the student presents to his Dean within a week after the date set for the examination a satisfactory excuse for his absence.

**Advanced standing examinations.**—Applications for advanced standing examinations must be approved by the chairman of the Department, by the student's Dean, and filed with the Registrar at least four days before the examination periods as fixed by the Calendar. Credit has rarely been given for courses by examination. In fact, advanced standing examinations will be allowed only in very exceptional cases, and it may be expected that they will be searching in character, that in length they will extend to four hours for each semester covered, and that the papers will be graded with great strictness. No advanced standing examination will be given to any student who has registered for or has been given a grade in the course for which he desires credit.

In order to pass an advanced standing examination a grade of at least *B* must be secured.

Absence from an advanced standing examination after a permit has been granted, will have the same effect as failure unless the student presents to his Dean within a week after the date set for the examination a satisfactory excuse for his absence.

#### EXPLANATION OF COURSES

**Definitions.**—The unit of measure for credit purposes is the semester hour, which means one hour of recitation (or the equivalent in shop or laboratory work) per week for one semester of eighteen weeks, unless otherwise specified. For each classroom hour two hours of preparation are expected. Three hours of shop or laboratory work are counted equivalent to one classroom hour and the preparation for it.



Most courses meet three hours a week, having a credit value of three hours for one semester, or six hours for both semesters.

**Notation.**—Courses are designated by numbers which indicate both rank and credit value in semester hours, and by letters which indicate the part of a course referred to or the semester or term in which it is given.

**Rank and credit value.**—A number between 200 and 299 indicates a value of two semester hours, one between 300 and 399 a value of three semester hours, etc., except that when the value is six semester hours the numbers between 0 and 99 are used, instead of the numbers between 600 and 699. The two digits on the right indicate the rank of the course; if between 0 and 9 the course is of freshman rank; if between 10 and 19, of sophomore rank; if between 20 and 99, of upper division (advanced) rank.

A student may not receive credit in one department for two courses whose numbers have the same right-hand digits—for example, Physics 12 and Physics 812.

No courses will be given which carry only one semester hour of credit.

Certain beginning or freshman courses are not numbered, but are marked *A* and have a value of six semester hours.

Courses of junior or senior rank are referred to as upper division or advanced courses.

Registration in a course for non-credit is indicated by NC.

**Use of letters.**—The lower-case letters *f* (first semester), *s* (second semester), following a course number show the semester of the long session in which the course is given. The notation *fs* indicates that the course is given in the first semester and repeated in the second semester. A course not so designated runs throughout the long session and in such a case the lower-case letter *a* means the first half of such a course, the letter *b* the second half. For example, English 1 (freshman English) is a course running through the entire long session and carrying six semester hours of credit. English 1as is the first half of English 1 given in the second semester and carrying three semester hours of credit which, however, cannot be taken until English 1b, the second half of English 1, has been completed.

In any course requiring two semesters for completion, the first semester is prerequisite for the second semester of the course.

### GRADES OF SCHOLARSHIP

To pass in a course, it is necessary to secure a grade of at least *D* both on class work and on semester examination, considered separately. Grades are given by semester; however, in a course extending through two semesters no credit is given on degrees until both semesters of the course have been completed.

**Grades.**—The standing of the student in his work is expressed by grades made up from class work and from examinations. There are six grades: *A* (excellent), *B* (good), *C* (fair), *D* (low pass), *E* (failure, but with privileges of petitioning to continue the course and to take removal-of-condition

examination), *F* (failure, and, if a semester grade, without further current privileges in the course).

In the case of students who drop courses or who withdraw from school, the following grades apply:

1. A student who is passing a course at the time he drops it receives a grade of *Dr* in the course. A student who is failing a course at the time he drops it, receives a grade of *DrF* in the course.

2. A student who is passing a course at the time he withdraws from school receives a grade of *Wd* in the course. A student who is failing a course at the time of his withdrawal receives a grade of *WdF* in the course.

**Effect of a semester grade of E.**—A student who fails to pass in a course but makes a grade of *E* is called "conditioned," and is allowed opportunity to remove the condition by a second examination at the next regular examination period in that subject, at the discretion of his Dean, but in any event he must take the condition examination not later than twelve months after the condition was received. A condition successfully removed becomes *D*.

In a subject continuing beyond one semester (for example, English 1b), the instructor may, by sending to the Registrar the proper credit notice, raise an *E* of an earlier semester to *D* because of a grade of *C* or better done in a later semester, but no grade may be altered after the registration period of the next succeeding semester.

**Higher work after failure.**—If a student makes an *F* in a course, he may not take up a higher course in the same subject until the course is taken again. If a student makes an *E* in a course, he may take up a higher course in the same subject only with the written consent of the instructor concerned, approved by his Dean.

**Incomplete work.**—Grades for work not completed may be obtained by three distinct and separate methods:

1. At any intra-semester grade period, if the student has not completed his work for any particular course, the instructor may give a grade of *Incomplete* in the course.

2. At the end of any semester a student may be given a grade of *PX* if he unavoidably is absent from the final examination in a course, and such absence is approved by the respective Dean. This procedure obligates the student to take a *Postponed Examination* in the course as part of the removal-of-*PX* grade.

3. At the end of a semester a grade of *Incomplete* may be given in exceptional circumstances and with the permission of the instructor and the proper Dean. When the grade of *Incomplete* is given at the end of the first semester, the work missed must be completed before grades are reported at the end of the second semester. If the *Incomplete* is given at the end of the second semester or at the end of either term of a Summer Session, it must be removed before grades are recorded for the fall semester following.

When the student is given the grade of *Incomplete* or *PX*, grade points for the course will be considered as if the grade were "*F*" in calculating the standing of the student.

If *PX* or *Inc.* grades are removed within the first two weeks of the semester immediately following the one in which they were received, the scholastic standing of the student will be adjusted according to the final grades. *Px* examinations will be given within two weeks after the close of each semester.

When a student is late or dilatory in handing in any required work of any nature, his instructor may give him, depending on the circumstances, a lowered grade, or even zero, on the late performance in question.

A student who has not completed the required volume of work in a course at the end of a semester will receive a grade within the calculation of which will be included various uncompleted pieces of work rated at zero. When such final semester grade results in an *E* the instructor and respective Dean may require the student to complete the missing work as part of his removal-of-condition obligation.

**Repetition of course.**—If a student repeats a course, his official grade is the last one made.

#### LATE REGISTRATION

Students will be permitted to register late under the following conditions:

1. Each day missed will be counted as an absence unless work is made up before mid-semester.
2. The student's class schedule will be made up only from the sections which are open at the time of his registration.
3. Work missed because of late registration will be counted as zero unless the student definitely makes it up before mid-semester.
4. The student will be required to enroll for a reduced program of classes depending upon the lateness of registration.

#### REPORTS

**Semester reports.**—Reports are sent out to parents and guardians at the end of each semester for all students. Self-supporting students over 21 years of age, if they request it of the Registrar in writing, may have their reports sent to them instead of to their parents.

**Intra-semester reports.**—On November 12 and March 26 reports are due in the Registrar's Office for the following students:

1. All students on the freshman advisory lists.
2. All students on scholastic probation list.
3. All other students making less than a grade of *C* in a course.
4. All students who are enrolled under the educational provisions of the G. I. Bill of Rights, Public Law 346, 78th Congress or Public Law 16 (in addition to grades, the instructor must report absences on these students).

Students may receive these grades from the Registrar if all grades for that mid-semester are *D* or better. If there are any failures among the student's grades for that mid-semester the entire set of grades will be mailed to his parents or guardians.

### STANDARD OF WORK REQUIRED

**Definitions.**—The grades *Px*, *Inc.*, *E*, and *F* will not be considered passing. (If *Px*, *Inc.*, or *E* are removed within two weeks after the end of the semester, the student's status will be adjusted.)

**Required Minimum.**—To remain in good standing, a student must meet the following standard of work at mid-semester and semester report periods:

1. A student taking less than six semester hours must make a *C* average in all work taken.
2. A student taking six or more semester hours must make a *C* average in at least six semester hours.

**Scholastic Probation.**—A student who fails to attain the required minimum at any grade period (mid-semester or end of semester) will be placed on Scholastic Probation with the exception of beginning freshmen, who will not be placed on Scholastic Probation before the end of their first semester of attendance.

The student will be warned by his Dean and his parents will be notified by the Registrar.

A student who withdraws during a semester while on Scholastic Probation will be continued on that status for the succeeding long-session semester unless he attends an intervening summer session and makes a *C* average in at least nine semester hours.

**Return to Good Standing.**—A student on Scholastic Probation can return to good standing in the following ways:

1. By attaining the minimum requirement at any grade period in the long session.
2. By attending a summer session and making a *C* average in at least nine semester hours.
3. After withdrawal while on Scholastic Probation, by registering after a lapse of one long-session semester.

**Failure.**—A student who is placed on Scholastic Probation and fails to attain the required minimum at the next succeeding grade period of the long session will be dropped from the rolls of the College unless:

1. He makes an average grade of *C* or better in nine semester hours in the intervening summer session.
2. He be permitted to continue by the President.

A student who fails in all his courses at the end of any long-session semester may be dropped from the rolls of the college immediately.

**Return After Failure.**—A student who fails to attain the required minimum may register sooner than the second successive long-session semester if he attends an intervening summer session and makes a *C* average in nine semester hours.

A student who has absolved the failure requirements either by being dropped from the College for a long-session semester or by passing nine semester hours in an intervening summer session with an average grade of *C* or better will be permitted to re-enter in good standing.

#### WITHDRAWAL FROM SCHOOL

**Official.**—A student who wishes to withdraw from school may do so with the consent of his Dean. In any course in which the student is passing at the time of withdrawal, he will receive a grade of *Wd*. In any course which the student is failing at the time of withdrawal, he will receive a grade of *WdF*.

**Unofficial.**—Withdrawal from school without consent of the student's Dean constitutes an unofficial withdrawal. In such cases the student will receive a grade of *F* in each of the courses for which he was registered during that semester.

#### Effect of withdrawal on scholastic standing.—

Effect on student in good standing: loss of time.

Effect on student on scholastic probation: student is continued on scholastic probation.

Effect of an unofficial withdrawal: a student who unofficially withdraws will receive the grade of *WdF* and must satisfy the requirement of *Return After Failure* (see above).

## **REQUIREMENTS FOR DEGREES AND CERTIFICATES STUDY OF CONSTITUTIONS OF UNITED STATES AND TEXAS REQUIRED**

The Forty-fifth Legislature enacted a law requiring all students entering tax-supported educational institutions to secure six semester hours of credit in Federal and Texas Constitutions before being awarded degrees or teachers' certificates. The completion of Government 10 satisfies the requirements of this law.

### **Second Degree**

No second bachelor's degree will be conferred until the candidate has completed at least twenty-four semester hours in the College of Mines and Metallurgy in addition to those counted toward the bachelor's degree requiring the higher number of semester hours of credit. Two bachelor's degrees may not be awarded to any candidate at the same commencement.

### **ENGINEER OF MINES**

The degree of Engineer of Mines may be conferred upon graduates of the College of Mines and Metallurgy who have received the degree of Bachelor of Science in Mining Engineering, and who attended a college prior to September 1, 1931. The applicant must have completed at least two years of successful professional work in mining, metallurgy, or geology, subsequent to receiving the Bachelor's degree, and present a satisfactory thesis.

### **BACHELOR OF SCIENCE IN MINING ENGINEERING**

The completion of one of the following four-year curricula and the satisfaction of other general requirements lead to the degree of Bachelor of Science in Mining Engineering. The listed curricula in Mining, Mining Geology, and Metallurgy have been approved by the Engineers' Council for Professional Development.

Each student anticipating a degree of Bachelor of Science in Mining Engineering in either the Mining, the Metallurgy, or the Mining Geology option should spend at least one summer in practical work related to the degree desired and should furnish satisfactory evidence to the Registrar of a summer so spent.

All candidates must take at least twenty-four hours in advanced courses, in class at the College, out of the last thirty semester hours offered.

In order to become a candidate for a degree a student must have satisfied all admission requirements, and have completed one-hundred-four semester hours of work prescribed in the chosen option with an average grade of C or better. He will then petition the Faculty through the Registrar to become a candidate for a degree.

## UNIFORM CURRICULUM FOR THE FIRST AND SECOND YEARS

## First Year

Course and Number	Title of Course	Hrs. per Wk.		Sem. Hrs. Credit
		Class	Lab.	
<b>First Semester</b>				
Chemistry 801a	General Chemistry	3	3	4
Drawing 301	Engineering Drawing	2	7	3
English 1a	Rhetoric and Composition	3	0	3
Geology 301	Principles of General Geology	3	3	3
Mathematics 803a	Elementary Mathematical Analysis	4	0	4
Physical Education	Service Course	3	0	1
Engineering 01	The Engineering Profession	½	0	0
				18
<b>Second Semester</b>				
Chemistry 801b	General Chemistry	3	3	4
Drawing 302	Descriptive Geometry	2	7	3
English 1b	Rhetoric and Composition	3	0	3
Geology 302	Principles of General Geology	3	3	3
Mathematics 803b	Elementary Mathematical Analysis	4	0	4
Physical Education	Service Course	3	0	1
				18
<b>Second Year</b>				
<b>First Semester</b>				
Chemistry 311	Qualitative Analysis	1	6	3
Geology 316	Mineralogy	1	6	3
Government 10a	American Government	3	0	3
Mathematics 13a	Calculus	3	0	3
Physics 612	Mechanics, Heat, Wave Motion, and Sound	5	3	6
Physical Education	Service Course	3	0	1
				19
<b>Second Semester</b>				
Chemistry 413	Quantitative Analysis	1	8	4
Economics 312	Principles of Economics	3	0	3
Geology 217	Mineralogy	0	6	2
Government 10b	American Government	3	0	3
Mathematics 13b	Calculus	3	0	3
Physics 413	Electricity, Magnetism, and Light	3	3	4
Physical Education	Service Course	3	0	1
				20
<b>Summer School</b>				
Engineering 614	Plane Surveying	5	32	6

## MINING OPTION

## Third Year

Course and Number	Title of Course	Hrs. per Wk.		Sem. Hrs. Credit
		Class	Lab.	
<b>First Semester</b>				
Chemistry 323	Quantitative Analysis	1	6	3
Geology 421	Advanced General Geology	3	3	4
Mathematics 325	Calculus	3	0	3
Metallurgy 423	Ore Dressing and Milling	3	3	4
Mining 521	Mining Methods	5	0	5
				19
<b>Second Semester</b>				
Engineering 322	Mine and Route Surveying	2	3	3
Engineering 515	Statics	3	6	5
English 324	Technical Writing	3	0	3
Geology 322	General Economic Geology	3	0	3
Metallurgy 321	General Metallurgy	3	0	3
Metallurgy 324	Assaying	1	6	3
				20
<b>Summer School</b>				
Engineering 224	Mine Surveying—Field Work; 8 hours a day for two weeks		96	2
<b>Fourth Year</b>				
<b>First Semester</b>				
Engineering 431	Electrical Circuits and Machines	3	3	4
Engineering 434	Strength of Materials	3	3	4
Geology 264	Field Geology	1	3	2
Metallurgy 261	Metallurgy of Iron, Copper and Lead	2	0	2
Mining 260	Mine Plant	2	0	2
Mining 267	Management	2	0	2
				16
<b>Second Semester</b>				
Engineering 335	Masonry and Reinforced Concrete	3	0	3
Engineering 350	Heat Engineering	3	0	3
Engineering 354	Hydraulics	3	0	3
Mining 231	Mine Hygiene	2	0	2
Mining 261	Mine Plant	1	3	2
Mining 262	Mine Plant Design	0	6	2
Mining 269	Management	2	0	2
Mining 074	Senior Trip			0
				17



## MINING-GEOLOGY OPTION

## Third Year

Course and Number	Title of Course	Hrs. per Wk.		Sem. Hrs. Credit
		Class	Lab.	
<b>First Semester</b>				
Chemistry 323	Quantitative Analysis	1	6	3
Geology 421	Advanced General Geology	3	3	4
Mathematics 325	Calculus	3	0	3
Metallurgy 423	Ore Dressing and Milling	3	3	4
Mining 521	Mining Methods	5	0	5
				19
<b>Second Semester</b>				
Engineering 322	Mine and Route Surveying	2	3	3
Engineering 515	Statics	3	6	5
English 324	Technical Writing	3	0	3
Geology 322	General Economic Geology	3	0	3
Geology 427	Petrology and Petrography	3	3	4
				18
<b>Summer School</b>				
Engineering 224	Mine Surveying:—Field Work: 8 hours a day for two weeks		96	2
<b>Fourth Year</b>				
<b>First Semester</b>				
Engineering 434	Strength of Materials	3	3	4
Geology 418	Invertebrate Paleontology	2	6	4
Geology 463	Geology and Petroleum, the Fuels and the Non-Metallics	3	3	4
Geology 264	Field Geology	1	3	2
Mining 267	Management	2	0	2
Elective		2	0	2
				18
<b>Second Semester</b>				
Engineering 335	Masonry and Reinforced Concrete	3	0	3
Engineering 350	Heat Engineering	3	0	3
Engineering 354	Hydraulics	3	0	3
Geology 361	Advanced Economic Geology	2	3	3
Metallurgy 324	Assaying	1	6	3
Mining 269	Management	2	0	2
Geology 074	Senior Trip			0
				17

**METALLURGY OPTION**  
**Third Year**

Course and Number	Title of Course	Hrs. per Wk.		Sem. Hrs. Credit
		Class	Lab.	
<b>First Semester</b>				
Chemistry 323	Quantitative Analysis	1	6	3
Chemistry 460	Physical Chemistry	3	3	4
Mathematics 325	Calculus	3	0	3
Metallurgy 423	Ore Dressing and Milling	3	3	4
Mining 521	Mining Methods	5	0	5
				19
<b>Second Semester</b>				
Chemistry 261	Physical Chemistry	2	0	2
Engineering 515	Statics	3	6	5
English 324	Technical Writing	3	0	3
Geology 322	General Economic Geology	3	0	3
Metallurgy 321	General Metallurgy	3	0	3
Metallurgy 324	Assaying	1	6	3
				19
<b>Fourth Year</b>				
<b>First Semester</b>				
Engineering 431	Electrical Circuits and Machines	3	3	4
Engineering 434	Strength of Materials	3	3	4
Metallurgy 361	Metallurgy of Iron, Copper and Lead	3	0	3
Metallurgy 362	Metallurgy of Leaching Processes	2	3	3
Metallurgy 263	Advanced Ore Dressing	2	0	2
Mining 267	Management	2	0	2
				18
<b>Second Semester</b>				
Engineering 335	Masonry and Reinforced Concrete	3	0	3
Engineering 350	Heat Engineering	3	0	3
Metallurgy 364	Metallurgical Laboratory	0	9	3
Metallurgy 365	Ore Dressing Laboratory	0	9	3
Metallurgy 473	Metallography	3	3	4
Mining 269	Management	2	0	2
Metallurgy 074	Senior Trip			0
				18

**BACHELOR OF SCIENCE IN ENGINEERING**

To take care of students who are definitely interested in civil and electrical engineering the Department of Engineering offers four-year programs of study in these two fields, each program leading to the degree of Bachelor of Science in Engineering.

**REQUIREMENTS**

The total number of semester hours required for the degree of Bachelor of Science in Engineering is 144.

All general requirements affecting residence, grades, and graduation are the same as outlined in this catalogue for the degree of Bachelor of Science in Mining Engineering.

**BACHELOR OF SCIENCE IN ENGINEERING**  
(Civil Engineering)  
First Year

Course and Number	Title of Course	Hrs. per Wk.		Sem. Hrs. Credit
		Class	Lab.	
<b>First Semester</b>				
Chemistry 801a	General Chemistry	3	3	4
Drawing 301	Engineering Drawing	2	7	3
English 1a	Rhetoric and Composition	3	0	3
Geology 301	Principals of General Geology	3	3	3
Mathematics 803a	Elementary Mathematical Analysis	4	0	4
Physical Education	Service Course	3	0	1
Engineering 01	The Engineering Profession	½	0	0
				18
<b>Second Semester</b>				
Chemistry 801b	General Chemistry	3	3	4
Drawing 302	Descriptive Geometry	2	7	3
English 1b	Rhetoric and Composition	3	0	3
Geology 302	Principals of General Geology	3	3	3
Mathematics 803b	Elementary Mathematical Analysis	4	0	4
Physical Education	Service Course	3	0	1
				18
<b>Second Year</b>				
<b>First Semester</b>				
Economics 312	Principals of Economics	3	0	3
Government 10a	American Government	3	0	3
Mathematics 13a	Calculus	3	0	3
Physics 612	Mechanics, Heat, Wave Motion, and Sound	5	3	6
Physical Education	Service Course	3	0	1
Approved Elective				3
				19
<b>Second Semester</b>				
Engineering 515	Statics	3	6	5
Government 10b	American Government	3	0	3
Mathematics 13b	Calculus	3	0	3
Physics 413	Electricity, Magnetism, and Light	3	3	4
Physical Education	Service Course	3	0	1
Public Speaking 301	Speech Correction	3	0	3
				19
<b>Summer School—Six Weeks</b>				
Engineering 614	Plane Surveying	5	32	6

## BACHELOR OF SCIENCE IN ENGINEERING

## (Civil Engineering)

## Third Year

Course and Number	Title of Course	Hrs. per Wk.		Sem. Hrs. Credit
		Class	L. L.	
<b>First Semester</b>				
Engineering 246	Contracts and Specifications	2	0	2
Engineering 434	Strength of Materials	3	3	4
Engineering 431	Electrical Circuits and Machines	3	3	4
Engineering 220	Topographic Surveying	1	3	2
Mathematics 325	Calculus	3	0	3
Approved Elective				3
				18
<b>Second Semester</b>				
Engineering 340	Highway and Railway Engineering	3	0	3
Engineering 454	Hydraulics	3	3	4
Engineering 322	Mine and Route Surveying	2	3	3
Engineering 335	Masonry and Reinforced Concrete	3	0	3
English 324	Technical Writing	3	0	3
				16
<b>Fourth Year</b>				
<b>First Semester</b>				
Engineering 341	Public Water Supplies	3	0	3
Engineering 348	Soil Mechanics and Foundations	3	0	3
Engineering 326	Engineering Economics	3	0	3
Engineering 243	Stresses in Framed Structures	0	6	2
Engineering 237	Tunneling and Blasting	2	0	2
Approved Elective				3
				16
<b>Second Semester</b>				
Engineering 350	Heat Engineering	3	0	3
Engineering 342	Sewerage and Sewage Disposal	3	0	3
Engineering 236	Construction Methods	2	0	2
Engineering 344	Structural Design and Theory	0	9	3
Approved Elective				3
				14
Total Semester hours				144

**BACHELOR OF SCIENCE IN ENGINEERING**  
**(Electrical Engineering)**  
**First Year**

Course and Number	Title of Course	Hrs. per Wk.		Sem. Hrs. Credit
		Class	Lab.	
<b>First Semester</b>				
Chemistry 801a	General Chemistry	3	3	4
Drawing 301	Engineering Drawing	2	7	3
English 1a	Rhetoric and Composition	3	0	3
Mathematics 803a	Elementary Mathematical Analysis	4	0	4
Physics 1a	General Physics	3	2	3
Physical Education	Service Course	3	0	1
Engineering 01	The Engineering Profession	½	0	0
				—
				18
<b>Second Semester</b>				
Chemistry 801b	General Chemistry	3	3	4
Drawing 302	Descriptive Geometry	2	7	3
English 1b	Rhetoric and Composition	3	0	3
Mathematics 803b	Elementary Mathematical Analysis	4	0	4
Physics 1b	General Physics	3	2	3
Physical Education	Service Course	3	0	1
				—
				18
<b>Second Year</b>				
<b>First Semester</b>				
Economics 312	Principles of Economics	3	0	3
Engineering 312	Elements of Mechanisms	2	3	3
Government 10a	American Government	3	0	3
Mathematics 13a	Calculus	3	0	3
Physics 12a	Second-Year Physics	3	3	3
Physical Education	Service Course	3	0	1
Approved Elective				3
				—
				19
<b>Second Semester</b>				
Engineering 415	Statics	3	3	4
Engineering 510	Elements of Electrical Engineering	4	3	5
Government 10b	American Government	3	0	3
Mathematics 13b	Calculus	3	0	3
Physics 12b	Second-Year Physics	3	3	3
Physical Education	Service Course	3	0	1
				—
				19

## BACHELOR OF SCIENCE IN ENGINEERING

## (Electrical Engineering)

## Third Year

Course and Number	Title of Course	Hrs. per Wk.		Sem. Hrs. Credit
		Class	Lab.	
<b>First Semester</b>				
Engineering 857a	Alternating-Current Circuits	3	3	4
Engineering 238	Dynamics	2	0	2
Engineering 316	Elementary Plane Surveying	2	3	3
Mathematics 325	Calculus	3	0	3
Physics 438	Theory and Applications of Electron Tubes	3	3	4
Approved Elective				3
				19
<b>Second Semester</b>				
Engineering 857b	Alternating-Current Circuits	3	3	4
Engineering 350	Heat Engineering	3	0	3
Engineering 466	Direct-Current Machines	3	3	4
English 324	Technical Writing	3	0	3
Mathematics 326	Differential Equations	3	0	3
				17
<b>Fourth Year</b>				
<b>First Semester</b>				
Engineering 326	Engineering Economics	3	0	3
Engineering 868a	Alternating-Current Machines	3	3	4
Engineering 434	Strength of Materials	3	3	4
Approved Electives				6
				17
<b>Second Semester</b>				
Engineering 454	Hydraulics	3	3	4
Engineering 358	Heat Engineering	2	3	3
Engineering 370	Machine Design	2	3	3
Engineering 868b	Alternating-Current Machines	3	3	4
Approved Elective				3
				17
<b>Total Semester Hours</b>				<b>144</b>

## BACHELOR OF SCIENCE IN ENGINEERING

### Elective Courses

The entire elective program must meet the approval of the Department of Engineering.

The following courses are suggested as elective courses:

Bacteriology 29 (General Bacteriology); B.A. 311, 314 (Theory and Practice in Accounting); B.A. 20 (Business Letters and Report Writing); B.A. 23 (Business Law); B.A. 332 (Business Statistics); B.A. 342 (Personnel Management and Production Problems); B.A. 344 (Modern Transportation and Communication); Economics 313 (Principles of Economics); Chemistry 311 (Qualitative Analysis); Chemistry 413, 323 (Quantitative Analysis); Engr. 335 (Masonry and Reinforced Concrete); Engr. 341 (Public Water Supplies); Engr. 348 (Soil Mechanics and Foundations); Engr. 343 (Stresses in Framed Structures); Engr. 237 (Tunneling and Blasting); Engr. 342 (Sewerage and Sewage Disposal); Engr. 236 (Construction Methods); Engr. 238 (Dynamics); Engr. 358 (Heat Engineering); Engr. 71 or 371 (Advanced Engineering Problems); English 312Q (English and American Literature of Today); Speech 301, 305 (Basic Principles of Public Speaking); Speech 319 (Business and Professional Speaking); Geology 301, 302 (Principles of General Geology); History 301, 302 (American History); Sociology 310 (Introduction to Sociology); Mathematics 326 (Differential Equations); Mathematics 333 (Theory of Equations); Physics 304 (Fundamentals of Radio); Physics 438 (Theory and Applications of Electron Tubes); Physics 34 (Electricity and Magnetism); Courses in Spanish, German, or French; Phil. 312 (Logic); Phil. 314 (Problems of Philosophy); Psychology 310 (Introductory Psychology).

The Department of Engineering may be consulted for further suggestions.

## BACHELOR OF ARTS

**General Provisions.**—No degree will be conferred except publicly and at Commencements.

All candidates are expected to attend in person the Commencement at which their degree is to be conferred unless absent for good cause, in which case they will petition the President in writing at least one week in advance, giving the reason for their absence.

No degree will be conferred without a residence of at least two long session semesters, or five summer session terms, or one long session semester and two summer session terms or an equivalent.

At least thirty semester hours of work counting toward the degree must be completed in residence.

At least twenty-four of the last thirty semester hours offered must be taken in the College.

At least six semester hours in advanced courses in the major subject must be completed in residence.

Not more than thirty semester hours of credit offered for a degree shall have been secured from other institutions by extension, correspondence, or both.

A student registering either for the first time or in a later year may obtain a degree according to the requirements of the catalogue then in force, subject, however, to the restriction that all the requirements for a degree must be completed within six years of the date of the catalogue chosen.

A condition, made by a candidate in the last semester of his session of graduation, may not be removed until the succeeding time for removal of conditions.

**Special Provisions.**—Upon completion of ninety semester hours of work as set forth in the outline for the chosen major, the student will petition the Faculty through the Registrar for permission to *become a candidate for a degree*. This petition will not be accepted unless the average grade of such work completed is *C* or better and all admission requirements have been satisfied.

The student must make an average of at least fifteen points per semester hour in the courses taken at the College which are required and counted toward the degree, an *A* grade on a semester hour counting as 21 points; a *B* grade as 18 points; a *C* as 15 points; a *D* as 12 points; an *E*, an *F*, *Px* or an *Inc.*, as zero. The Faculty reserves the right to demand grades of *C* or better in certain courses when they are important as prerequisites or as parts of majors or minors.

A student majoring in a department which requires a major examination must pass a general four-hour written examination in his major subject on the date fixed in the Calendar next preceding the completion of the work required for the degree. At the discretion of the department concerned, one hour of oral examination may be substituted for one hour of the written examination. The chairman of the department in which the major is taken fixes the place of the examination and supervises the giving of it. In setting this examination, the Faculty of the department will take into account the particular courses elected by the student, but will expect a more mature and comprehensive knowledge than is required in the regular semester examinations.

A student who fails to pass the major examination may take the examination on the next date provided in the Calendar for such examinations, but in no case will a special examination be given.

A study of the Constitutions of the United States and of Texas is required by law.

**Concentrations.**—Major and minor fields of concentration must be chosen from the following groups in accordance with the limitations indicated:

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<sup>1</sup>A different minor may be chosen only with the permission of the head of the major department and the approval of the Dean.



**Group A**

*Major:* Biological Sciences, Chemistry,<sup>2</sup> Geology, Mathematics,<sup>2</sup> Physics.<sup>2</sup>

*Minor:*<sup>1</sup> Biological Sciences, Chemistry,<sup>2</sup> Geology, Mathematics,<sup>2</sup> Physics.<sup>2</sup>

**Group B**

*Major:* Art, Business Administration, Economics, Education, English, French, History, Inter-American Affairs, Journalism, Music Theory, Music Education, Physical Education, Psychology, Public Speaking and Dramatics, Radio, Spanish.

*Minor:* Art, Biological Sciences, Business Administration, Chemistry, Economics, Education, English, French, Geology, Government, History, Journalism, Music, Mathematics, Physical Education, Psychology, Physics, Public Speaking, Radio, Sociology, Spanish.

**Basic requirements.**—In order to secure a Bachelor of Arts degree, the following minimum course requirements must be met:

1. Not less than twenty-four semester hours, at least twelve of which must be advanced courses, in a major subject chosen from one of the major groups listed under "Concentrations."

2. Not less than eighteen semester hours, at least six of which must be of advanced courses, in another subject chosen as a minor, in accordance with the limitations indicated in the concentration groups.

3. Twelve semester hours in English (English 1, and<sup>7</sup> 12 or 12Q).

4. Completion of Course 12 or 13 in one foreign language, either modern or ancient.<sup>8</sup>

5. Twelve semester hours in natural (laboratory) sciences.<sup>4</sup>

6. Six semester hours in mathematics.<sup>5</sup>

7. Six semester hours in American and Texas Government (Government 10), History 301 and 302, Economics 312, Philosophy 330<sup>6</sup> and 331.<sup>7</sup>

8. Not less than a total of thirty semester hours of advanced courses<sup>8</sup> and not more than a total of sixty-six semester hours in the major and minor subjects.

9. Four semester hours of Physical Education as prescribed in the Freshman and Sophomore years.

<sup>1</sup>Mathematics 803 is required for majors in Chemistry, Mathematics, and Physics; and for minors in Mathematics and Physics. Chemistry 801 is required for majors and minors in Chemistry.

<sup>2</sup>In the Physical Education Major Education 301, 316, and 317; or Education 301, 314, and 318; and three additional semester hours are required instead of language.

<sup>3</sup>Botany, biology, chemistry, geography, geology, physics, zoology.

<sup>4</sup>In the Music Majors six semester hours of a second language may be substituted for Mathematics.

<sup>5</sup>In the Education Majors Sociology 310<sup>4</sup> is required instead of Philosophy 330.

<sup>6</sup>In the Spanish Major History 347 or 348 is required in addition; in the French Major, History 351.

<sup>7</sup>Students taking Chemistry 801, 311, and 413 may count the last three semester hours as advanced; those taking Mathematics 803 and 13 may count the semester hours in excess of the first twelve as advanced.

10. Enough other courses to make at least one hundred and twenty-four semester hours.

**Order and choice of courses.**—Students are urged to follow the arrangements of courses by years as suggested below with such minor variations as may be necessary because of special departmental requirements as shown under "Curriculum Outlines."

*Freshman Year.*—English 1; foreign language 1; science, six semester hours; History 301 and 302, six semester hours; elective or major subject, six semester hours; physical education.

*Sophomore Year.*—English 12; foreign language 12; science, or mathematics, six semester hours; major subject, six semester hours; minor subject, six semester hours; physical education.

*Junior Year.*—The student's course program must be approved by the head of his major department and should include: Government 10; Economics 312, three semester hours; major subject (advanced), six semester hours; minor subject, six semester hours; science or mathematics, six semester hours; elective (advanced), three semester hours.

*Senior Year.*—The student's course program must be approved by the dean and should include: Philosophy 330 and 331, six semester hours; major subject (advanced), six semester hours; minor subject (advanced), six semester hours; elective (advanced), three semester hours; elective, nine semester hours.

**Curriculum outlines.**—A student should choose his major subject as early as possible. He must then pursue it in accordance with the outline provided for that subject.

## CURRICULUM IN

## ART MAJOR

Minor—See Group B under "Concentrations"

## Requirements

	HOURS
1. Art—twenty-four semester hours, including Design 301 and 302,—twelve of which must be advanced.....	24
2. Minor—eighteen semester hours, six of which must be advanced .....	18
3. English 1 and 12 or 12Q .....	12
4. Foreign language—the completion of a course numbered 12 or 13 .....	12
5. Science (laboratory)—twelve semester hours.....	12
6. Mathematics .....	6
7. Social Studies—twenty-one semester hours, including Government 10, History 301 and 302, Economics 312, Philosophy 330 and 331 .....	21
8. Electives, six semester hours of which must be advanced.....	15
9. Physical Education—two years of service courses.....	4
	124

**CURRICULUM IN**  
**BUSINESS ADMINISTRATION MAJOR**  
 Minor—See Group B under "Concentrations"

**Requirements**

	HOURS
1. Business Administration 311, 314, 332, 20, and nine additional semester hours of business administration, at least three of which must be advanced	24
2. Minor subject, eighteen semester hours, six of which must be advanced	18
3. English 1 and 12 or 12Q	12
4. Foreign language—the completion of a course numbered 12 or 13	12
5. Science (laboratory)—twelve semester hours	12
6. Mathematics 304 and 307 or 309, or 803	6
7. Social Studies—twenty-one semester hours, including Government 10, History 301 and 302, Economics 312, Philosophy 330 and 331	21
8.*Electives, six semester hours of which must be advanced	15
9. Physical Education—two years of service courses	4
	124

\*Students electing this major are strongly advised to include Economics 313 and Psychology 316.

CURRICULUM IN  
ECONOMICS MAJOR

Minor—See Group B under "Concentrations"

Requirements

	HOURS
1. Economics 312, 313, 329 and fifteen additional semester hours in economics, at least nine of which must be advanced _____	24
2. <i>Minor subject</i> , eighteen semester hours, six of which must be advanced _____	18
3. English 1 and 12 or 12Q _____	12
4. Foreign language—the completion of a course numbered 12 or 13 _____	12
5. Science (laboratory)—twelve semester hours _____	12
6. Mathematics _____	6
7. Social Studies—eighteen semester hours, including Government 10, History 301 and 302, Philosophy 330 and 331 _____	18
8. *Electives, six semester hours of which must be advanced _____	18
9. Physical Education—two years of service courses _____	4
	124

\*Students electing this major are strongly advised to include Business Administration 311 and 314 and Psychology 316.

**CURRICULUM IN  
EDUCATION MAJOR**

Minor—See Group B under "Concentrations"

**PLAN I**

(Note.—These are the minimum requirements for the B.A. degree, but do not necessarily lead to a permanent teacher's certificate.)

**Requirements**

	<b>HOURS</b>
1. Education—twenty-four semester hours, twelve of which must be of advanced courses.....	24
2. Minor—eighteen semester hours of numbered courses, six of which must be advanced.....	18
3. English 1 and 12 or 12Q.....	12
4. Foreign language—the completion of a course numbered 12 or 13.....	12
5. Science (laboratory)—twelve semester hours.....	12
6. Mathematics.....	6
7. Social Studies—twenty-one semester hours, including Government 10, History 301 and 302, Economics 312, Philosophy 331, and Sociology 310†.....	21
8. *Electives and additional courses—including Speech 301 and nine semester hours of advanced courses.....	15
9. Physical Education—two years of service courses.....	4
	124

\*Students electing the education major are advised to plan their course programs carefully so as to meet the general requirement of a total of thirty semester hours of advanced courses.  
†Instead of Philosophy 330.

**CURRICULUM IN  
EDUCATION MAJOR**

Academic Major—See Group B under “Concentrations”

**PLAN II**

**FOR HIGH-SCHOOL TEACHERS**

(NOTE.—Those who desire a permanent high-school certificate must satisfy the following requirements for the Bachelor of Arts degree.)

Requirements	HOURS
1. Education. 301, 305, 316, 317, 327, 327T, and six additional advanced semester hours, including three semester hours of methods in the academic major.....	24
2. Academic major—twenty-four semester hours, twelve of which must be advanced.....	24
3. English 1 and 12 or 12Q.....	12
4. Foreign language—the completion of a course numbered 12 or 13.....	12
5. Science (laboratory)—twelve semester hours.....	12
6. Mathematics.....	6
7. Social Studies—twenty-one semester hours, including Government 10, History 301 and 302, Economics 312, Philosophy 331, and Sociology 310*.....	21
8. Electives and additional courses—including Speech 301 and Physical Education 341.....	9
9. Physical Education—two years of service courses.....	4
	124

\*Instead of Philosophy 330.

CURRICULUM IN  
EDUCATION MAJOR  
PLAN III

FOR ELEMENTARY SCHOOL TEACHERS

(NOTE.—Those who desire a six-year elementary school certificate must satisfy the following requirements for the Bachelor of Arts degree.)

*Requirements*

	HOURS
1. Education 301, 305, 314, 318, 331T, 328, 328T, and three additional advanced hours.....	24
2. Design 301, Public School Art 321, Elementary Music Education 310, Education 320, and Physical Education 319 and 341 .....	18
3. English 1 and 12 or 12Q.....	12
4. Foreign language—the completion of a course numbered 12 or 13 .....	12
5. Science (laboratory)—twelve semester hours (including Geography 303) .....	12
6. Mathematics .....	6
7. Social Studies—twenty-one semester hours, including Government 10, History 301 and 302, Economics 312, Philosophy 331, and Sociology 310*.....	21
8. Electives and additional courses—including Speech 301 and six advanced hours .....	15
9. Physical Education—two years of service courses.....	4
	124

\*Instead of Philosophy 330.



CURRICULUM IN  
ENGLISH MAJOR

Minor—See Group B under "Concentrations"

Requirements

	HOURS
1. English 1, 12 or 12Q, and twelve additional semester hours of advanced courses _____	24
2. Minor—eighteen semester hours, six of which must be advanced _____	18
3. English 1 and 12 or 12Q (see No. 1) _____	0
4. Foreign language—the completion of a course numbered 12 or 13 _____	12
5. Science (laboratory)—twelve semester hours _____	12
6. Mathematics _____	6
7. Social Studies—twenty-one semester hours including Government 10, History 301 and 302, Economics 312, Philosophy 330 and 331 _____	21
8. Electives, six semester hours of which must be advanced _____	27
9. Physical Education—two years of service courses _____	4
	124

## CURRICULUM IN

## HISTORY MAJOR

Minor—See Group B under "Concentrations"

## Requirements

	HOURS
1. History 301, 302, and eighteen additional hours, twelve of which must be advanced .....	24
2. Minor—eighteen semester hours, six of which must be advanced .....	18
3. English 1 and 12 or 12Q .....	12
4. Foreign language—the completion of a course numbered 12 or 13 .....	12
5. Science (laboratory)—twelve semester hours .....	12
6. Mathematics .....	6
7. Social Studies—fifteen semester hours, including Government 10, Economics 312, Philosophy 330 and 331 .....	15
8. *Electives, six semester hours of which must be advanced .....	21
9. Physical Education—two years of service courses .....	4
	124

\*Students interested in teaching history are urged to take the following courses in Education, which will meet the requirements for a four-year high-school teacher's certificate: Education 301, 316, 317, and three additional semester hours in Education. Education 327 and 327T (student teaching) are strongly recommended.

**CURRICULUM IN  
INTER-AMERICAN STUDIES**

Minor—Combination

**Requirements**

	<b>HOURS</b>
1. and 2. (a) Economics 312, 313, 348, and three additional advanced hours in Economics*	
(b) History 301, 302, 347, 348, and six semester hours of lower division History†	
(c) Spanish 1 (or 801), 12, 357, and one of the following: 360, 362 or 364‡	
(d) Nine additional advanced hours chosen from the fields of Economics, Government, History, and Languages	
3. English 1, and 12 or 12Q.....	57
4. Foreign language (see Nos. 1 and 2)	12
5. §Science (laboratory) .....	12
6. Mathematics .....	6
7. Social Studies—Government 10, Philosophy 330, Psychology 310 .....	12
8.   Electives .....	21
9. Physical Education—two years of service courses.....	4
	124

\*Economics 350 is recommended.

†History 312 and 313 are recommended.

‡A major examination in Spanish is required.

§Geography 303 is recommended.

||Students interested in exchange teaching should take Education 301, 305, and six additional semester hours of Education.

Note: The student should advise with the Dean of Arts and Sciences with reference to the planning of his work in this major.

**CURRICULUM IN  
JOURNALISM MAJOR**

Minor--See Group B under "Concentrations"

**Requirements**

	<b>HOURS</b>
1. Journalism 311, 312 and eighteen additional semester hours, twelve of which must be advanced.....	24
2. Minor--eighteen semester hours, six of which must be advanced .....	18
3. English 1 and 12 or 12Q .....	12
4. Foreign language--the completion of a course numbered 12 or 13 .....	12
5. Science (laboratory)--twelve semester hours.....	12
6. Mathematics .....	6
7. Social Studies--twenty-one semester hours; including Government 10, History 301 and 302, Economics 312, Philosophy 330 and 331 .....	21
8. *Electives, six semester hours of which must be advanced.....	15
9. Physical Education--two years of service courses.....	4
	124

\*Students interested in teaching Journalism are urged to take the following courses in Education which will meet the requirements for a four year high-school certificate: Education 301, 316, 317, and three additional semester hours in Education.

**CURRICULUM IN  
MATHEMATICS MAJOR**

Minor—See Group A under "Concentrations"

**Requirements**

	<b>HOURS</b>
1. Mathematics—twenty-four semester hours, twelve of which must be advanced.....	24
2. Minor—eighteen semester hours, six of which must be advanced.....	18
3. English 1 and 12 or 12Q.....	12
4. Foreign language—the completion of a course numbered 12 or 13.....	12
5. Science (laboratory)—twelve semester hours.....	12
6. Mathematics (See No. 1).....	0
7. Social Studies—twenty-one semester hours, including Government 10, History 301 and 302, Economics 312, Philosophy 330 and 331.....	21
8. *Electives, six semester hours of which must be advanced.....	21
9. Physical Education—two years of service courses.....	4
	<b>124</b>

\*Students who plan to teach high-school mathematics should take Education 301, 316, and 317, and at least three additional semester hours in education. Education 327 and 327T are strongly recommended. Credits earned in these courses may be counted toward a minor in education or as elective hours.

## CURRICULUM IN

## MODERN LANGUAGE MAJOR

Minor—See Group B under "Concentrations"

## Requirements

	HOURS
1. Major language—courses 1 or 801, and 12 plus twelve additional semester hours of advanced courses .....	24
2. Minor—eighteen semester hours, six of which must be advanced .....	18
3. English 1, and 12 or 12Q .....	12
4. Second foreign language—the completion of a course numbered 12 or 13 .....	12
5. Science (laboratory)—twelve semester hours .....	12
6. Mathematics .....	6
7. Social Studies—twenty-four semester hours, including Government 10, History 301 and 302, Economics 312, Philosophy 330 and 331 and, for Spanish majors, History 347 or 348; for French majors, History 351 .....	24
8. *Electives, three semester hours of which must be advanced .....	12
9. Physical Education—two years of service courses .....	4
	124

\*Students preparing to teach modern languages are urged to take Education 301, 316, 317, and three additional semester hours in Education, to meet the requirements for a four-year high-school certificate.

\*CURRICULUM IN  
MUSIC EDUCATION

Minor—Education  
Requirements

	HOURS
1. *Music—at least 24 semester hours of which 12 must be advanced .....	24
2. Education 301, 305, 316, 317, 376K, and 3† additional advanced hours in music methods .....	18
3. English 1 and 12 or 12Q .....	12
4. Foreign language—the completion of a course numbered 12 or 13 .....	12
5. Science (laboratory)—twelve semester hours .....	12
6. †Mathematics .....	6
7. Social studies—twenty-one semester hours, including Government 10, History 301 and 302, Economics 312, Philosophy 330 and 331 .....	21
8. Electives and additional courses, including six semester hours of advanced courses .....	15
9. Physical Education—two years of service courses .....	4
	124

\*During 1947-48 this major will be offered only in Band. The following courses in Music are required: Theory 1 and 11; Band Ensemble 201, 211, 221, 231; Class Instruments 325 and 326; Methods 352s; and four semester hours in piano, voice or chorus.

†Band majors must include three semester hours of advanced band methods (Education 377).

‡Six semester hours of a second language may be substituted.

CURRICULUM IN  
MUSIC THEORY MAJOR

Minor—Applied Music

Requirements

	HOURS
1. Music 1, 11, 21 and 31.....	24
2. Applied Music—eighteen semester hours, six of which must be advanced.....	18
3. English 1 and 12 or 12Q.....	12
4. Foreign language—the completion of a course numbered 12 or 13.....	12
5. Science (laboratory)—twelve semester hours.....	12
6. †Mathematics.....	6
7. Social Studies—twenty-one semester hours, including Govern- ment 10, History 301 and 302, Economics 312, Philosophy 330 and 331.....	21
8. *Electives and additional courses, including Chorus 205 and six semester hours of advanced courses.....	15
9. Physical Education—two years of service courses.....	4
	124

\*Those students who desire a music teacher's certificate should confer with the Head of the Music Department concerning the necessary courses in education, music, piano, and methods.

†Six hours of a second language may be substituted.



**CURRICULUM IN  
PHYSICAL EDUCATION MAJOR**

Minor\*—See Group B under "Concentrations"

**Requirements**

	<b>HOURS</b>
1. Physical Education—twenty-four semester hours, twelve of which must be advanced.....	24
2. *Minor—eighteen semester hours, six of which must be advanced.....	18
3. English 1 and 12 or 12Q.....	12
4. †Education 301, 316, and 317 or Education 301, 314, and 318, and three additional semester hours.....	12
5. Natural Science—Zoology 301 and 302 and Biology 310 and 311.....	12
6. Mathematics.....	6
7. Social Studies—History 301 and 302, Government 10, Economics 312, and Philosophy 330 and 331.....	21
8. Electives and additional courses including Education 328-328T or Education 327-327T.....	15
9. Physical Education—two years of service courses.....	4
	124

\*Majors in Physical Education are strongly urged to have one minor in Health Education.

†These courses are to be chosen according to the classification of teacher's certificate desired instead of language.

**CURRICULUM IN  
PSYCHOLOGY MAJOR**

Minor—See Group B under "Concentrations"

**Requirements**

	HOURS
1. Psychology 310, 311 or 316, 351, 362 and twelve additional hours, six of which must be advanced.....	24
2. Minor—eighteen semester hours, six of which must be advanced .....	18
3. English 1 and 12 or 12Q.....	12
4. *Foreign Language—the completion of a course number 12 or 13 .....	12
5. Mathematics .....	6
6. Science—Physics 1, Zoology 301 and 302.....	12
7. Social Studies—twenty-one semester hours, including Government 10, History 301 and 302, Economics 312, Philosophy 330 and 331.....	21
8. †Electives, six semester hours of which must be advanced.....	15
9. Physical Education—two years of service courses.....	4
	124

\*French or German is strongly recommended.

†Students electing this major are advised to include Biology 310 and 311.

**CURRICULUM IN  
RADIO MAJOR**

Minor—See Group B under "Concentrations"

**Requirements**

	HOURS
1. Journalism 301, or Radio 301, Radio 302, 314, 315 and twelve additional semester hours of radio, which must be advanced	24
2. Minor—eighteen semester hours, six of which must be advanced	18
3. English 1 and 12 or 12Q	12
4. Foreign language—the completion of a course numbered 12 or 13	12
5. Science (laboratory)—twelve semester hours	12
6. Mathematics	6
7. Social Studies—twenty-one semester hours, including Government 10, History 301 and 302, Economics 312, Philosophy 330 and 331	21
8. Electives, six semester hours of which must be advanced	15
9. Physical Education—two years of service courses	4
	124

CURRICULUM IN  
SCIENCE MAJOR\*

Minor†—See Group A under "Concentrations"

Requirements

	HOURS
1. Major science—twenty-four semester hours, twelve of which must be advanced.....	24
2. †A second science—eighteen semester hours, six of which must be advanced.....	18
3. English 1 and 12 or 12Q.....	12
4. Foreign language—the completion of a course numbered 12 or 13.....	12
5. Science (see No. 1 and No. 2).....	0
6. ‡Mathematics.....	6
7. Social Studies—twenty-one semester hours, including Government 10, History 301 and 302, Economics 312, Philosophy 330 and 331.....	21
8. Electives, six semester hours of which must be advanced.....	27
9. Physical Education—two years of service courses.....	4
	124

\*When registering for this major, the student should be careful to secure proper advice concerning the order and choice of courses.

†A minor other than science may be chosen only with the consent of the head of the major department and the approval of the dean.

‡Mathematics 803 is required for majors in chemistry, mathematics and physics; and for minors in mathematics and physics.

CURRICULUM IN

**SPEECH AND DRAMATICS MAJOR**

Minor—See Group B under "Concentrations"

**Requirements**

	HOURS
1. Speech—twenty-four semester hours, including Speech 303 and twelve advanced hours .....	24
2. Minor—eighteen semester hours, six of which must be advanced .....	18
3. English 1 and 12 or 12Q.....	12
4. Foreign language—the completion of a course numbered 12 or 13.....	12
5. Science (laboratory)—twelve semester hours.....	12
6. Mathematics .....	6
7. Social Studies—twenty-one semester hours including Government 10, History 301 and 302, Economics 312, Philosophy 330 and 331.....	21
8. Electives, six semester hours of which must be advanced.....	15
9. Physical Education—two years of service courses.....	4
	<hr/>
	124.

**CURRICULUM IN  
BACHELOR OF BUSINESS ADMINISTRATION**

**General Provisions.**—The total number of hours required for the Bachelor of Business Administration degree is 124. At least 30 of the 124 semester hours must be advanced (upper division) courses and not more than 66 of the 124 semester hours may be offered in Business Administration. All other requirements affecting residence, grades, and graduation are the same as outlined in the catalogue for the Bachelor of Arts degree.

**Requirements**

	<b>HOURS</b>
1. Business Administration 311, 314, 332, 20, 23, 337, 354, and fifteen additional semester hours.....	42
2. English 1 and 12 or 12Q.....	12
3. Science (laboratory) .....	6
4. *Mathematics .....	6
5. Social Studies—including Government 10; Economics 312, 313, and 332; History 301 and 302; Philosophy—3 semester hours; Psychology—3 semester hours.....	27
6. Speech .....	3
7. Electives, six semester hours of which must be advanced.....	24
8. Physical Education—two years of service courses.....	4
	<b>124</b>

\*Mathematics 304 and 307 are recommended.

**BACHELOR OF SCIENCE**

In recognition of the needs for more concentrated study in the fields of science, the Texas College of Mines has provided for the extension of the Bachelor of Science degree to include certain of the sciences outside the Division of Engineering.

**Fields of Concentration**

*Major:* Biology, Chemistry, Geology, Physics.

*Minor:* Biology, Chemistry, Geology, Mathematics, Physics.

**Requirements**

The total number of semester hours required for the Bachelor of Science degree is 136.

At least 36 semester hours of upper division work must be included with a minimum of 15 of these upper division hours in the major field.

There must be a minimum of 60 semester hours in the sciences and/or mathematics.

	HOURS
1. First concentration (major in science, at least 15 semester hours of which must be advanced).....	30
2. Second concentration (second science or mathematics, six hours of which must be advanced).....	18
3. Third science .....	6
4. History 301 and 302, Economics 312, Philosophy 330 and 331..	15
5. English 1 and 12 or 12Q.....	12
6. Government 10.....	6
7. *Mathematics 803 (if not included in second concentration) ..	8
8. Electives, sufficient to bring total number of required hours for degree to 136 including enough advanced hours to complete the total of 36 advanced hours required. Foreign language should be included if student plans graduate work. For majors in chemistry German 801 must be included.	
9. Physical Education—two years.....	4
Total .....	136

All other general requirements affecting residence, grades, and graduation are the same as outlined in this catalogue for the Bachelor of Arts degree.

\*Mathematics 304-309 may be substituted for Mathematics 803 in the Biology major-Geology minor combination.

**MASTER OF ARTS**

**General information.**—Graduate study officially began in the Summer Session in June, 1941. Courses in Education, English, History, and Spanish will be offered as majors leading to the Master of Arts degree. In addition to the major fields of study minors will be offered in the following fields: Biological Sciences, Chemistry, Business Administration, Economics, French, Geology, Government, Mathematics, Physical Education, Physics, Psychology, Sociology, and Spanish.

Applicants for admission to graduate study must hold the Bachelor of Arts degree or its equivalent. Exceptions to this general requirement will be made only with the approval of the Graduate Council.

Applications for admission are to be made in the office of the Registrar. Transcripts of all work, undergraduate and graduate, done elsewhere must be furnished the Registrar.

Graduate credit for work done in the College of Mines before June, 1941, is subject to the approval of the Graduate Council, each case being handled individually.

Not more than six semester hours of work may be accepted for graduate credit from another institution of equal rank in which the applicant was enrolled at the time the work was taken.

**Undergraduates.**—Undergraduates after completion of 93 semester hours including all freshman and sophomore courses required for the undergraduate degree, may be permitted, upon application, to the Graduate Council, to take approved courses for credit in the Graduate Division.

**Minimum requirements.**—Twenty-four (24) semester hours of course work, a thesis counting six (6) semester hours, and the passing of an oral examination. The thesis must be approved by a committee representing the major and minor fields of study. A grade of *B* is required in any course submitted for graduate credit.

**Further information.**—More detailed information can be obtained from the chairman of the Graduate Council. Evaluation of credits, transferred or otherwise, must be handled through the office of the Registrar.

**PREPARATORY WORK FOR OTHER DEGREES****Selection of Courses**

Certain rules govern the order and choice of work, particularly for the freshman and sophomore years. These rules vary somewhat with the character of the degree for which the student proposes to become a candidate. The student should advise with his Dean concerning the selection of courses.



**Work Preparatory to the Degree of Medicine**

**Leading to Degree of Bachelor of Arts**

Completion of the following courses leads to the degree of Bachelor of Arts at the end of the first year of work in the School of Medicine at Galveston.

Thus both the B.A. and the M.D. degrees may be taken in seven years.

*Freshman Year:* English 1; French 1 or German 1; six semester hours in mathematics; Chemistry 801; Zoology 301-302; Physical Education.

*Sophomore Year:* English 12; French 12 or German 12; Chemistry 311 and 413; Physics 801; Zoology 14; Physical Education.

*Junior Year:* Chemistry 821; Government 10; three semester hours in economics; Zoology 320 and 321; History 301 and 302, Philosophy 330.

**Work Preparatory to the Degree of Law**

**Leading to Degree of Bachelor of Arts**

The successful completion of the following courses plus 28 semester hours of work in the School of Law at The University of Texas leads to the Bachelor of Arts degree:

	HOURS
1. English .....	12
2. Mathematics .....	6
3. The completion of a course numbered 12 or 13 in a foreign language .....	12
4. Natural sciences (including Chemistry 801 or 1 or Physics 801 or 1 and Botany 301 and 302, or Geology 301 and 302, or Zoology 301 and 302) .....	12
5. Social sciences (including Government 10, History 301 and 302, Economics 312, Philosophy 330 and 331, and nine advanced semester hours)—Not more than 12 semester hours of a freshman social science may be counted .....	36
6. Electives, six of which must be advanced .....	15
7. Physical Education—2 years .....	4
<b>Total</b> .....	<b>97</b>

**Work Preparatory to Other Engineering Degrees**

*Uniform Freshman Year.*—First semester: Mathematics 803a, Chemistry 801a, Drawing 301, English 1a, Physics 1a, Engineering 01, Physical Education. Second semester: Mathematics 803b, Chemistry 801b, Drawing 302, English 1b, Physics 1b, Physical Education. Additional courses are offered, such as to enable a student to complete at least the sophomore year in aeronautical, chemical, mechanical, and petroleum engineering.

**STATE TEACHERS' CERTIFICATES**

In view of the fact that accredited public school systems require degrees of beginning teachers, students are not encouraged to apply for certificates until after graduation.

The minimum requirements for the six-year elementary teacher's certificate are sixty semester hours including English 1, Government 10, and twelve semester hours of education, at least six of which must be in the elementary field.

The minimum requirements for the four-year high-school teacher's certificate are sixty semester hours, including English 1, Government 10, and twelve semester hours of education, at least six of which must be in the secondary field.

The minimum requirements for the six-year high-school certificate are ninety semester hours, including English 1, Government 10, and eighteen semester hours of education, six hours of which must deal with high-school teaching and one course which shall include at least thirty-six recitation hours of practice teaching.

A student who holds a B.A., B.B.A., or B.S. degree from the College of Mines is entitled to a permanent high-school certificate, provided he has twenty-four semester hours in education, including Education 327 and 327T.

Information concerning other teachers' certificates may be obtained from the Registrar.

## COURSES OF INSTRUCTION

For an explanation regarding numbers and letters used in titles of courses and their meanings with respect to prerequisites of residence and credit, credit hours earnable, amount of work required in and out of class, semesters in which offered, etc., please see *Explanation of Courses*.

### ART

ASSISTANT PROFESSOR WISE; INSTRUCTORS COOGLER, SOLER

#### 301f. Elementary Design

A course stressing principles of art, and planned to develop the creative ability of the student. Color, theory, values, balance, rhythm, composition and other design elements and principles studied. The organization of ideas into creative design. Media used, tempora, water color, ink, etc.

Credit value: Three semester hours. Fee: \$2.00 Three lecture and three laboratory hours per week for one semester.

#### 302s. Elementary Design

Continued study of fundamental principles of design with emphasis upon composition and application of design in various fields. Organization of material gained in sketching and research into design elements. Consideration of technique of handling pencil, water color, tempora, etc.

Prerequisite: Design 301. Credit value: Three semester hours. Fee: \$2.00. Three lecture and three laboratory hours per week for one semester.

#### 303f. Weaving

Practical work in weaving cloth bags, table settings, scarfs, etc. The setting up of looms, study of textiles and weaves, and the proper combinations of weaves, color, and design in textiles. Originality in weaving stressed.

Credit value: Three semester hours. Fee: \$2.00. Three lecture and three laboratory hours per week for one semester.

#### 304f. Pottery

A study of the methods of pottery making, coil building, wheel throwing, slip casting and various methods, glazing, operation of kilns. Emphasis placed on simplicity of form of vases, containers, etc., decorative tiles and plates.

Credit value: Three semester hours. Fee: \$2.00. Three lecture and three laboratory hours per week for one semester.

#### 305f. Metal Work and Jewelry

Designing and making of jewelry in silver and other suitable materials. Study of modern and primitive design in rings, pins, bracelets, ear rings, etc. Soldering methods.

Credit value: Three semester hours. Fee: \$2.00. Three lecture and three laboratory hours per week for one semester.

**305ks. Metal Work and Jewelry**

A continuation of the study of jewelry design and methods of making jewelry and metal objects.

Credit value: Three semester hours. Fee: \$2.00. Three lecture and three laboratory hours per week for one semester.

**306. Sketching**

The principles of freehand drawing and sketching, including study of mass, form, and composition. Also, perspective, light, shadow, shade, and reflections studied, with color and value considered. Media, pencil, water color, tempera, and oil. Flower studies, landscapes, buildings, etc., will be drawn. Sketching trips planned. Given in summer session.

Credit value: Three semester hours. Fee: \$2.00. Three lecture and three laboratory hours per week for one semester.

**307a. Craft Essentials**

A course in the essential elements of craft design. The making of jewelry in silver and other suitable materials. Plates, ash trays, boxes, etc., made in metals. Pottery making and ceramics.

Credit value: Three semester hours. Fee: \$2.00. Three lecture and three laboratory hours per week for one semester.

**307kf. Basic Crafts**

A study of the crafts, particularly jewelry and ceramics. Procedure from the simplest forms to complex pieces, such as brooches, pins, bracelets, bowls, and trays, figurines, and other pottery objects made in class.

Credit value: Three semester hours. Fee: \$2.00. Three lecture and three laboratory hours per week for one semester.

**308s. Weaving**

The study of weaving on floor and table looms, of linens, place mats, scarfs, belts, etc. Also tapestry patterns and primitive designs.

Prerequisite: Weaving 305. Credit value: Three semester hours. Fee: \$2.00. Three lecture and three laboratory hours per week for one semester.

**309a. Pottery and Ceramics**

A study of the methods of making pottery by coil, slab wheel throwing and slip casting. Modeling of figures and animals. Glazing and firing in the kiln.

Prerequisite: Pottery 304. Credit value: Three semester hours. Fee: \$2.00. Three lecture and three laboratory hours per week for one semester.

**309mf. History of Furniture Design**

History of furniture from Jacobean through Early American, Eighteenth Century English, etc., to modern; also French, Spanish, and Italian furniture design. Distinguishing characteristics, woods, and proper architectural backgrounds will be studied.

Credit value: Three semester hours. Three lectures per week for one semester.

**309n. Life Drawing from the Costumed Model**

Study of the human form, its balance, rhythm and plastic qualities. Special study of head, face and hands, and of composition of the human figure in space.

Credit value: Three semester hours. Fee: \$2.00. Three lecture and three laboratory hours per week for one semester.

**Art 309L. Life Drawing**

Continuation of Art 309n in study of the human form.

Prerequisite: Art 309n. Credit value: Three semester hours. Fee: \$2.00. Three lecture hours and three laboratory hours per week for one semester.

**309kfs. Sculpture**

A course in sculpture, comprehensive in scope. Cast sketching, sight and visual training in plastic form, portrait modeling, general modeling, wood carving, stone cutting and plaster casting may be studied but different phases emphasized according to the aptitudes of the students.

Credit value: Three semester hours. Fee: \$2.00. Six hours per week of lecture and laboratory for one semester.

**Art 310. Pottery**

The second year study of ceramics. Casting, experimental glazing and advanced work in modeling. Required of those who wish to major in this field.

Prerequisite: Pottery 309. Credit value: Three semester hours. Fee: \$2.00. Three lecture hours and three laboratory hours per week for one semester.

**Art 311. Pottery**

Continuation of Art 310.

Prerequisite: Art 310. Credit value: Three semester hours. Fee: \$2.00. Three lecture hours and three laboratory hours per week for one semester.

**315f. Survey of Art Fields**

A survey of art fields, with problems in designing furniture interiors, stage settings, advertising, fashions, etc. Development of good taste and sense of proportion and values in study of design for modern living.

Prerequisite: Design 301 and 302. Credit value: Three semester hours. Fee: \$2.00. Three lecture and three laboratory hours per week for one semester.

**316s. Survey of Art Fields**

Continued study of design for modern living. Study of materials and how to make the most of them in design.

Prerequisite: Design 315. Credit value: Three semester hours. Fee: \$2.00. Three lecture and three laboratory hours per week for one semester.

**Art 317. Life Drawing**

Second year work in life drawing.

Prerequisite: Art 309L. Credit value: Three semester hours. Fee: \$2.00. Three lecture hours and three laboratory hours per week for one semester.

**Art 318. Life Drawing**

Continuation of Art 317 in second semester. Drawing from the costumed model in various poses. Form and composition in space emphasized.

Prerequisite: Art 317. Credit value: Three semester hours. Fee: \$2.00. Three lecture hours and three laboratory hours per week for one semester.

**320f. Art History and Appreciation**

A study of the most important works of art from early periods, Egyptian, Greek, Chinese, etc., through Byzantine, Medieval, and the Renaissance era. Art and its part in history and life through the ages. Lectures illustrated by pictures and color slides.

Prerequisite: Junior standing. Credit value: Three semester hours. Three lecture hours per week for one semester.

**320ks. Art History and Appreciation**

Art history from the post-Renaissance or literal period through French Impressionists, etc., to modern times. Analyses of motives and techniques of artists, with view of better understanding and appreciation of their work. Lectures illustrated by pictures and color slides.

Prerequisite: Junior standing. Credit value: Three semester hours. Three lecture hours per week for one semester.

**321s. Public School Art**

A course in materials and methods for those preparing to teach art in the public schools. Actual work in materials involved, crayon, opaque water color, linoleum blocks, making of marionettes, notebook covers, etc. Study of methods of developing creative ability of the child.

Prerequisite: Junior standing and Art 301. Credit value: Three semester hours. Three lecture hours per week for one semester.

**322f. Painting**

The development of visual structure in painting. Direct study of outdoor subjects. Landscape composition in black and white and color. Portrait and still life drawing and painting.

Prerequisite: Art 315 and 316. Credit value: Three semester hours. Fee: \$2.00. Three lecture and three laboratory hours per week for one semester.

**323s. Painting**

Study of various techniques in painting. Organization of materials for landscape painting, murals, illustrations, etc. Outdoor work.

Prerequisite: Art 315 and 316. Credit value: Three semester hours. Fee: \$2.00. Three lecture and three laboratory hours per week for one semester.

**324f. Metal Work and Jewelry**

The designing and making of jewelry and other objects, with particular emphasis on decorative design. Study of primitive design such as Chinese, Aztec, Mayan for inspiration in decorative form, as well as modern conceptions. The use of semi-precious stones in jewelry.

Prerequisite: Twelve semester hours of art, including Design 301 and 302, and Jewelry 305 and 305k. Credit value: Three semester hours. Fee: \$2.00. Three lecture and three laboratory hours per week for one semester.

**325s. Metal Work and Jewelry**

Constructive work in creating useful and original objects, in functional designs and decorative forms. The use of available metals and other materials in creating costume jewelry, plates, trays, etc.

Prerequisite: Metal Work and Jewelry 324. Credit value: Three semester hours. Fee: \$2.00. Three lectures and three laboratory hours per week for one semester.

**Art 326. Painting.**

Landscape, still life, and other types of painting particularly adaptable to the individual. Organization of material from sketches. Media—oil, water color, gouache.

Prerequisite: Art 322 and 323. Credit value: Three semester hours. Fee: \$2.00. Three lecture hours and three laboratory hours per week for one semester.

**Art 327. Painting**

A continuation of Art 326.

Prerequisite: Art 326. Credit value: Three semester hours. Fee: \$2.00. Three lecture hours and three laboratory hours per week for one semester.

**BIOLOGICAL SCIENCES**

PROFESSOR BERKMAN; INSTRUCTORS WRIGHT, DUKE AND JACQUES

Course 316 may not be used to satisfy the science requirement for the B.A. degree or the B.S. degree.

**ANATOMY AND PHYSIOLOGY**

**306. Anatomy and Physiology**

Study of a typical animal cell, mitosis and cell division, and a survey of the following: histology of mammalian tissues, the human skeleton, muscles of the body, the circulatory and the nervous systems, physiology, and the human body in general. This course is not open to students other than pre-clinical nurses and to students in a school of nursing.

Credit value: Three semester hours. Fee: \$2.00. Two lectures and three laboratory hours per week for one semester.

## BIOLOGY

**303. Microbiology**

A study of microbes with emphasis on the more common pathogenic forms including both bacteria and protozoans, the laboratory assignments emphasizing culture technique, staining technique, histology of the blood, blood groups and typing of blood groups. This course is not open to students other than pre-clinical nurses and to students in a school of nursing.

Credit value: Three semester hours. Fee: \$2.00. Two lectures and three laboratory hours per week for one semester.

**310. Biology of the Human Body**

A survey of the anatomy of the human body with emphasis on the skeletal system and skeletal muscles.

Prerequisite: Zoology 302, or six semester hours of biology. Two lectures and three laboratory hours per week for one semester. Fee: \$2.00. Credit value: Three semester hours.

**311. Introduction to Human Physiology**

A survey of human physiology, emphasizing the relation of functions to physical exercise.

Prerequisite: Biology 310. Two lectures and three laboratory hours per week for one semester. Fee: \$2.00. Credit value: Three semester hours.

**316f. Heredity**

Fundamental principles of heredity in their application to animals, plants, and mankind. Lectures are supplemented with a study of prepared slides of *Drosophila*.

Prerequisite: Sophomore standing or six semester hours of a laboratory science. Credit value: Three semester hours. Three lectures per week for one semester.

**330s. Technique in Histology and Cytology**

Fixing, imbedding, sectioning, staining, and mounting cells and tissues for critical analysis.

Prerequisite: Chemistry 413, or 21, or 821, or Bacteriology 29, or 12 semester hours of zoology, or botany. Credit value: Three semester hours. Fee: \$2.00. Two lectures or the equivalent and three laboratory hours per week.

## BACTERIOLOGY

**29. General Bacteriology**

Principles of bacteriology; study and isolation of nonpathogenic and pathogenic forms; investigation of water, milk, and sewage; bacterial antagonism; immunology.

Prerequisite: Twelve semester hours in any one of the natural sciences, or a combination of twelve semester hours in natural sciences and junior standing. Credit value: Six semester hours. Fee: \$2.00 per semester. Two lectures and three laboratory hours per week for two semesters.



**BOTANY**

**301f. General Botany**

Structure and physiology of the plant cell; survey of the algae and fungi coupled with an exposition of their functional relationship to man.

Credit value: Three semester hours. Fee: \$2.00. Two lectures and three laboratory hours per week for one semester.

**302a. General Botany**

A survey of the mosses, ferns, and seed plants, including discussions on their relationship to society of man.

Prerequisite: Botany 301. Credit value: Three semester hours. Fee: \$2.00. Two lectures and three laboratory hours per week for one semester.

**ZOOLOGY**

No credit will be given for any advanced course in zoology taken concurrently with Zoology 14 until Zoology 14 has been completed.

**301f. General Zoology**

Theoretical Biology, followed by a survey of the invertebrates and their relationship to health problems and the economic phase of man's life.

Credit value: Three semester hours. Fee: \$2.00. Two lectures and three laboratory hours per week for one semester.

**302a. General Vertebrate Zoology**

A general survey of the protochordates, cyclostomes, the dogfish, and the frog, followed by a few exercises on animal histology and genetics.

Prerequisite: Zoology 301. Credit value: Three semester hours. Fee: \$2.00. Two lectures and three laboratory hours per week for one semester.

**14. Vertebrate Zoology and Comparative Anatomy**

A comparative study of the anatomy of the dogfish, an amphibian (*Necturus*), the turtle, pigeon, and a mammal, with emphasis on development and relationship of such evolution to the developmental anatomy of man.

Prerequisite: Zoology 302. Credit value: Six semester hours. Fee: \$2.00 per semester. Two lectures and four laboratory hours per week for two semesters.

**320s. Animal Cytology and Histology**

Study of structure, differentiation, and function of cells.

Prerequisite: Zoology 14; for juniors and seniors, Zoology 302 completed with a grade not lower than C, and Zoology 14 concurrently. Credit value: Three semester hours. Fee: \$2.00. Two lectures and three laboratory hours per week for one semester.

**321f. Vertebrate Embryology**

Detailed study of the development of the chick and mammalian embryos.

Prerequisite: Zoology 14; for juniors and seniors, Zoology 302 completed with a grade not lower than C, and Zoology 14 concurrently. Credit value: Three semester hours. Fee: \$2.00. Two lectures and three laboratory hours per week for one semester.

**BUSINESS ADMINISTRATION AND ECONOMICS**

PROFESSOR HARTRICK; ASSISTANT PROFESSOR SPENCER; INSTRUCTORS  
BLACK, SMITH, SAYLES

A student majoring in the department of Economics and Business Administration may elect a degree in Bachelor of Arts or Bachelor of Business Administration. For those preparing particularly for business careers, the Bachelor of Business Administration Degree is recommended. Those students choosing the Bachelor of Arts Degree may major in Economics or Business Administration.

Experience has shown that students interested in particular fields of work will benefit by including certain courses in their degree plans. (a) For persons interested in General Economics: among others, Economics 321, 322, 331, 332, 337, 343, 344, and 359, and Business Administration 311 and 314; (b) for students interested in General Business Training: among others, Business Administration 302, 303, 23, 331, 337, 338, 342, 344, 357, and 359, and Economics 312 and 313; (c) for students interested in Accounting: among others, Business Administration 23, 326, 327, 329, 330, 338, and 359, and Economics 312 and 313; (d) for students interested in Secretarial Science: among others, Business Administration 302, 303, 10, 20, 21, 334, 335, 359, 331, and 342, and Economics 312 and 313; (e) for students interested in foreign trade: among others, Economics or Business Administration 337, 344, 348, 350, 351, and 359; (f) for students wishing to teach subjects in business or economics in high school, courses should be planned with the aid of the chairman of the department.

**Note to majors and minors in this department.**—In order that the courses may be coordinated and planned in advance for you, you are urged to counsel with the head of this department before registration in your sophomore year. Advice at this stage may prevent subsequent difficulties in your program.

**BUSINESS ADMINISTRATION****302. Elementary Typewriting**

A course for beginners in typewriting covering a general knowledge of the care and operation of a typewriter, copy work, letter writing, and forms.

Credit value: Three semester hours. Fee: \$2.00. Three class and six laboratory hours per week for one semester. (Students, who present one or more units of high-school typewriting, may not offer this course for credit.)

**303. Intermediate Typewriting**

A continuation of B.A. 302 designed to increase speed and accuracy in typewriting while increasing the ability to plan and prepare advanced copy work.

Prerequisite: B.A. 302 or one admission unit in typewriting or its equivalent. Credit value: Three semester hours. Fee: \$2.00. Three class and six laboratory hours per week for one semester.

**10. Elementary Shorthand**

A course designed to present the elementary principles of Gregg shorthand covering reading, penmanship, and simple transcription.

Prerequisite: B.A. 303 or its equivalent or sophomore standing. Credit value: Six semester hours. Fee: \$2.00 per semester. Three class and two laboratory hours per week for two semesters.

**311. Theory and Practice in Accounting**

Principles of double-entry bookkeeping and theories of general financial accounting. The analysis and recording of business transactions, adjusting and closing entries. Financial statements, sole proprietorship accounting and practice set. Use of worksheets.

Prerequisite: Sophomore standing. Credit value: Three semester hours. Fee: \$2.00. Three lectures and three laboratory hours per week for one semester.

**314. Theory and Practice of Accounting**

Business Administration 311 continued into a consideration of partnership accounting, corporation accounting, reserves and reserve funds, manufacturing accounts, asset valuation, practice sets on partnerships and corporations.

Prerequisite: Business Administration 311. Credit value: Three semester hours. Fee: \$2.00. Three lectures and three laboratory hours per week for one semester.

**20. Business Letters and Report Writing**

The writing of clear, concise and forceful business letters. Practical business situations are given as the bases for letter assignments. Practice in writing sales letters, credit letters, adjustments, claim, order, rejection, collection, and application letters. Part of course is given over to the theory and practice of report writing.

Prerequisite: English 12 or 12Q; Business Administration 314; the ability to type accurately. Credit value: Six semester hours. Three class hours per week for two semesters.

**21. Advanced Stenography**

Training in advanced secretarial practice. Development of speed and accuracy in shorthand and typing. Character study and practice dictation of medical, legal and engineering phraseology; technique in letter layouts; practice in receiving messages and transcribing from dictating machines.

Prerequisite: Business Administration 303 and 10 or their equivalent. Credit value: Six semester hours. Fee: \$2.00 per semester. Three lectures and three laboratory hours per week for two semesters.

**321K. Fundamentals of Advertising**

Relation of advertising to other business functions; study of campaigns, appropriations, and media; survey of activities of those engaged in advertising work.

Prerequisite: Junior standing. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Journalism 321K.)

**23. Business Law**

Textbook and case method. Cases on law of contracts, agency, bailments, sales, mortgages, negotiable instruments. Special emphasis on Texas interpretation of these legal principles.

Prerequisite: Economics 313 or Business Administration 314. Credit value: Six semester hours. Three class hours per week for two semesters.

**326. Intermediate Accounting, First Course**

Classification and codification of accounts, forms, and contents of financial statements; theory involved in corporation accounting, actuarial accounting, accounting for consignments and installment sales, evaluation of investments, analysis of working capital.

Prerequisite: Business Administration 314. Credit value: Three semester hours. Three class hours per week for one semester.

**326K. Advertising, Copywriting and Special Layouts**

Instruction and practice in the technique of preparing various types of copywriting and layouts. Study of marketing media, direct mail advertising, circulars and store layouts.

Prerequisite: Business Administration 321K or Journalism 321K. Credit value: Three semester hours. Two class and four-practice hours per week for one semester. (May not be counted for credit in addition to Journalism 326K.)

**327. Intermediate Accounting, Second Course**

Theory involved in partnership accounting, venture accounts, accounting for receiverships, parent and subsidiary accounting, consolidated balance sheets, foreign exchange accounting, estates and trusts, budgets, public accounts, bank accounting.

Prerequisite: Business Administration 326. Credit value: Three semester hours. Three class hours per week for one semester.

**329. Cost Accounting**

Accounting for materials; labor, and manufacturing expense under specific cost system and under the continuous process cost system. Standard costs; accounting for variances; study of production orders and standing orders.

Prerequisite: Business Administration 314. Credit value: Three semester hours. Three class hours per week for one semester.

**330. Auditing**

Auditing procedure, reports, and working papers used in financial investigations; balance sheet and detailed audits; verification of assets, liabilities and nominal accounts.

Prerequisite: Business Administration 326. Credit value: Three semester hours. Three class hours per week for one semester.

**331. Business and Government**

Government in a regulatory capacity and in a coöperative capacity, theories of constitutional protection, anti-trust laws, the control of unfair trade practices, regulation of security issues and security exchanges, railway regulation, the government as a credit-granting institution. Settlement of labor disputes, social security.

Prerequisite: Business Administration 314. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Economics 331.)

**332. Business Statistics**

Training in quantitative methods of analysis used in dealing with mass data. The use of graphic and tabular presentations, organizing and describing data, the frequency distribution, measures of central tendency, dispersion, skewness, time series analysis, correlation.

Prerequisite: Six semester hours of mathematics and Junior standing. Credit value: Three semester hours. (May not be counted for credit in addition to Economics 329.) Fee: \$2.00. Three lectures and three laboratory hours per week for one semester.

**334. Office Practice**

Practice in the use of dictating, bookkeeping, and duplicating machines, and other types of office equipment. Demonstrational work in the use and operation of a telephone switchboard. Filing, advanced dictation and transcription practice. Designed for students intending to go into office work.

Prerequisite: Business Administration 21 or the equivalent, and 314. Credit value: Three semester hours. Fee: \$2.00. Three class hours and three laboratory hours per week for one semester.

**335. Office Organization and Management**

The location, equipment, organization, and general routine practice within the modern business office. Two viewpoints are presented: that of the office manager, and that of the office employee. Designed primarily for students going into office work.

Prerequisite: Business Administration 314 or Junior standing. Credit value: Three semester hours. Three class hours per week for one semester.

**337. Marketing**

The place of marketing in our domestic business system. Functions of marketing, the place of the middleman in the system, brief consideration of the wholesaler and the retailer.

Prerequisite: Business Administration 314. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Economics 337.)

**338K. Federal Tax Accounting for Individuals**

Theory and problems in income taxation for the individual. The preparation of income tax forms and a study of the most recent federal revenue acts. The application of the federal tax problems to everyday personal and business questions.

Prerequisite: Business Administration 314. Credit value: Three semester hours. Three class hours per week for one semester.

**338M. Federal Tax Accounting for Partnerships and Corporations**

Theory and problems in income taxation for the partnership and the corporation. Accounting for taxes of estates and trusts, capital stock taxes, excess profits taxes, gift taxes, taxes on foreign income and problems of foreign taxpayers.

Prerequisite: Business Administration 338K. Credit value: Three semester hours. Three class hours per week for one semester.

**339. Business Salesmanship**

A study of the economic problems connected with personal selling; an analysis of the products and the market; the planning and execution of an interview; building good will; consideration of the relationship between the salesman and his employer.

Prerequisite: Business Administration 314. Credit value: Three semester hours. Three class hours per week for one semester.

**341. Advanced Banking Theory and Practice**

A study of banking in its relation to the business world, promotion and incorporation, banking organization and powers, the directors, stockholders, clearing and collecting systems, credit analysis, banking departments, the Federal Reserve System.

Prerequisite: Economics 322 or Business Administration 354. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Economics 341.)

**342. Personnel Management and Production Problems**

Policies and managerial techniques for employment, wage and salary payment; joint relations through labor unions and company representation plans. Principles underlying modern production; problems of small and large businesses using manufacturing processes.

Prerequisite: Business Administration 314. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Economics 342.)

**344. Modern Transportation and Communication**

A survey of peculiar problems and related public policies with emphasis upon the modern era of promotion and regulation of transportation and telephone and radio communication. Problems of monopoly, service, safety, rates and cost. Development of regulatory policies. Private and

governmental promotion. F.C.C. control of telephone and broadcasting services.

Prerequisite: Business Administration 314. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Economics 344.)

**345. Business Cycles and Forecasting**

History and theories of the business cycle; possibilities and limitations in scientific prediction of commodity prices, sales volume, industrial production, industrial growth and decay, security prices and business profits; a study of professional forecasting services.

Prerequisite: Economics 329 or Business Administration 332. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Economics 345.)

**347. Consumer Purchasing**

A study of the position of the consumer in present-day society. Factors influencing consumer choice; costs and standards of living; household budgeting; installment buying; consumer protective organizations; positive and restrictive governmental aid to the consumer.

Prerequisite: Economics 313. Credit value: Three semesters hours. Three class hours per week for one semester. (May not be counted for credit in addition to Economics 347.)

**348. Latin-American Resources and Trade**

A study of the economic resources of the Latin-American nations, geographic resources, relations of topography to business enterprises, trade relations of the United States with the Latin-American nations. Productive conditions past and present in Mexico, Central America, Caribbean Lands, and South America. The future of trade relations between the United States and the Southern Hemisphere republics.

Prerequisite: Economics 313. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Economics 348.)

**349. Labor Problems**

History of the labor movement in the United States; problems arising from the employer-employee relationship; governmental agencies; legislation; current issues.

Prerequisite: Economics 313. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Economics 349.)

**350. Introduction to Foreign Trade**

Principles of international movements of economic goods, the protective tariff and free trade controversy, the control of raw materials, techniques in shipments of physical commodities, financing foreign transactions.

Prerequisite: Economics 313. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Economics 350.)

**351. Trade Promotion with Mexico**

A study of the interchange of products between the United States and Mexico, including the history, production, transportation, sales promotion, financing, and legal factors affecting this movement.

Prerequisite: Economics 313. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Economics 351.)

**354. Short-term Finance**

Studies of the principles of money and banking systems of the United States and selected foreign countries, important underlying theories. History of the precious metals, bimetallism, banking development, relation of money and credit to prices, foreign exchange principles.

Prerequisite: Business Administration 314 and Economics 313. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Economics 322.)

**357. Investments**

Investment principles, investment banking, security analysis, security classification including rails, industrials, utilities, governments and others. Principally considers investor's viewpoint.

Prerequisite: Business Administration 314. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Economics 357.)

**359. General Insurance**

Risk, its nature and economic significance. The insurance contract, fire insurance, marine insurance, property insurance, life insurance, burglary, robbery, and theft insurance, types of carriers, State supervision of insurance carriers. Social insurance.

Prerequisite: Business Administration 314 and Economics 313. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Economics 359.)

**360. Life Insurance**

Principles underlying life insurance; business and personal uses; types of policies and carriers; organization, administration and supervision of risk carriers.

Prerequisite: Business Administration 314 or Economics 313. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Economics 360.)



**Education 321K. Methods of Teaching Commercial Subjects.**

Subject matter and methods for teaching secretarial courses, book-keeping, arithmetic, and allied subjects in high school.

Prerequisite: Business Administration 21 and 314; Education 317. Credit value: Three semester hours. Three class hours per week for one semester. (May be counted for credit in business administration.)

**ECONOMICS**

**312. Principles of Economics**

The place of economic principles and institutions in society. A survey of the nature of economics, the development of modern industry, the present-day business unit, employer-employee relationships, value and price, and functional distribution.

Prerequisite: Sophomore standing. Credit value: Three semester hours. Three class hours per week for one semester.

**313. Principles of Economics**

A survey of the principles, practices and institutions utilized in money and banking, international trade, public finance, and government in its relation to business.

Prerequisite: Economics 312. Credit value: Three semester hours. Three class hours per week for one semester.

**321. Public Finance and Taxation**

A general treatment of financial administration by agencies of the Government of the United States. Principles of taxation, the sales tax, the property tax, income taxes, inheritance taxes. Analysis of government expenditures and public credit.

Prerequisite: Economics 313. Credit value: Three semester hours. Three class hours per week for one semester.

**322. Money and Banking**

Studies of the principles of money and banking, the existing money and banking systems of the United States and selected foreign countries, important underlying theories. History of the precious metals, bimetallism, banking development, relation of money and credit to prices, foreign exchange principles.

Prerequisite: Economics 313. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Business Administration 354.)

**329. Economic Statistics**

Training in the quantitative methods of dealing with mass data. The use of graphic and tabular methods of presentation of facts. Measures of central tendency, index numbers, measures of dispersion and skewness, time series analysis, and correlation.

Prerequisite: Economics 313 and six semester hours of mathematics. Credit value: Three semester hours. (May not be counted for credit in addition to Business Administration 332.) Fee: \$2.00. Three lectures and three laboratory hours per week for one semester.

**331. Business and Government**

Government in a regulatory capacity and a coöperative capacity, theories of constitutional protection, anti-trust laws, the control of unfair trade practices, regulation of security issues and security exchanges, railway regulation, the government as a credit-granting institution. Settlement of labor disputes, social security.

Prerequisite: Economics 313. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Business Administration 331.)

**332. Corporation Finance**

The promotion of corporations, sources of capital, capital structures, internal financial management, receiverships, reorganizations, relation of corporation finance to banking, social consequences of over-promotion.

Prerequisite: Economics 313. Credit value: Three semester hours. Three class hours per week for one semester.

**337. Marketing**

The place of marketing in our domestic business system. Functions of marketing, the place of the middleman in the system, brief consideration of the wholesaler and the retailer.

Prerequisite: Economics 313. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Business Administration 337.)

**341. Advanced Banking Theory and Practice**

A study of banking in its relation to the economic world, promotion and incorporation, banking organization and powers, the directors, stockholders, clearing and collection systems, credit analysis, banking departments, the Federal Reserve System.

Prerequisite: Economics 322 or Business Administration 354. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Business Administration 341.)

**342. Personnel Management and Production Problems**

Policies and managerial techniques for employment, wage and salary payment, joint relations through labor unions and company representation plans. Principles underlying modern production; problems of small and large businesses using manufacturing processes.

Prerequisite: Economics 313. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Business Administration 342.)

**343. Comparative Economic Systems**

A consideration of the economic foundations of the capitalistic and other systems. An objective study of the economic construction of Fascism, Nazism, Socialism, Communism, and Capitalism.

Prerequisite: Economics 313. Credit value: Three semester hours. Three class hours per week for one semester.

**344. Modern Transportation and Communication**

A survey of peculiar problems and related public policies with emphasis upon the modern era of promotion and regulation of transportation and telephone and radio communication. *Development of water, railroad, motor and air transportation.* Problems of monopoly, service, safety, rates, and costs. *Development of regulatory policies.* Private and governmental promotion. F.C.C. control of telephone and broadcasting services.

Prerequisite: Economics 313. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Business Administration 344.)

**345. Business Cycles and Forecasting**

History and theories of the business cycle; possibilities and limitations in scientific predictions of commodity prices, sales volume, industrial production, *industrial growth and decay*, security prices and business profits; a study of professional forecasting services.

Prerequisite: Economics 329 or Business Administration 332. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Business Administration 345.)

**347. Economics of Consumption**

A study of the position of the consumer in present-day society. Factors influencing consumer choice; costs and standards of living; household budgeting; installment buying; consumer protective organizations; positive and restrictive governmental aids to the consumer.

Prerequisite: Economics 313. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Business Administration 347.)

**348. Latin-American Resources and Trade**

A study of the economic resources of the Latin-American nations, geographic resources, relations of topography to business enterprises, trade relations of the United States with the Latin-American nations. Productive conditions past and present in Mexico, Central America, Caribbean Lands, and South America. The future of trade relations between the United States and the Southern Hemisphere republics.

Prerequisite: Economics 313. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Business Administration 348.)

**349. Labor Problems**

History of the labor movement in the United States; problems arising from the employer-employee relationship; governmental agencies; legislation; current issues.

Prerequisite: Economics 313. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Business Administration 349.)

**350. Introduction to Foreign Trade**

Principles of international movements of economic goods, the protective tariff and free trade controversy, the control of raw materials, techniques in shipments of physical commodities, financing foreign transactions.

Prerequisite: Economics 313. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Business Administration 350.)

**351. Trade Promotion with Mexico**

A study of the interchange of products between the United States and Mexico, including the history, production, transportation, sales promotion, financing, and legal factors affecting this movement.

Prerequisite: Economics 313. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Business Administration 351.)

**357. Investments**

Investment principles, investment banking, security analysis, security classification, including rails, industrials, utilities, governments and others. Principally considers investor's viewpoint.

Prerequisite: Economics 313. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Business Administration 357.)

**358. International Economic Relations.**

Mercantilism as a background, English commercial development. American colonial development as related to internationalism, tariff history, problems of free trade, international movements of the factors of production, international commercial entanglements. International economic relations and the Second World War.

Prerequisite: Economics 313 and three semester hours of advanced economics. Credit value: Three semester hours. Three class hours per week for one semester.

**359. General Insurance**

Risk, its nature and economic significance; study of various forms of property, life, and social insurance; the insurance contract; types and state supervision of insurance carriers.

Prerequisite: Economics 313. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Business Administration 359.)

**360. Life Insurance**

Principles underlying life insurance; business and personal uses; types of policies and carriers; organization, administration, and supervision of risk carriers.

Prerequisite: Economics 313 or Business Administration 314. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Business Administration 360.)

**CHEMISTRY**

PROFESSOR LAKE; ASSOCIATE PROFESSOR HANCOCK; ASSISTANT PROFESSORS BALL, NORMAN; INSTRUCTORS JACQUES, PEIRCE, SCRUGGS

**1. General Chemistry**

Designed for those students whose formal education in chemistry terminates with one year's work in the subject or whose degree plans stipulate six hours of general chemistry as the total requirement in that science.

Credit value: Six semester hours. Fee: \$2.00 per semester. Two lectures, one demonstration hour, and two laboratory hours per week for two semesters. May not be used as a prerequisite for any other chemistry course.

**801. General Chemistry**

The laws and theories of chemistry; the elements and their most important compounds with reference to their production and use. For students who need a foundation for work in advanced chemistry and related sciences.

Credit value: Eight semester hours. Fee: \$4.00 per semester. Three lectures and three laboratory hours per week for two semesters.

**305fs. General Chemistry**

A review of the fundamental principles of elementary chemistry and their application. Required of all students who, after trial and a qualifying examination, are found insufficiently prepared to carry Chemistry 801a and who plan to register for that course the next succeeding semester.

Credit value: Three semester hours. May not be counted in addition to Chemistry 801a or 1a. Two lectures, one demonstration hour, and two laboratory hours per week for one semester. May not be used as a prerequisite for any chemistry course other than 801a.

**306fs. Chemistry for Nurses**

Elementary principles of chemistry with applications to the nursing profession. This course is not open to students other than pre-clinical nurses and to students in a school of nursing.

Credit value: Three semester hours. Fee: \$2.00. Three lectures and two laboratory hours per week for one semester.

**207fs. Chemistry for Nurses**

A continuation of Chemistry 306.

Prerequisite: Chemistry 306. Credit value: Two semester hours. Two lectures per week for one semester.

**311fs. Qualitative Analysis**

Analytical reactions from the point of view of the laws of chemical equilibrium applied to solutions of electrolytes. Analysis of the common ions using the semi-micro technique.

Prerequisite: Chemistry 801a and 801b with a grade of not less than C in each. Credit value: Three semester hours. Fee: \$2.00. One lecture and six laboratory hours per week for one semester.

**413fs. Quantitative Analysis**

The quantitative analysis of salts, minerals, and industrial products.

Prerequisite: Chemistry 311. Credit value: Four semester hours, three of which may be counted as advanced. Fee: \$4.00. One lecture and eight laboratory hours per week for one semester.

**415. Organic Chemistry**

A one-semester course in organic chemistry for pre-dental students.

Prerequisite: Chemistry 801. Credit value: Four semester hours. Fee: \$4.00. Three lectures and three laboratory hours per week for one semester.

**21 and 821. Organic Chemistry**

A study of the fundamental types of carbon compounds.

Prerequisite: For 821, Chemistry 413; for 21, Chemistry 801. Credit value: For 21, six semester hours; for 821, eight semester hours. Fee: \$2.00 per semester for 21, \$4.00 per semester for 821. Three lectures and three laboratory hours per week for 821 for two semesters. Students registering for 21 will receive the equivalent of two lectures and three laboratory hours per week for two semesters.

**323fs. Quantitative Analysis**

A continuation of Chemistry 413.

Prerequisite: Chemistry 413. Credit value: Three semester hours. Fee: \$2.00. One lecture and six laboratory hours per week for one semester.

**460f. Physical Chemistry**

Properties of substances in the gaseous, liquid, and solid state; solutions; thermochemistry.

Prerequisite: Chemistry 413, Mathematics 13, and Physics 1 or 812. Credit value: Four semester hours. Fee: \$4.00. Three lectures and three laboratory hours per week for one semester.

**461s. Physical Chemistry**

Homogeneous and heterogeneous equilibria; kinetics of reaction, electrochemistry, and chemical thermodynamics.

Prerequisite: Chemistry 460. Credit value: Four semester hours. Fee: \$4.00. Three lectures and three laboratory hours per week for one semester.

**261s. Physical Chemistry**

This course covers part of the work covered by Chemistry 461 and is intended for students who elect the option in metallurgical engineering.

Prerequisite: Chemistry 460. Credit value: Two semester hours. Two lectures per week for one semester.

**362f. Biochemistry**

Chemistry of food substances, digestion, vitamins, enzymes, absorption, and blood.

Prerequisite: Chemistry 21 or 821. Credit value: Three semester hours. Fee: \$2.00. Two lectures and three laboratory hours per week for one semester.

**363s. Biochemistry**

Immunochemistry, chemistry of respiration, hormones, intermediary metabolism, etc., with emphasis on cell metabolism.

Prerequisite: Chemistry 362. Credit value: Three semester hours. Fee: \$2.00. Two lectures and three laboratory hours per week for one semester.

**368s. Principles of Colloid Chemistry**

Chemical and physical conditions of the colloid state.

Prerequisite: Chemistry 460. Credit value: Three semester hours. Fee: \$2.00. Two lectures and three laboratory hours per week for one semester.

**396, 496, 596, 696fs. Introduction to Research**

Credit will be granted, up to six semester hours, for research satisfactorily completed by advanced students in the Chemistry Department. Only specially qualified students approved by the Head of the Chemistry Department will be accepted for this work. Credit will be granted only in the senior year on the recommendation of the Head of the Chemistry Department.

Prerequisite: Permission of Head of the Chemistry Department. Credit value: Up to six semester hours as recommended by Head of the Chemistry Department. Fee: \$2.00 for 396; \$4.00 for 496; \$4.00 for 596; \$4.00 for 696 per semester.

**EDUCATION**

PROFESSORS FARQUEAR, PUCKETT; ASSISTANT PROFESSOR HUTCHINS;  
INSTRUCTOR REYNOLDS

This program is intended to provide opportunity for the prospective teacher to obtain (a) orientation in the general field of education, (b) an over-view of the fundamental principles and philosophy of the elementary or secondary

schools, and (c) specific training in the technique of instruction in the field or subject which is selected. Students who are planning to teach in the secondary schools are advised to take Plan II under the Education Major. Students who are planning to teach in the elementary schools are advised to take Plan III under the Education Major.

#### General

#### **301fs. Introduction to Educational Psychology**

A study of some of the topics in educational psychology which relate most directly to an understanding of the learning process and the conduct of children.

Credit value: Three semester hours. Three lectures per week for one semester.

#### **305fs. The American School System**

The course, which is introductory to the study of education, gives attention to the relation of American public schools to social and economic changes, also to problems in the development of the curriculum, instructional practices, school organization, and administration.

Credit value: Three semester hours. Three lectures per week for one semester.

#### **336Ts. Current Curriculum Trends and Problems**

A study of present theory and practice of curriculum revision in elementary and secondary schools, and of the function of the school in present society.

Prerequisite: Six hours in Education and Junior standing. Credit value: Three semester hours. Three lectures per week for one semester.

#### **339. The Education of Exceptional Children**

Consideration is given to the philosophy of the education of exceptional children and to the psychology and educational treatment of atypical pupils in elementary and secondary schools.

Prerequisite: Twelve semester hours in Education, or permission of Chairman of the Department. Credit value: Three semester hours. Three lectures per week for one semester.

#### **339K. Counseling and Vocational Guidance**

A study of the principles and methods used in counseling and vocational guidance. The counseling techniques used in school, home, personal life and social situations. The use of tests, interviews and other techniques in vocational selection and training.

Prerequisite: Twelve semester hours of education or permission of the Chairman of the Department. Credit value: Three semester hours: Three class hours per week for one semester. (May not be counted for credit in addition to Psychology 339.)



**340K. Psychology of the Handicapped Child**

The psychology of all types of handicapped children and a consideration of the attendant emotional and social problems. Regular lectures augmented by those of visiting specialists.

Prerequisite: Twelve semester hours of Education, or permission of Chairman of Department. Credit value: Three semester hours. Three class hours per week for one semester. (May not be taken in addition to Psychology 340.)

**341f. Principles in Guidance**

Consideration is given to the general meaning, importance, and function of guidance together with a survey of techniques and the evaluation of outcomes.

Prerequisite: Six hours in Education and Junior standing. Credit value: Three semester hours. Three lectures per week for one semester.

**343K. Clinical Psychology**

A study of clinical problems, case study methods and discussion of psychological tests used in intelligence, personality and aptitudes with analysis and interpretation of results.

Prerequisite: Twelve semester hours in Education, or permission of Chairman of the Department. Credit value: Three semester hours. Three lectures per week for one semester. (May not be counted for credit in addition to Psychology 343.)

**344s. Recent Educational Trends**

Movements which have been important in the development of American education receive major attention. Consideration is also given to the relation of present educational trends to the war emergency.

Prerequisite: Six hours in Education and Junior standing. Credit value: Three semester hours. Three lectures per week for one semester.

**347K. Individual Room Planning and Activities in the Elementary Grade**

Designed to aid teachers in planning work to meet the needs of the individual child. The possibilities of differentiating instruction in large classes will be explored. Outside reading for the course will be selected to meet the needs of the individual teacher.

Prerequisite: Twelve semester hours in Education. Credit value: Three semester hours. Three lectures per week for one semester.

**349. Teaching of the Social Studies in the Elementary Grades**

The course will consider programs of instruction and procedures, as well as more detailed techniques in the teaching of specific units in the social studies. Consideration will be given to the function of social studies in an integrated program.

Prerequisite: Six hours in Education and Junior standing. Credit value: Three semester hours. Three lectures per week for one semester.

**350K. Trends and Practices in Remedial Reading**

This course is designed especially for teachers of intermediate, junior high-school and senior high-school students. There will be an examination and appraisal of significant researches in the field of remedial reading. Attention will also be given to the analysis and diagnosis of individual cases of reading retardation; corrective and remedial procedures; and practical application of suggested techniques to classroom situations.

Prerequisite: Twelve semester hours in Education, or permission of the Chairman of the Department. Credit value: Three semester hours. Three class periods per week for one semester.

**352. Abnormal Psychology**

Suggestibility and hypnotism; dreams; nervous and mental disorders; mental effect of drugs; normal and abnormal motivation; the concept of insanity; spiritualistic phenomena.

Prerequisite: Twelve semester hours in Education, or permission of the Chairman of the Department. Credit value: Three semester hours. Three lectures per week for one semester. (May not be counted for credit in addition to Psychology 352.)

**355. Mental and Educational Measurement**

Introduction to measurement in education. Typical methods of measuring intelligence, character, and achievement. Elementary statistical terms and processes. Preparation for use of mental and educational tests.

Prerequisite: Six hours in Education and Junior standing. Credit value: Three semester hours. Three lectures per week for one semester.

**356. The Technique of Speech Correction**

The technique of speech correction, involving diagnosis of speech defects and disorders, phonetics, principles of speech correction, and clinical practices in speech correction.

Prerequisite: Twelve semester hours in Education, or permission of the Chairman of the Department. Credit value: Three semester hours. Three lectures per week for one semester. (May not be counted in addition to Public Speaking 356.)

**357. Mental Hygiene and the Problems of Children**

A study of the conditions and factors essential for healthful mental development. Methods of developing the personality of the child will be treated with special stress on the problems peculiar to the school child.

Prerequisite: Twelve semester hours in Education, or permission of the Chairman of the Department. Credit value: Three semester hours. Three lectures per week for one semester. (May not be counted in addition to Psychology 357.)

**359f. Philosophy of Education**

Educational principles governing aims, curricula, methods, and organization; relation of individual to society, the social frontier, moral and religious education, antinomic principles of education; functions of family, church, school and state in the education of children; the historical development of modern democratic concepts of education.

*Prerequisite:* Six hours in Education and Junior standing. Credit value: Three semester hours. Three lectures per week for one semester.

**383. A Workshop in the Development of Basic Educational Materials for Non-English Speaking Children**

Previous workshops have produced "A Manual of Aids and Devices for Teaching Beginning Non-English Speaking Children" and teaching materials for the second and third year levels, respectively. The workshop for this summer will prepare teaching materials for the fourth and fifth year levels.

*Prerequisite:* Twelve semester hours in Education, or permission of the Chairman of the Department. Credit value: Three semester hours. Five conference periods and six additional hours of laboratory work per week for one semester.

**384. A Workshop in the Development of Basic Materials for Non-English Speaking Children**

A seminar which deals with problems developed in Education 383.

*Prerequisite:* Twelve semester hours in Education, or permission of the Chairman of the Department. Education 384 must be taken concurrently with Education 383. Five lecture periods and six additional hours of laboratory per week for one semester.

**385. A Seminar in Course of Study Production**

The chief interest of this course will be the actual construction of courses of study to be used in the El Paso Public schools, tentative plans contemplate a revision of the courses of study now in use for high-school English, high-school science, high-school social studies, and social studies for grades 6, 7, and 8.

*Prerequisite:* Twelve semester hours in Education or permission of the Chairman of the Department. Credit value: Three semester hours. Five conference periods and six additional hours of laboratory work per week.

**386. A Seminar in Course of Study Production. An Extension of Education 385**

*Prerequisite:* Twelve semester hours in Education, or permission of the Chairman of the Department. Education 386 must be taken concurrently with Education 385. Credit value: Three semester hours. Five conference periods and six additional hours of laboratory work per week.

**389. Classroom Use of Audio-Visual Equipment and Materials**

Consideration will be given to various kinds of equipment and material associated with audio-visual education, and useful to the classroom teacher. Practical teaching materials in relation to different kinds of equipment will be developed. Some opportunity will be provided for classroom demonstrations.

Prerequisite: Twelve semester hours in Education, or permission of the Chairman of the Department. Credit value: Three semester hours. Three lecture hours per week for one semester.

**98. Thesis Course for Master's Degree**

Prerequisite: Twelve semester hours of advanced courses in Education; graduate standing; permission of Chairman of Department. Credit value: Six semester hours.

**Elementary****314f. Child Psychology**

A study of the changes which take place in the life of the child as related to the processes of elementary education.

Prerequisite: Education 301 and Sophomore standing. Credit value: Three semester hours. Three lectures per week for one semester.

**318s. Introduction to Elementary Education**

An introduction to teaching in the elementary grades. Attention given to guiding learning through activities of children.

Prerequisite: Education 301 and Sophomore standing. Credit value: Three semester hours. Three lectures per week for one semester.

**320s. Children's Literature**

A knowledge of children's literature is one primary aim of the course; the other is the administration of the recreational reading program and its relation to the content subjects. Special reading may be done at the level in which the student is most interested.

Prerequisite: Six hours in Education and Junior standing. Credit value: Three semester hours. Three lectures per week for one semester.

**328f. Observation of Teaching in the Elementary School (Formerly Education 28a)**

A study of the principles of teaching and the observation of class work. A minimum of five hours weekly in the elementary classroom will be required during the semester, more time being assigned if necessary.

Prerequisite: Education 314 and 318. Credit value: Three semester hours. Two lectures and five laboratory hours per week for one semester.

**328Ts. Student-Teaching in the Elementary School (Formerly Education 28b.)**

The construction of lesson plans, and teaching under supervision. One hour daily for five days a week is required during the semester. The course may follow or be taken concurrently with Education 328.

Prerequisite: Education 314, 318 and 328. Credit value: Three semester hours. Five laboratory hours per week for one semester.

**331Tf. Methods and Materials of Instruction in the Elementary School**

*This is an intensive study of methods for the elementary schools, with emphasis centered upon reading, social studies, arithmetic, and science. It includes observations, as well as a survey of the literature in each field.*

Prerequisite: Education 314 and 318. Credit value: Three semester hours. Two lectures and three laboratory hours per week for one semester.

**376. Teaching and Supervision of Music in the Elementary Level**

The study of procedures in the teaching of music in the first six grades. The child voice, its development and classification. Introduction of notation, all kinds of song materials, rhythm bands, appreciation methods and creative music for children.

Prerequisite: Education 318 and four hours of music. Three class periods per week for one semester. Credit value: Three semester hours.

**High School**

**316f. Psychology of Adolescence**

A study of the nature and development of the individual through the adolescent period as related to the processes of secondary education. Emphasis is placed on the nature of individual differences and especially on the development of proper habits and the correct integration of behavior patterns into a socially desirable personality.

Prerequisite: Education 301 and Sophomore standing. Credit value: Three semester hours. Three lectures per week for one semester.

**317s. An Introduction to High-School Teaching**

Basic principles of high-school teaching and high-school management are considered.

Prerequisite: Education 301 and Sophomore standing. Credit value: Three semester hours. Three lectures per week for one semester.

**321K. Methods of Teaching Commercial Subjects**

Subject matter and methods for teaching secretarial courses, book-keeping, arithmetic, and allied subjects in high school.

Prerequisite: Business Administration 21 and 314 and Education 317. Credit value: Three semester hours. Three lecture hours per week for one semester. (May be counted for credit in Business Administration.)

**327f. Observation of Teaching in the High School (Formerly 27a)**

A study of the principles of teaching and the observation of class work.

Prerequisite: Education 316 and 317. Credit value: Three semester hours. One hour daily for five days a week for one semester.

**327Ts. Student Teaching in the High School (Formerly Education 27b)**

The construction of lesson plans and teaching under supervision.

Prerequisite: Education 316, 317 and 327. Credit value: Three semester hours. One hour daily for five days a week for one semester.

**376k. Teaching and Supervision of Music in the Junior and Senior High School**

The study of procedure in the teaching of music in the upper level grades and in high school. General treatment of choral and instrumental music; music appreciation, theory and integration. Public school music as it is related to the life and needs of a community is fully studied.

Prerequisite: Education 317 and six hours of music. Three class periods per week for one semester. Credit value: Three semester hours.

**377. Methods and Administration of Band Supervision**

Band organization, teaching methods, promotion of program in community, instrumentation plans, equipping and housing of the band.

Prerequisite: Education 317 and nine hours of music. Three class periods per week for one semester. Credit value: Three semester hours.

**ENGINEERING AND DRAWING**

PROFESSORS DECKER, THOMAS; ASSISTANT PROFESSOR McDILL;

INSTRUCTORS BALLENTINE, COLEMAN, HASSLER, NELSON

**ENGINEERING****01f. The Engineering Profession**

A series of eight lectures designed to acquaint the freshman engineering student with the profession of engineering and the various fields of endeavor within the profession.

Required of all entering freshman engineering students.

Credit value: Zero hours. Semi-monthly lectures throughout the semester.

**510s. Elements of Electrical Engineering**

The direct-current electric circuit, simplification of electric networks, the magnetic circuit, magnetic properties of iron and steel, induced and generated electromotive forces, transients, force on a conductor, measuring instruments, electric fields, magnetic fields, conduction in solids and liquids, and the interlinking of electric and magnetic fields.

Prerequisite: Physics 12a and registration in Mathematics 13b. Credit value: Five semester hours. Fee: \$4.00. Four lectures and three laboratory hours per week for one semester.

**312f. Elements of Mechanisms**

A study of the laws which govern the motion of machine parts; graphic analyses are made of various mechanisms, the motions produced, and the velocities and accelerations of the parts; a study of linkages, sliding and rolling contact, gears, and gear teeth, wheels in trains, cams, belts, ropes and chains, differential motion, and pulley blocks.

Prerequisite: Mathematics 803, Drawing 302, and Physics I. Credit value: Three semester hours. Fee: \$2.00. Two lectures and three laboratory hours per week for one semester.

**316f. Elementary Plane Surveying**

The elements of plane surveying, including the care and adjustment of instruments; land surveying; traverses; leveling; the different systems of notekeeping; the usual computations used in plane surveying; and an elementary discussion of precision.

Prerequisite: Mathematics 803 and Drawing 302. Credit value: Three semester hours. Fee: \$2.00. Two lectures and three laboratory hours per week for one semester.

**614. Plane Surveying (Summer Work)**

The theory of plane surveying, including the care and adjustment of instruments; land surveying; traverses; leveling; determination of meridian; topographic surveying; mapping; the different systems of notekeeping; the usual computations used in plane surveying; and an elementary discussion of precision.

Prerequisite: Mathematics 803 and Drawing 302. Credit value: Six semester hours. Five hours of lecture and thirty-two hours of field work per week for six weeks. Fee: \$4.00.

**415a. Statics**

Coplanar, concurrent, parallel, and nonconcurrent forces; concurrent parallel, and nonparallel forces in space; friction; centroids and centers of gravity; and moment of inertia, and radius of gyration. Exercises in the laboratory will include graphical solutions of problems.

Prerequisite: Drawing 302, registration in Physics 12b or 413, and registration in Mathematics 13b. Credit value: Four semester hours. Fee: \$4.00. Three lectures and three laboratory hours per week for one semester.

**515a. Statics**

Covers topics outlined in Engineering 415 plus laboratory exercises in kinematics.

Prerequisite: Drawing 302, registration in Physics 12b or 413, and registration in Mathematics 13b. Credit value: Five semester hours. Fee: \$4.00. Three lectures and six laboratory hours per week for one semester.

**220f. Topographic Surveying**

The use of the level, transit, and plane table in mapping areas for construction and geological problems.

Prerequisite: Mathematics 803, Drawing 302, and Junior standing. Credit value: Two semester hours. Fee: \$2.00. One lecture and three laboratory hours per week for one semester.

**322s. Mine and Route Surveying**

(a) Theory and practical application of simple, reverse, and compound curves; rights-of-way; cross sections; and estimates.

(b) Theory and calculations connected with shaft plumbing, underground connections, steep transit sights, and conditions peculiar to mine surveying.

The classwork is equally divided between a and b, and the laboratory field work is devoted entirely to a.

Prerequisite: Engineering 614. Credit value: Three semester hours. Fee: \$2.00. Two lectures and three laboratory hours per week for one semester.

**224. Mine Surveying; Summer Field Work**

A practical field course in mine surveying. A complete survey and map of one of the mines in the vicinity of the college are required. Students are required to pay all expenses for their transportation and board while on this trip.

Prerequisite: Engineering 322. Credit value: Two semester hours. Fee: \$2.00. Eight hours daily for two weeks, immediately following the close of the Spring semester.

**326f. Engineering Economics**

Application of economics to engineering and industrial problems which require a knowledge of engineering for their solution.

Prerequisite: Economics 312 and senior standing in any engineering course. Credit value: Three semester hours. Three lectures per week for one semester.

**431s. Electrical Circuits and Machines**

Theory of direct and alternating current circuits and machinery; comparison of direct with alternating current for various uses in mining, metallurgical, and electro-chemical work; machine characteristics; motor starting and controlling devices; distribution systems; protective devices; motor applications; electrical hoisting systems; and power factor correction. For non-electrical engineering students.

Prerequisite: Physics 12 or 413, and Mathematics 13. Credit value: Four semester hours. Fee: \$4.00. Three lectures and three laboratory hours per week for one semester. (To be offered in the Fall semester 1948-1949.)



**434f. Strength of Materials**

Stresses and strains, in tension, and in shear; riveted and welded joints; torsion of shafts; shear and moment in beams; stresses in beams; deflection of beams; fixed and continuous beams; beams of two materials; beams of constant strength; resilience; combined stresses; Euler's, Rankine's and the straight-line column formulae; columns in general; deflection of beams by area moment method; and curved beams and hooks. Laboratory tests will be made for tensile and compressive stresses in wood, iron, steel, and cement; bending and torsional stresses will be determined on specimens where practical.

Prerequisite: Engineering 415, or 515. Credit value: Four semester hours. Fee: \$4.00. Three lectures and three laboratory hours per week for one semester.

**335a. Masonry and Reinforced Concrete**

Lectures on natural stone, building stone, brick, mortars, and cements. Lectures, recitations, and problems pertaining to reinforced concrete construction, including strength of concrete in compression; reinforcing steel in tension; percentage of steel required; bond required in reinforcing bars; diagonal tension; designing of columns, beams, and slabs; and discussions relating to eccentric loading.

Prerequisite: Engineering 434. Credit value: Three semester hours. Three lectures per week for one semester.

**236a. Construction Methods**

A study and discussion of construction processes, including planning, equipment, material handling, safety, workers' health, personnel relations, and public relations.

Prerequisite: Senior standing. Credit value: Two semester hours. Two lectures per week for one semester.

**237f. Tunneling and Blasting**

Methods of excavation and material handling in tunneling and hard-rock foundation. Handling of explosives, placement of charges, safety precautions, ventilation.

Prerequisite: Senior standing. Credit value: Two semester hours. Two lectures per week for one semester.

**238f. Dynamics**

Principles of dynamics and application to engineering problems; motion of a particle, translation, rotation, plane motion, work and energy, impulse, and momentum.

Prerequisite: Engineering 415 or 515. Credit value: Two semester hours. Two lectures per week for one semester.

**340a. Highway and Railway Engineering**

Location, design, construction, and maintenance of roads, highways, and railroads. A study of various types of wearing surfaces, costs, methods,

and economics of various types of roads and highways. Procedures, standards, and economics of railroad construction.

Prerequisite: Engineering 614. Credit value: Three semester hours. Three lectures per week for one semester.

**341f. Public Water Supplies**

Sources, storage, treatment, and distribution of water for domestic and commercial use, including discussion of the planning, financing, construction, and maintenance of water supply systems.

Prerequisite: Engineering 454 and Chemistry 801. Credit value: Three semester hours. Three lectures per week for one semester.

**342s. Sewerage and Sewage Disposal**

A study of sewer systems, their planning, construction and maintenance; and the treatment and disposal of sewage.

Prerequisite: Engineering 341. Credit value: Three semester hours. Three lectures per week for one semester.

**243f. Stresses in Framed Structures**

Deflection of trusses and beams with simple applications of stress analysis in design of framed structures. Laboratory work in the design of plate girders, simple framed trusses, and steel mill-type buildings.

Prerequisite: Engineering 434. Credit value: Two semester hours. Fee: \$2.00. Six laboratory hours per week for one semester.

**344s. Structural Design and Theory**

Advanced structural design in concrete, steel and timber structure, including the complete analysis of structures.

Prerequisite: Engineering 243 and Engineering 335. Credit value: Three semester hours. Fee: \$2.00. Nine laboratory hours per week for one semester.

**246f. Contracts and Specifications**

A study of elements of contracts and specifications, including discussion of the legal problem of contractual relations:

Prerequisite: Junior standing. Credit value: Two semester hours. Two lectures per week for one semester.

**348f. Soil Mechanics and Foundations**

A study of problems in soil stability, stress distribution, compressibility, lateral earth pressure, settlement of structures, choice of foundation types.

Prerequisite: Engineering 515 and Senior standing. Credit value: Three semester hours. Three lectures per week for one semester.

**350s. Heat Engineering**

A study of the principles of thermodynamics, properties of gases, saturated and superheated vapors, calorimeters and mechanical mixtures; fuels, combustion, and flue gas analysis; boilers, engines, and their auxiliaries; turbines.

**Prerequisite:** Mathematics 13, and Physics 12 or 612. Credit value: Three semester hours. Three lectures per week for one semester.

**354f. Hydraulics**

Physical properties of fluids, hydrostatics, energy and momentum equations, metering instruments, flow of liquids through pipes, orifices, and over weirs, and flow in open channels.

**Prerequisite:** Physics 12 or 612, and Mathematics 13. Credit value: Three semester hours. Three lectures per week for one semester. (To be offered in the Spring semester 1948-1949.)

**454s. Hydraulics**

The same as Engineering 354, but with additional work done in the laboratory.

**Prerequisite:** Physics 12 or 612, and Mathematics 13. Credit value: Four semester hours. Fee: \$4.00. Three lectures and three laboratory hours per week for one semester.

**857. Alternating-Current Circuits**

Theory of alternating currents in single-phase and in polyphase balanced and unbalanced circuits; instantaneous and effective current and voltage, power, vector algebra, wave analysis, coupled circuits, measurements, transmission line calculations, wave filters, symmetrical components, short-circuit calculations, and transients.

**Prerequisite:** Engineering 510. Credit value: Eight semester hours. Fee: \$4.00 per semester. Three lectures and three laboratory hours per week for two semesters.

**358s. Heat Engineering**

A study of condensers, pumps, air compressors, internal-combustion engines, and the use and calibration of pressure, temperature, and velocity measuring instruments used in mechanical engineering.

**Prerequisite:** Engineering 350. Credit value: Three semester hours. Fee: \$2.00. Two lectures and three laboratory hours per week for one semester.

**466s. Direct-Current Machines**

A study of direct-current machines, including construction, armature windings, armature reaction, commutation, characteristics, operation, starting and speed control of motors, regulating devices, efficiency, testing, rating, and applications.

**Prerequisite:** Engineering 357a. Credit value: Four semester hours. Fee: \$4.00. Three lectures and three laboratory hours per week for one semester.

**868. Alternating-Current Machines**

Theory of synchronous generators, transformers, polyphase and single-phase induction motors, synchronous motors, alternators in parallel, synchronous converters, mercury vapor arc rectifiers, series motors, repulsion

motors, and starting, control, and regulating auxiliaries. Efficiency, testing, rating, and applications are covered.

Prerequisite: Engineering 857 and 466. Credit value: Eight semester hours. Fee: \$4.00 per semester. Three lectures and three laboratory hours per week for two semesters.

### **370s. Machine Design**

Study of the forces, stresses, and resultant design of various machine elements.

Prerequisite: Engineering 312, 238, and 434. Credit value: Three semester hours. Fee: \$2.00. Two lectures and three laboratory hours per week for one semester.

### **71. or 371. Advanced Engineering Problems**

Original investigation of special problems in the student's field, the problem to be selected by the student with the approval of the Chairman of the Department.

Prerequisite: Senior standing and consent of the Chairman of the Department. Credit to be arranged, but not to exceed three credit hours per semester for two semesters. Laboratory fee: \$2.00 per semester.

## **DRAWING**

### **301fs. Engineering Drawing**

For all engineering students. Freehand lettering, orthographic projection, auxiliary views, sectional views, dimensioning, cams, gears, assembly and detail drawings, and pictorial methods.

Prerequisite: One year of high-school mechanical drawing or Drawing 203. Credit value: Three semester hours. Fee: \$2.00. Two lectures and seven hours of supervised drawing per week for one semester.

### **302fs. Descriptive Geometry**

Principal, auxiliary, and oblique views; straight and curved line problems; planes; intersection and development of surfaces; single-curved, warped, and double-curved surfaces; mining problems; perspective drawings.

Prerequisite: Drawing 301. Credit value: Three semester hours. Fee: \$2.00. Two lectures and seven hours of supervised drawing per week for one semester.

### **203fs. Mechanical Drawing**

An introductory course for freshman engineering students who do not present mechanical drawing for entrance. Intended to serve as preparation for Drawing 301. Use of instruments, drafting technique, lettering, orthographic projection, geometrical construction, conventions, and symbols.

Credit value: Two semester hours, but may not be used to satisfy requirements for engineering degrees. Fee: \$2.00. Two lectures and four hours of supervised drawing per week for one semester.

**ENGLISH AND SPEECH**

PROFESSOR SONNICHSEN; ASSOCIATE PROFESSOR BRADY; ASSISTANT  
PROFESSORS MOSES, EGG, JAMES, LEACH; INSTRUCTORS ANDERSON,  
BALL, BONIFACE, COLLINGWOOD, FRANCIS, HUTCHINS,  
LUBARR, MILLER, PONSFORD

**ENGLISH**

For the degree of Bachelor of Arts twelve semester hours in English are required—English 1 and English 12 or 12Q. English 1 and English 310 or 324 are required for the degree of Bachelor of Science in Mining Engineering; English 1 and English 12 or 12Q for the degree of Bachelor of Science in the Sciences. English majors are advised to take English 12, but may elect English 12Q instead of English 12. Either English 12 or English 12Q may be presented as prerequisite to any advanced course in English.

**A. Elementary English**

A preliminary course for students to whom English is a second language. Intended to serve as preparation for English 1a.

Dictation, pronunciation, oral summaries, approved styles of note-taking, composition. May not be used to satisfy foreign language or English requirements.

Credit value: Six elective hours. Three class periods per week for two semesters.

**1. Freshman English**

A basic course required of all Freshmen designed to help the student organize his information, clarify his thinking, and improve his written expression. Practice in writing is the first object of the course, but emphasis is also placed on reading for ideas and style; on exercises and drills to promote correctness in usage and grammar; on use of the library; and on the enlargement of vocabulary.

Credit value: Six semester hours. Three class periods per week for two semesters.

**1a. Freshman English**

Repetition of the first semester of English 1.

**1Q. Special Freshman English**

A course for exceptionally well prepared students with a special interest in writing. Reading assignments will include specimens of all types of good contemporary writing. Each student will be encouraged to turn in the best work he can do in various forms and styles.

Prerequisite: An average of at least *B* in high-school English or consent of the instructor.

Credit value: Six semester hours. Three class periods per week for two semesters.

**1Qa. Special Freshman English**

Repetition of the first semester of English 1Q.

**302. Pre-Freshman English**

An introductory course for students unprepared to take English 1. Those whose entrance examinations or class exercises show a definite need for such a course will be required to register for English 302 on recommendation of the head of the English Department.

Credit value: Three semester hours. Three class periods per week for one semester.

**303. Pre-Freshman English**

A continuation of English 302.

Prerequisite: English 302 or recommendation of the head of the English Department. Credit value: Three semester hours. Three class periods per week for one semester.

**310. Technical Writing**

For engineering students and others specializing in technical subjects. Training in assembling and evaluating technical information, outlining, preparing reports and specifications, and expressing effectively the students' own ideas.

Prerequisite: English 1. Credit value: Three semester hours. Three class periods per week for one semester. (To become English 324 in 1948-1949.)

**12. Outline History of English Literature**

Survey of English literature from the beginning to the present time with emphasis on major works and authors. Two essays on the life or literature of the periods covered are required of the student during each semester. English 12 is recommended for English majors.

Prerequisite: English 1. Credit value: Six semester hours. Three class periods per week for two semesters.

**12a. Outline History of English Literature**

Repetition of the first semester of English 12.

**12Q. English and American Literature of Today**

A course designed to replace English 12 for students not expecting to specialize in English. The reading includes novels, short stories, plays, poetry, and various types of nonfiction. Most of the material is by present-day writers, though examples of writing from earlier periods are frequently read for purposes of comparison and explanation. The object of the course is to help the student to orient himself in the world of the present through a study of its literature, and to help him to explore various kinds of reading in which he may find pleasure and profit throughout life. Two essays are required each semester on reading done outside the class.

Prerequisite: English 1. Credit value: Six semester hours. Three class periods per week for two semesters.

**12Qa. English and American Literature of Today**

Repetition of the first semester of English 12.

**312Q. English and American Literature of Today**

The first semester of English 12Q offered for Engineering students and others in need of three hours independent credit in literature. Prerequisite: English 1. Credit value: Three semester hours. Three class periods per week for one semester.

**320. Shakespeare: The Earlier Plays**

Detailed study of some of the plays composed before 1601, with a rapid reading of others belonging to the same period.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours. Three class periods per week for one semester.

**321. Shakespeare: The Later Plays**

Detailed study of some of the great tragedies, followed by a rapid reading of other plays written after 1600.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours. Three class periods per week for one semester.

**322. Victorian Poetry**

Consideration of the poetry of Browning primarily, and study of such noteworthy minor poets as Arnold, Clough, James Thompson, and others.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours. Three class periods per week for one semester.

**323. Victorian Poetry**

Consideration of the poetry of Browning primarily, and study of such noteworthy minor poets as Swinburne, Morris, D. G. Rossetti, Christina Rossetti, and others.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours. Three class periods per week for one semester.

**324. Technical Writing**

For engineering students and others specializing in technical subjects. Training in assembling and evaluating technical information, outlining, preparing reports and specifications, and expressing effectively the students' own ideas.

Prerequisite: English 1 and Junior standing. Credit value: Three semester hours. Three class periods per week for one semester. Formerly English 310. (To be offered in 1948-1949.)

**325. Writing**

A course for students seriously interested in developing their power of written expression.

Prerequisite: English 12 or 12Q and consent of the instructor. Credit value: Three semester hours. May be taken a second time for credit. Three class periods per week for one semester.

**327. An Outline History of the English Novel**

A study of prose fiction in England from the Middle Ages to the nineteenth century, particular attention being given to the novels of Richardson, Fielding, Smollett, Sterne, Walpole, Burney, Jane Austen, and Scott.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours. Three class periods per week for one semester.

**328. An Outline History of the English Novel**

A continuation of English 327, with study of typical works of Dickens, Thackeray, the Brontës, George Eliot, Hardy, and Meredith.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours. Three class periods per week for one semester.

**329. English Romantic Poetry, the Earlier Phase**

Rapid survey of Romanticism in the eighteenth century, followed by a more detailed consideration of the works of Burns, Scott, Coleridge, and Wordsworth.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours. Three class periods per week for one semester.

**330. English Romantic Poetry, the Later Phase**

Consideration of the works of Byron, Shelley, Keats, and some of their contemporaries.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours. Three class periods per week for one semester.

**331. The Drama in England since 1660**

A study of the representative plays of the Restoration, of the eighteenth and nineteenth centuries, and of such modern playwrights as Jones, Pinero, Barker, St. John Hankin, Shaw, Coward, Galsworthy, Maugham, Dane, etc.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours. Three class periods per week for one semester.

**332. The Development of the American Drama**

A study of the drama of the Colonial and Revolutionary Periods, followed by a consideration of the development of the drama to modern times. Attention will be given to such modern playwrights as the Mackayes, Thomas, Sheldon, Kaufman and Connelly, Crothers, Hughes, Davis, Anderson, Rice, Hellman, Howard, Behrman, and O'Neill.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours. Three class periods per week for one semester.

**334. Contemporary Poetry**

The social and intellectual movements which arose in England and America between late Victorian times and the immediate past, and the expression of these movements in verse.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours. Three class periods per week for one semester.



**336. American Literature**

A study of the chief American poets and prose writers between the Revolution and the Civil War.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours.  
Three class periods per week for one semester.

**337. American Literature**

A study of the most important poets and prose writers in America from the Civil War to the present.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours.  
Three class periods per week for one semester.

**339. Early Eighteenth-Century Prose and Poetry**

The background of the English Classical Period in the writers of the Restoration. The philosophic, religious, social, and literary ideas and ideals of the period. The work of Defoe, Addison and Steele, Swift, Pope, and their contemporaries.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours.  
Three class periods per week for one semester.

**340. Later Eighteenth-Century Prose and Poetry**

The decline of Neo-Classicism and the rise of Romanticism. Johnson, Boswell, Goldsmith, and Burke will be specially considered on the one hand; Thomson, Gray, Collins, Young, Chatterton, Cowper, Blake, and Burns on the other.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours.  
Three class periods per week for one semester.

**341. The Short Story**

*The literature and technique of the short story; its development from earliest times; typical specimens from the short-story literature of England, America, Russia, France, and other countries.*

Prerequisite: English 12 or 12Q. Credit value: Three semester hours.  
Three class periods per week for one semester.

**342. Life and Literature of the Southwest**

A study of the social background of the Southwest and its reflection in literature.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours.  
Three class periods per week for one semester.

**355. The American Novel**

A careful study of the representative American novels and novelists from 1850 to the present.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours.  
Three class periods per week for one semester.

**356. Elizabethan and Jacobean Drama**

Development of the comedy, the tragedy, and the chronicle history from earlier types of the drama in England. Plays of Lyly, Marlowe, Greene, Beaumont and Fletcher, Dekker, Johnson, Middleton, Webster, and their contemporaries, related so far as possible to the literary fashions that prevailed at various times during the period.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours. Three class periods per week for one semester.

**357. The English Novel since 1900**

A survey of the English novel since 1900, concentrating on such figures as H. G. Wells, Arnold Bennett, John Galsworthy, Somerset Maugham, Aldous Huxley, J. B. Priestley, D. H. Lawrence, James Joyce, and Virginia Woolf.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours. Three class periods per week for one semester.

**358. The English Language**

A course designed to give an understanding of the growth, structure, and relationships of the English language with special emphasis on the development of modern English. Attention will be given to the theory of language and its function in human life and progress; the great language groups; development from the Anglo-Saxon to modern times.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours. Three class periods per week for one semester.

**359. The English Language**

A continuation of English 358. English in recent times. Dialects; usage; influence of scientific developments, war, radio, etc. Foreign elements; word building; other topics leading to an understanding and appreciation of the student's native language.

Prerequisite: English 12 or 12Q. Credit value: Three semester hours. Three class periods per week for one semester.

**98. Thesis Course for the Master's Degree**

Confer with the Chairman of the Department immediately after registration.

Prerequisite: Twelve semester hours of advanced courses in English; graduate standing. Credit value: Six semester hours.

**SPEECH****301. Basic Principles of Speech**

Study and practice of the basic principles of speech applied to extemporaneous discourse. Emphasis on the development of poise and confidence; directness of approach; the conversational spirit; appropriate bodily action; and the use of the voice.

Credit value: Three semester hours. Three class periods per week for one semester.

**303. Voice and Diction**

A course intended to develop clear articulation and enunciation, correct pronunciation, proper vowel placement, and control of the speaking voice. It is required of all speech majors and strongly recommended for radio majors and others interested in speech improvement.

Credit value: Three semester hours. Three class periods per week for one semester. (May not be counted for credit in addition to Radio 303.)

**305. Basic Principles of Speech**

A continuation of Speech 301. The work includes the composition and delivery of original speeches with emphasis on finding subjects and materials, organization, outlining, composition, and practice in public presentation.

Prerequisite: Speech 301, 303, or 307. Credit value: Three semester hours. Three class periods per week for one semester.

**307. Speech for Foreign-Language Students**

A course designed to aid in the use and comprehension of oral English and in the acquisition of sounds and rhythms of standard speech. Open to any student interested in the correction of a speech defect.

Credit value: Three semester hours. Three class periods per week for one semester. (May not be counted for credit in addition to Radio 303 or Speech 303.)

**310. Argumentation and Debate**

A study of the principles and techniques of public discussion and debate. Training in phrasing and analyzing current questions; outlining and briefing cases for debate; selecting and using evidence; organizing refutation and rebuttal; together with a study of proof, applied logic, and the common fallacies. Practice in formal public debate.

Prerequisite: Sophomore standing. Credit value: Three semester hours. Three class periods per week for one semester.

**311. Argumentation and Debate**

A continuation of Speech 310.

Prerequisite: Speech 310. Credit value: Three semester hours. Three class periods per week for one semester.

**312. Play Production**

A general survey of the various fields in the theater: Directing, Technical Production, Acting, and Designing. The student will be given training and experience in directing plays and in constructing scenery. The course is intended to prepare him to produce plays in schools and communities.

Prerequisite: Sophomore standing or six semester hours of Speech. Credit value: Three semester hours. Three class periods per week for one semester.

**313. Play Production**

A continuation of Speech 312 with emphasis on acting, designing, and make-up. Characterization will be studied through work on individual roles and group rehearsing of scenes. Experience will be gained in designing costumes and scenery and in planning stage arrangement.

Prerequisite: Speech 312. Credit value: Three semester hours. Three class periods per week for one semester.

**314. Acting**

A course designed as a laboratory in which a student may develop his ability to analyze a character and create a role. Scenes from classic drama, one-act plays, radio plays, and pantomime will be used in the development of acting technique.

Prerequisite: Sophomore standing. Credit value: Three semester hours. Three class periods per week for one semester.

**319. Business and Professional Speaking**

A practical course designed to help the student meet situations in the business and professional world. Stress will be laid on the principles of organization and presentation of material and on the technique of after-dinner speeches, sales talks, introductions, public discussions, political speeches, etc.

Prerequisite: Six hours of Speech. Credit value: Three semester hours. Three class periods per week for one semester.

**320. Oral Interpretation**

A course designed to develop an adequate mental and emotional response to the meaning of literature. The attention given to the sound and meaning of words should lead to improvement in voice, pronunciation, and enunciation, and to greater general effectiveness in speech.

Prerequisite: Six hours of Speech and Junior standing. Credit value: Three semester hours. Three class periods per week for one semester.

**322. Radio Drama**

A course in the technique of acting before the microphone and of directing radio drama. Classes are conducted in the two large radio studios of the college, and finished productions are broadcast over campus station KVOF as well as over El Paso stations.

Prerequisite: Six hours of speech and Junior standing. Credit value: Three semester hours. Three class periods per week for one semester. (May not be counted for credit in addition to Radio 322.) Formerly Speech 321.

**323. Techniques of Public Discussion**

A course intended to develop skill in leading and participating in discussion groups of all kinds. Attention is given to forums, panels, round tables, and symposiums, and to actual practice in the discussion of current problems.

Prerequisite: Six hours of Speech and Junior Standing. Credit value: Three semester hours. Three class periods per week for one semester.

**327. The Development of the Early Theater**

Prerequisite: Junior standing. Credit value: Three semester hours. Three class periods per week for one semester.

**330. Advanced Acting and Directing**

Prerequisite: Speech 312 and 313, or 314. Credit value: Three semester hours. Three class periods per week for one semester.

**331. Advanced Acting and Directing**

Prerequisite: Speech 330. Credit value: Three semester hours. Three class periods per week for one semester.

**356. Disorders of Speech**

The cause, diagnosis, and therapy of the most common disorders of speech, including delayed and spastic speech, aphasia, and stuttering. Also consideration of articulatory disorders such as sound substitutions, lispings, and cleft-palate speech.

Prerequisite: Junior standing. Credit value: Three semester hours. Three class periods per week for one semester.

**COLLEGE PLAYERS**

**202. College Players**

The campus acting and producing organization. It presents one major production each term. Members are required either to act or to do technical work in connection with the major production, and in addition must appear in one student-directed play.

Prerequisite: Consent of the instructor. Credit value: Two semester hours (one hour per semester). Three hours per week for two semesters.

**216. College Players (second year)**

Further work with the campus acting and producing organization, with increased responsibility and more advanced assignments.

Prerequisite: Speech 202 and consent of the instructor. Credit value: Two semester hours (one hour per semester). Three hours per week for two semesters.

**222. College Players (third year)**

Advanced work with the campus acting and producing organization.

Prerequisite: Speech 216 and consent of the instructor. Credit value: Two semester hours (one hour per semester). Three hours per week for two semesters.

**232. College Players (fourth year)**

Final year of work with the campus acting and producing organization.

Prerequisite: Speech 222 and consent of the instructor. Credit value: Two semester hours (one hour per semester). Three hours per week for two semesters.

**GEOLOGY AND GEOGRAPHY**

PROFESSORS QUINN, NELSON; ASSISTANT PROFESSOR STRAIN

**GEOLOGY****301f. Physical Geology**

A critical study of the principles of physiography and dynamic and structural geology.

Prerequisite: None. Credit value: Three semester hours. Fee: \$2.00. Three lectures and two laboratory hours per week for one semester.

**302a. Historical Geology**

A critical study of the principles of stratigraphy, paleogeography and organic developments.

Prerequisite: Geology 301. Credit value: Three semester hours. Fee: \$2.00. Three lectures and two laboratory hours per week for one semester.

**316f. Mineralogy**

Crystallography and blowpipe analysis; a study of the crystallographic, chemical, and physical characteristics of minerals and mineral determination by blowpipe methods. Classification of minerals.

Prerequisite: Chemistry 1 (Chemistry 801 for engineering students). Credit value: Three semester hours. Fee: \$2.00. One lecture and six laboratory hours per week for one semester. (Given also during Summer Session, 1947.)

**317a and 217a. Mineralogy**

Determinative mineralogy; a continuation of 316f. Largely devoted to the identification of minerals by physical characteristics.

Prerequisite: Geology 316. Credit value: Geology 317—Three semester hours; Geology 217—Two semester hours. Fee: \$2.00. 317s—One lecture and six laboratory hours per week for one semester. 217s—Six laboratory hours per week for one semester. (Given also during Summer Session, 1947.)

**418f. Invertebrate Paleontology**

A systematic study of the structure and classification of important invertebrates together with their development and geological significance.

Prerequisite: Geology 301 and 302. Credit value: Four semester hours. Fee: \$4.00. Two lectures and six laboratory hours per week for one semester.

**419s. Paleontological Stratigraphy**

A comprehensive study of the stratigraphy of North America with special emphasis on that of West Texas and the Southwest.

Prerequisite: Geology 418. Credit value: Four semester hours. The last two hours of this course count as advanced. Fee: \$4.00. Two lectures and six laboratory hours per week for one semester.

**421f. Advanced General Geology**

Certain topics of general geology such as stratigraphy, petrology, and structural geology are expanded in an advanced and quantitative manner.

Prerequisite: Geology 217 or 317; and Geology 302. Credit value: Four semester hours. Fee: \$4.00. Three lectures and three laboratory hours per week for one semester.

**322s. General Economic Geology**

A general consideration of economic occurrences of mineral deposits and rocks with considerable attention given to those of Texas and the Southwest.

Prerequisite: Geology 217 or 317; and Geology 302. Credit value: Three semester hours. Three lectures per week for one semester.

**323f. Structural Geology**

A course treating of the forces causing deformation of the crust, the physical properties of rocks and their reactions under deforming forces. Special attention is given to primary and secondary rock structures particularly with reference to structural features important in mining, petroleum and engineering operations.

Prerequisite: Twelve semester hours in Geology. Credit value: Three semester hours. Three lectures per week for one semester. (Given during Long Session, 1947-1948; to be offered in Long Session, 1948-1949.)

**427s. Petrology and Petrography**

The determination, origin, and subsequent history of minerals and rocks as revealed in mineral grains and thin sections by the petrographic microscope.

Prerequisite: Geology 421 in advance or concurrently. Credit value: Four semester hours. Fee: \$4.00. Three lectures and three laboratory hours per week for one semester.

**361s. Advanced Economic Geology**

Discussions and original papers on new developments in the field of Economic Geology. Methods of geological examination; preparation of geological reports and manuscripts; bibliography research; applications of the principles of ore deposition to the search for ore; advanced consideration of the mineral deposits of Texas.

Prerequisite: Fifteen hours in geology, or permission of Chairman of the Department. Credit value: Three semester hours. Fee: \$2.00. Two lectures, three laboratory hours per week for one semester.

**463s. Geology of Petroleum, the Fuels, and the Non-Metals**

Study of the origin, migration, and accumulation of petroleum and natural gas; the origin and occurrence of fuels with emphasis on coals; and the study of the important economic occurrence of the non-metallic mineral deposits, stressing those occurring in Texas and the Southwest.

Prerequisite: Fourteen hours of geology, or permission of Chairman of the Department. Credit value: Four semester hours. Fee: \$4.00. Three lectures and three laboratory hours per week for one semester.

**264f. Field Geology**

A field study of a limited area near the College, and the application of quantitative standards to the mapping and geological field studies. An acceptable typed thesis will be required for the successful completion of this course.

Prerequisite: Six semester hours of advanced courses in Geology. Credit value: Two semester hours. One lecture and one afternoon in the field per week for one semester.

**074s. Geology Field Trip**

A survey trip of about two weeks covering districts of geological interest.

Prerequisite: Senior standing or permission of Head of Department of Geology. Credit value: None, but required for graduation in the Bachelor of Science in Mining Engineering. Fee: \$50.00.

**GEOGRAPHY****303s. Elements of Geography**

A study of the major geographic realms emphasizing the relation of man to the various natural elements of his environment. This course together with Geology 301 may be used to satisfy six semester hours of the science requirement for the Bachelor of Arts degree, but may not be used as a prerequisite for any other course in Geology.

Prerequisite: None. Credit value: Three semester hours. Fee: \$2.00. Two lectures and three laboratory hours per week for one semester.

**304s. Elements of Geography**

A continuation of Geography 303.

Prerequisite: Geography 303. Credit value: Three semester hours. Fee: \$2.00. Two lectures and three laboratory hours per week for one semester. (Omitted in 1947-1948; to be offered in Long Session, 1948-1949.)

**HISTORY, GOVERNMENT AND SOCIOLOGY**

PROFESSOR WALLER; ASSOCIATE PROFESSORS GREGORY, PORTER, STRICKLAND; ASSISTANT PROFESSOR QUINN; INSTRUCTORS MCNEELY, BRICE

**HISTORY****301. History of the United States to 1865: Principles of American Democracy**

Survey of the factors that have affected the growth of American democracy; European background, American environment, development of social and political institutions, conflict with imperial control and separation, constitution making—state and national, Jeffersonian republicanism and Jacksonian democracy, the Civil War.

Credit value: Three semester hours. Three lectures per week for one semester.



**302. History of the United States since 1865: United States and World Affairs**

Deals with the Industrial Revolution and its influence upon American industry; economic imperialism; American participation in world affairs; the First World War and after; economic depression; The New Deal; and the Second World War.

Credit value: Three semester hours. Three lectures per week for one semester.

**304. History of England**

Survey of the social, economic, political and intellectual development of Britain and the British Empire to 1660.

Credit value: Three semester hours. Three lectures per week for one semester.

**305. History of England**

Survey of the social, economic, political and intellectual development of Britain and the British Empire, 1660 to the present.

Credit value: Three semester hours. Three lectures per week for one semester.

**308. History of Europe, 1500-1815**

Brief survey of conditions at the end of the Middle Ages; rise of nationalities and absolutism; colonial expansion; social and economic progress; the Old Regime and the intellectual awakening; the French Revolution and the Napoleonic Era.

Credit value: Three semester hours. Three lectures per week for one semester.

**309. History of Europe, 1815-1914**

Brief survey of conditions at the time of Napoleon's downfall; restoration and reaction; industrial revolution; growth of nationalism and democracy; unification of Germany and Italy; the Balkan States and the Near Eastern problems; economic imperialism; Political Socialism and State Socialism; Triple Alliance and Entente Cordiale; background of World War I.

Credit value: Three semester hours. Three lectures per week for one semester.

**312. The Ancient World**

A survey of the ancient civilizations—Babylonian, Chaldean, Assyrian, Persian, and Egyptian; more intense study of the Greek history with its art and culture and its spread over the Mediterranean world; Roman history with its system of law, its early beginnings and expansion over Europe, rise and decline of the Roman Empire.

Prerequisite: Sophomore standing or six semester hours in History.  
Credit value: Three semester hours. Three lectures per week for one semester.

**313. Medieval Europe**

Renaissance and Reformation; cultural development of the Middle Ages; social, artistic, and economic phases of the Renaissance; development of feudalism and rise of city-states; causes and results of the Reformation; period of discovery.

Prerequisite: Sophomore standing or six semester hours in History.

Credit value: Three semester hours. Three lectures per week for one semester.

**317. A General Survey of the History of Texas**

Prerequisite: Sophomore standing or six semester hours in History.

Credit value: Three semester hours. Three lectures per week for one semester.

**320. History of Texas: Colonization and the Republic, 1821-1845**

A critical study of the social, economic, and political factors involved in the Anglo-American settlement of Texas; the establishment of the Republic and its history until annexation to the United States.

Prerequisite: Twelve semester hours of History. Credit value: Three semester hours. Three lectures per week for one semester.

**323. Europe, 1870-1900**

A survey of the different countries of Europe and their internal developments to the close of the century.

Prerequisite: Twelve semester hours in History. Credit value: Three semester hours. Three lectures per week for one semester.

**324. Europe after 1900**

Europe in the twentieth century. The last years of peace, the World War, the peace treaties.

Prerequisite: Twelve semester hours in History. Credit value: Three semester hours. Three lectures per week for one semester.

**325. History of the United States, 1607-1787**

Settlement and development of the Colonies; representative principles of government; westward expansion of the Colonies with the resulting economic and political problems; Mercantilism and the British Imperial policy; colonial participation in the English and French conflicts in America; the American Revolution; state-making and constitutional development during and after the Revolution.

Prerequisite: Twelve semester hours in History. Credit value: Three semester hours. Three lectures per week for one semester.

**326. History of the United States, 1787-1829**

Confederation and Constitution; formulation of foreign policy; Jeffersonian Democracy and Hamiltonian Federalism; expansion and development of Jacksonian Democracy; rise of nationalism and conflict over states' rights.

Prerequisite: Twelve semester hours in History. Credit value: Three semester hours. Three lectures per week for one semester.

**330. History of the Far East**

*Modernization of the nations of the Far East with particular attention given to China and Japan. The social, political, economic, and intellectual aspects of this transformation are considered in the light of the impact of Western influences.*

Prerequisite: Twelve semester hours in History. Credit value: Three semester hours. Three lectures per week for one semester.

**331. Russian History**

Prerequisite: Twelve semester hours of History. Credit value: Three semester hours. Three lectures per week for one semester.

**335. History of the United States, 1829-1850**

Jacksonian Democracy; expansion of the United States into the Southwest and Far West; development of the controversy over states' rights; slavery and cotton capitalism.

Prerequisite: Twelve semester hours in History. Credit value: Three semester hours. Three lectures per week for one semester.

**336. History of the United States, 1850-1865**

*Slavery controversy; manifest destiny; party history, breakdown of the Whigs, rise of the Republican Party, new leaders; Civil War, its causes, economic and social factors, military operations, results.*

Prerequisite: Twelve semester hours in History. Credit value: Three semester hours. Three lectures per week for one semester.

**347. Latin America: The Colonial Period**

This course gives a survey of the history and institutional development of Spanish and Portuguese America in the Colonial period.

Prerequisite: Twelve semester hours in History, or six semester hours of History and Junior standing. Credit value: Three semester hours. Three lectures per week for one semester.

**348. Latin America: The National Period**

This course deals with the empires and republics of Latin America after the Wars for Independence.

Prerequisite: Twelve semester hours in History, or six semester hours of History and Junior standing. Credit value: Three semester hours. Three lectures per week for one semester.

**351. The French Revolution and Napoleon**

Prerequisite: Twelve semester hours in History, or six semester hours of History and Junior standing. Credit value: Three semester hours. Three lectures per week for one semester.

**353. A Survey of Political and Social Britain from 1815-1895**

Tory England, the beginnings of reform, leaders and events in the making of modern Britain.

Prerequisite: Twelve semester hours in History. Credit value: Three semester hours. Three lectures per week for one semester.

**354. Britain and the Empire from 1895 to the Present**

The Boer War, the Empire and foreign relations, the Liberal party and internal reform, the World War, the Treaty, Britain since 1919.

Prerequisite: Twelve semester hours in History. Credit value: Three semester hours. Three lectures per week for one semester.

**355. History of the United States since the Civil War, 1865-1900**

Reconstruction, industrial development and regulation, sectionalism, grangers, greenbackers, populism, silver crusade, passing of the frontier, civil service reform, rise of imperialism.

Prerequisite: Twelve semester hours in History. Credit value: Three semester hours. Three lectures per week for one semester.

**356. Contemporary History of the United States, 1900 to the Present**

Rise of the United States as a world power, growth of trusts, imperialism and world trade, progressivism, Roosevelt and Wilson, World War and reconstruction, Republican prosperity, depression and world unrest.

Prerequisite: Twelve semester hours in History. Credit value: Three semester hours. Three lectures per week for one semester.

**358. The Old South**

Expansion, development, life and institutions of the southern United States from the late eighteenth century to the destruction of the old regime in the war for southern independence, 1861-1865.

Prerequisite: Twelve semester hours in History. Credit value: Three semester hours. Three lectures per week for one semester.

**359. The Anglo-American Southwest**

American expansion into Texas and the Far Southwest; filibustering expedition into Texas; Pike and early exploratory expeditions; the Austins and American colonization of Texas; Santa Fe trade; Texas Revolution and Independence; Texas Republic, English and American Rivalry in Texas and California; Mexican War and acquisition of California.

Prerequisite: Twelve semester hours in History. Credit value: Three semester hours. Three lectures per week for one semester.

**98. Thesis Course for the Master's Degree**

Confer with the departmental head immediately after registration.

Prerequisite: Twelve semester hours of advanced courses in history; graduate standing. Credit value: Six semester hours.

**GOVERNMENT****310 and 10. American Government**

The government of the United States—national, state, and local—with special emphasis upon the Constitutions of the United States and of Texas. Fulfills the legislative requirement of a course on the Constitutions of the United States and of Texas.

Prerequisite: Sophomore standing. Credit value: For 310 or 10a, three semester hours; for 10, six semester hours. Three lectures per week for one semester for 310; three lectures per week for two semesters for 10.

**323. The Governments of England and the British Commonwealth of Nations**

The rise of English political institutions; a critical analysis of the English and British systems of government with special emphasis on their practical workings; the larger problems of the British Empire and Commonwealth of Nations.

Prerequisite: Government 10. Credit value: Three semester hours. Three lectures per week for one semester.

**324. The Governments of Continental Europe**

The governments and politics of France, Italy, Switzerland, Germany, and Russia, with some attention given to lesser European countries; recent revolutionary and constitutional changes are emphasized.

Prerequisite: Government 10. Credit value: Three semester hours. Three lectures per week for one semester.

**330. International Politics**

The principles and political problems involved in foreign policies and international relations of the states of the world with particular emphasis on nationalism and imperialism.

Prerequisite: Government 10. Credit value: Three semester hours. Three lectures per week for one semester.

**331. International Organization and Administration**

The development of the machinery and procedure of international government for the peaceful settlement of international disputes.

Prerequisite: Government 10. Credit value: Three semester hours. Three lectures per week for one semester.

**334. The American National Government and Administration**

The making of the national government; the principles of the Federal system; Citizenship and Constitutional Rights; the organization of Congress; the National Executive and National Court System.

Prerequisite: Government 10. Credit value: Three semester hours. Three lectures per week for one semester.

**335. American National Government and Administration**

A general view of the powers of Congress; National Executive and National Court System; the organization, personnel work of the Civil Service and of the Budget Bureau.

Prerequisite: Government 10. Credit value: Three semester hours. Three lectures per week for one semester.

**343. The Foreign Policies of the United States**

The historical development and present organization of the Department of State and of the Foreign Service; the nature of the foreign relations power and the conduct and control of American foreign relations.

Prerequisite: Government 10. Credit value: Three semester hours. Three lectures per week for one semester.

**344. The Conduct of American Foreign Affairs**

The origin and development of fundamental principles of American diplomacy concerning neutrality, recognition, naturalization and expatriation, and promotion of trade and commerce with special attention devoted to post-war problems.

Prerequisite: Government 10. Credit value: Three semester hours. Three lectures per week for one semester.

**SOCIOLOGY****310. Introduction to Sociology**

Study of the individual in group action in which the student has a part. Includes broad consideration of heredity and environment factors, and a study of the major social institutions and processes. Different schools of sociological thought from early times to the present are reviewed, with emphasis on current interpretations and problems.

Prerequisite: Sophomore standing. Credit value: Three semester hours. Three lectures per week for one semester.

**311. Social Problems**

Physical and mental defectiveness considered from the sociological viewpoint; defects in social organization; poverty and dependency. Social controls applied to social problems.

Prerequisite: Sophomore standing. Credit value: Three semester hours. Three lectures per week for one semester.

**320. Fields of Social Work**

A survey of the various fields of social work now operating, both public and private in sponsorship, with particular attention to those organized on regional and national bases; and an examination of the methods used in the various fields considered.

Prerequisite: Sociology 310 and 311. Credit value: Three semester hours. Three lectures per week for one semester.

**333. Juvenile Delinquency**

A study of the causative factors in juvenile delinquency. Attention is given to the methods of social analysis, the clinical approach, the interrelation of physical, mental and social factors in delinquency. Emphasis upon the problem of delinquency in wartime.

Prerequisite: Sociology 310 and 311. Credit value: Three semester hours. Three lectures per week for one semester.

**336. Comparative Cultures**

A study of the folkways, changing mores and the growth of democratic ideas in the United States and the Republic of Mexico. Special emphasis upon the fusion of cultures along the border.

Prerequisite: Sociology 310 and 311. Credit value: Three semester hours. Three lectures per week for one semester.

**345. The Community**

Methods of studying the community; social anatomy; a comparative study of communities; analysis of the underlying forces and social successes which make for natural groups and institutions to meet industrial, religious, educational, governmental, and leisure-time needs; disorganization and reorganization of modern communities.

Prerequisite: Sociology 310 and 311. Credit value: Three semester hours. Three lectures per week for one semester.

**347. Population Problems and Immigration**

Population movements and their social control; problems of population, distribution, and assimilation. Social questions attending the complex composition of the American people; and examination of the ethnic origin and racial characteristics of "old" and "new" immigrants, taking up the economic, political, and social aspects of their migration to America. Consideration of Americanization programs and immigration laws.

Prerequisite: Sociology 310 and 311. Credit value: Three semester hours. Three lectures per week for one semester.

**348. Criminology**

Causes, characteristics, and relief of crime, with consideration of mental, physical, economic and social factors in crime. Attention to the juvenile offender and the social agencies for his adjustment. A sociological analysis and evaluation of penal methods.

Prerequisite: Sociology 310 and 311. Credit value: Three semester hours. Three lectures per week for one semester.

**349. The Family**

A study of the development of the family as a social institution. Emphasis is placed upon the American family and the problems which confront it today.

Prerequisite: Sociology 310 and 311. Credit value: Three semester hours. Three lectures per week for one semester.

**350. Child Welfare Problems**

The development of the rights of the child in relation to parental rights, as evidenced in the child labor laws, juvenile court, adoption, mother's aid legislation, the changing status of the illegitimate child, and public organization for more effective administration of other laws relating to child dependency, delinquency and neglect.

Prerequisite: Sociology 310 and 311. Credit value: Three semester hours. Three lectures per week for one semester.

**JOURNALISM AND RADIO**

ASSOCIATE PROFESSOR WILLIAMS; INSTRUCTOR HICKS, SCARRITT, SNELSON;  
ASSISTANT JOHNSON, RADIO CONSULTANT KARL O. WYLER

**JOURNALISM****301f. Introduction to Fields of Journalism**

Orientation course, giving an introduction in newspaper practice and the essentials of the field of journalism to acquaint the student who may be planning to major in that field with the problems ahead.

Credit value: Three semester hours. Three lectures per week for one semester.

**302s. Introduction to Fields of Journalism**

Continuation of Journalism 301.

Prerequisite: Journalism 301 or permission of the Chairman of the Department. Credit value: Three semester hours. Three lectures per week for one semester.

**307f. Elementary Photography**

Learning of the normal order of the photographic process. Discussion of lenses and cameras along with the actual photographic process: exposure, development, fixing and contact printing. Faults and corrective processes and certain-special types of work are treated.

Credit value: Three semester hours. Fee: \$2.00. Two lectures and four laboratory hours per week for one semester.

**308s. Fields of Photography**

A continuation of Elementary Photography with special emphasis on press photography. A survey of the various fields of photography with a practical working knowledge taught of high-speed cameras and their most effective uses.

Prerequisite: Journalism 307 or permission of the Chairman of the Department. Credit value: Three semester hours. Fee: \$2.00. Two lectures and four laboratory hours per week for one semester.

**311f. News Gathering and Reporting**

Instruction and practice in interviewing and writing: discussion of news sources, news values, and various types of news stories: study of the organization of the newspaper staffs and the news gathering associations. Required of all students majoring in journalism. (Formerly, Journalism 12a.)

Prerequisite: Sophomore standing including English 1. Credit value: Three semester hours. Two lectures and four practice hours per week for one semester.



**312s. News and Copy Reading**

Theory of writing newspaper copy and writing headlines. Special instruction by leading newspaper men and women. Regular assignments on college publications. Required of all students majoring in journalism. (Formerly, Journalism 12b.)

Prerequisite: Sophomore standing including English 1. Credit value: Three semester hours. Two lectures and four practice hours per week for one semester.

**313f. History and Principles of Journalism**

Includes a study of the growth of the modern American newspaper, with emphasis on great figures in American journalism, and a study of the principles of the newspaper and the magazine of today.

Prerequisite: Sophomore standing including English 1. Credit value: Three semester hours. Three lectures per week for one semester.

**316f. Comparative Journalism**

Study of foreign and American publications.

Prerequisite: English 1 and Sophomore standing. Credit value: Three semester hours. Three lectures per week for one semester.

**316K. Current Events**

A study of current events in the daily newspaper and interpretation of these current events in regard to the social welfare, future and progress of the world.

Prerequisite: Sophomore standing. Credit value: Three semester hours. Three lectures per week for one semester.

**322s. The Special Article**

Methods of gathering material for newspapers and magazine feature stories through interviews, research, and observation; study of feature story form and style; discussion of markets for literary material; practice in writing feature stories.

Prerequisite: Journalism 311 and 312, or English 12. Credit value: Three semester hours. Three lectures per week for one semester.

**321K. Fundamentals of Advertising**

Relation of advertising to other business functions; study of campaigns, appropriations, and media; survey of activities of those engaged in advertising work.

Prerequisite: Junior standing. Three class hours per week for one semester. May not be counted for credit in addition to Business Administration 321K. (Formerly Journalism 315.)

**324f. News Editing**

Study of newspaper style books; instruction in headline writing; study of newspaper makeup; practice in reading newspaper copy for errors in fact, English, and style; also practice in writing headlines and re-writing news stories.

Prerequisite: Journalism 311 and 312, or Journalism 313. Credit value: Three semester hours. Two lectures and four practice hours per week for one semester.

**325f. Small Newspaper Production and Management**

Advanced study of newspaper technique and of the problems of newspaper management. Detailed study of makeup, advertising problems, news policies, and business management, leading to a summer internship on Texas newspapers.

Prerequisite: Journalism 311 and 312. Credit value: Three semester hours. Three lectures per week for one semester.

**326K. Advertising, Copywriting and Special Layouts**

Instruction and practice in the technique of preparing various types of copywriting and layouts. Study of marketing media, direct mail advertising, circulars and store layouts.

Prerequisite: Business Administration 321K or Journalism 321K. Credit value: Three semester hours. Two class and four practice hours per week for one semester. May not be counted for credit in addition to Business Administration 326K. (Formerly Journalism 326.)

**329s. Principles of Typography**

Study of type, printing technique and methods, and history of printing, with emphasis on practical problems in typography that confront the newspaper editor and advertising manager.

Prerequisite: Journalism 311 or 312. Credit value: Three semester hours. Two lectures and four practice hours per week for one semester.

**340s. Editorial Writing and Direction**

Development and importance of the editorial; subject matter, policies, purposes, structure, and style; the editorial page; features, and makeup; editorial training, responsibility, and opportunity.

Prerequisite: Journalism 311 and 312. Credit value: Three semester hours. Three lectures per week for one semester.

**341s. Pictorial Journalism**

The development of modern day methods of photography, and its uses in the newspaper and magazine fields today. A study of picture editing news cameras, covering picture assignments, photoengraving, elements of picture layouts.

Prerequisite: Journalism 311 and 312. Credit value: Three semester hours. Fee: \$2.00. Two lectures and four laboratory hours per week for one semester.

**RADIO**

The radio courses offered are based on practicability and completeness of training. The objectives of the program are to provide training and practical experience in all fundamentals of Radio Broadcasting and to determine which phase of radio broadcasting is best suited to the ability and talent

of each student. Facilities include modern, well equipped campus studios and control room, with a direct wire to Radio Station KTSM for the broadcasting of campus programs. The Department also owns and maintains its own campus radio station KVOF, which operates on a frequency of 560 kc. and a broadcasting schedule of six hours daily. The Department has its own separate newsroom where an Associated Press teletype machine operates on a twenty-four hour basis. This machine is maintained for the Department through the cooperation of Radio Station KROD and the El Paso Times.

**302a. Fields of Radio Broadcasting**

A continuation of Journalism 301 with emphasis on the opportunities in the various fields of radio broadcasting. Application of theories and materials learned will be put in practice in the class laboratory.

Prerequisite: Journalism 301 or Radio 301 or permission of the Chairman of the Department. Credit value: Three semester hours. Three lectures per week for one semester.

**303. Voice and Diction**

A course intended to develop clear articulation and enunciation, correct pronunciation, proper vowel placement, and control of the speaking voice. This course is recommended for radio majors interested in speech improvement.

Credit value: Three semester hours. Three lectures per week for one semester. (May not be counted for credit in addition to Speech 303.)

**305. Radio News Processing**

A study of the leading world news telegraph services, news writing styles pertinent to radio broadcasting, and the techniques of processing news material for radio broadcast. Laboratory practice under actual radio newsroom conditions is made possible by use of 24-hour daily leased wire Associated Press facilities in the KVOF (campus radio station) newsroom.

Prerequisite: Journalism 301 or Radio 301 or by consent of the Chairman of the Department. Credit value: Three semester hours. Three class periods per week for one semester.

**314f. Introduction to Broadcasting**

A preliminary survey of broadcasting as a profession, with a general study of radio methods and broadcasting techniques.

Prerequisite: Radio 302 or consent of the Chairman of the Department. Credit value: Three semester hours. Two lectures and four laboratory hours per week for one semester. Fee: \$2.00.

**315a. Basic Studio Practices**

Principles of announcing, basic microphone techniques. Practice announcing, with special attention to diction and interpretation. The development of an effective, friendly radio personality.

Prerequisite: Radio 314 or consent of the Chairman of the Department. Credit value: Three semester hours. Two lectures and one four-hour laboratory per week for one semester. Fee: \$2.00.

**320f. Advanced Announcing and Radio Acting**

Development of skill in radio characterization and interpretation through studio production of all types of radio material, under actual broadcasting conditions. Introduction to Radio Writing.

Prerequisite: Six hours of radio courses and Junior standing. Credit value: Three semester hours. Two lectures and one four-hour laboratory per week for one semester. Fee: \$2.00.

**321a. Radio Production and Direction**

A practical course in script analysis, listener psychology, production procedures, sound effects, music, studio arrangements and casting. Actual program production using student producers and directors. Terminology of commercial broadcasting. Control room practices.

Prerequisite: Six hours of radio courses and Junior standing. Credit value: Three semester hours. Two lectures and one four-hour laboratory per week for one semester. Fee: \$2.00.

**322. Radio Drama**

A course in the technique of acting before the microphone and of directing radio drama. Classes are conducted in the two large radio studios of the College, and finished productions are broadcast over campus station KVOF as well as El Paso stations.

Prerequisite: Six hours of radio courses and Junior standing. Credit value: Three semester hours. Three lectures per week for one semester. (May not be counted for credit in addition to Speech 322.)

**330f. Program Building and Radio Writing**

A general study of radio station programming policies. Practical problems of assembling and writing various types of radio programs including interviews, forums, variety shows, educational programs, etc. Advanced production techniques.

Prerequisite: Six hours of radio courses and Junior standing. Credit value: Three semester hours. Two lectures and one four-hour laboratory per week for one semester. Fee: \$2.00.

**331s. Advanced Radio Production**

A practical workshop course for advanced students with previous experience in radio acting and producing. Each student will be assigned a script to produce under close supervision of the instructor. The student producer-director will be trained to evaluate, define and interpret the script, to analyze the characters, to audition and select the cast from among the members of the class, and to carry the program through rehearsals to an actual production.

Prerequisite: Radio 330 and six additional hours of radio courses. Credit value: Three semester hours. Two lectures and one four-hour laboratory per week for one semester. Fee: \$2.00.

**MATHEMATICS AND PHYSICS**

PROFESSOR KNAPP; ASSOCIATE PROFESSORS BARNES, LANE, PEARCE; ASSISTANT PROFESSOR MCMAHAN; INSTRUCTORS RESLEY, CALDWELL, SCHUMAKER, THREADCILL, PATTERSON, BOUMFALK, BAILEY

**MATHEMATICS**

As indicated in item six under degree requirements, six semester hours of Mathematics are required for the degree of Bachelor of Arts. 304 and either 309 or 307 may be used to satisfy this requirement. Students who wish a more complete course in *Mathematics* and students who plan to major or minor in Mathematics or in Physics, should take 803 in place of the courses mentioned above. Students who plan to major or minor in other sciences should see the descriptions of their majors and minors for Mathematics requirements. Students planning to major or minor in *Mathematics* or in *Physics*, should take *Mathematics* 208 in the second semester of the freshman year unless Solid Geometry is offered for entrance.

**803. Elementary Mathematical Analysis**

A course designed to give the student a good foundation for the study of calculus, the natural sciences, and engineering. The first two weeks are devoted to review of algebra. Those students not possessing a good working knowledge of algebra at the end of this period are transferred to *Mathematics* 305.

Prerequisite: One year of high-school geometry and one and one-half years of high-school algebra. Credit value: Eight semester hours. Four recitations per week for two semesters.

**304fs. Mathematical Analysis**

An introductory course designed for academic students unifying the basic ideas of algebra, trigonometry, and analytical geometry by means of the function concept. Not counted in addition to *Mathematics* 305.

Credit value: Three semester hours. Three recitations per week for one semester.

**305fs. Algebra**

A review of secondary-school and intermediate algebra for engineering students whose background in this subject is deficient.

Credit value: Three semester hours. Three recitations per week for one semester. Not counted in addition to *Mathematics* 304.

**307s. Mathematics of Investment .**

An elementary course in the theory and application of the mathematics of finance. Topics covered include logarithms, progressions, simple and compound interest, annuities, amortization, perpetuities. Credit earned may be applied toward the mathematics requirement or elective hours for the B.A. degree.

Prerequisite: *Mathematics* 304 or 305. Credit value: Three semester hours. Three recitations per week for one semester.

**208fs. Solid Geometry**

Required of candidates for engineering degrees who do not present solid geometry for entrance. This course or high-school solid geometry is required of all students beginning calculus. Counts toward academic degrees but not toward engineering degrees.

Prerequisite: One year of high-school geometry. Credit value: Two semester hours. Two recitations per week for one semester.

**309fs. Mathematical Analysis**

A continuation of Mathematics 304 and designed for students who do not plan to take other courses in mathematics.

Prerequisite: Mathematics 304 or 305. Credit value: Three semester hours. Three recitations per week for one semester.

**13. Calculus**

In this course differential calculus and integral calculus are carried on together. In differential calculus, special attention is given to the derivation of formulas and to the application of derivatives to the solution of problems in maxima, minima, rates, velocity, acceleration, and geometrical applications. The work in integral calculus drills the student in the integration of forms occurring in mechanics and physics; in evaluating areas and volumes, in finding centers of gravity, and in the derivation and application of the fundamental formulas by hydrostatics.

Prerequisite: Mathematics 208 unless solid geometry is presented for entrance, and Mathematics 803. Credit value: Six semester hours. Three recitations per week for two semesters.

**325fs. Calculus**

The topics of Mathematics 13 are extended to include the differentiation and integration of a wider class of functions and the applications of these processes to the solution of a wider range of problems: moments of inertia, series, approximations of definite integrals, partial differentiation, and multiple integrals.

Prerequisite: Mathematics 13. Credit value: Three semester hours. Three recitations per week for one semester.

**326s. Differential Equations**

A study of the common types of ordinary and partial differential equations of geometry, mathematics, mechanics, and electricity.

Prerequisite: Mathematics 13. Credit value: Three semester hours. Three lectures per week for one semester.

**333f. Theory of Equations**

Theory of polynomials, cubic and quartic equations, approximate methods, determinants, symmetric functions, and other topics.

Prerequisite: Mathematics 13. Credit value: Three semester hours. Three lectures per week for one semester.

**337s. Modern College Geometry**

A course in modern plane geometry involving an extension of some of the material of elementary geometry, together with an introduction to projective geometry. Properties of the triangle, properties of the circle, similitude, inversion, cross ratio, and principle of quality.

Prerequisite: Mathematics 13. Credit value: Three semester hours. Three lectures per week for one semester.

**341f. Analytical Mechanics**

Equilibrium and motion of a particle and a rigid body in two and three dimensions. May be counted as three advanced hours in Physics.

Prerequisite: Mathematics 13 and twelve credit hours in Physics. Credit value: Three semester hours. Three lectures per week for one semester. Not counted in addition to Physics 341. (Formerly Mathematics 41a.)

**342s. Analytical Mechanics**

Continuation of Mathematics 341. May be counted as three advanced hours in Physics.

Prerequisite: Mathematics 341. Credit value: Three semester hours. Three lectures per week for one semester. Not counted in addition to Physics 342. (Formerly Mathematics 41b.)

**PHYSICS****1. General Physics**

Credit value: Six semester hours. Fee: \$2.00 per semester. Three lectures, and two laboratory hours per week for two semesters.

**801. General Physics**

Designed primarily for pre-medical students. Mechanics, heat, electricity, magnetism, sound, and light. Physics 801 and 1 may not both be counted for credit by the same student.

Credit value: Eight semester hours. Fee: \$4.00 per semester. Four lectures and two laboratory hours per week for two semesters.

**303f. Introduction to Radio**

Theory and laboratory practice in those fundamentals of electricity which are needed as a foundation for the study of radio circuits and electron tube applications.

Credit value: Three semester hours. Fee: \$2.00. Two lectures and one three-hour laboratory period per week for one semester.

**304s. Fundamentals of Radio**

Elementary study of electron tube applications and radio circuits.

Prerequisite: Physics 303 or Physics 1. Credit value: Three semester hours. Fee: \$2.00. Two lectures and one three-hour laboratory period per week for one semester.

**12. Second-Year Physics**

First semester: light, electricity, and magnetism. Second semester: mechanics, heat, and sound. For students majoring or minoring in physics or in engineering courses other than civil or mining engineering. Covers the content of Physics 812 and Physics 222 from a more rigorous viewpoint. May be offered in place of 812 and 222 by students who decide to major in civil or mining engineering. The calculus is used throughout the course.

Prerequisite: Mathematics 13 concurrently and Physics 1. Credit value: Six semester hours. Fee: \$2.00 per semester. Three lectures and three laboratory hours per week for two semesters.

**812. Physics**

Includes a thorough grounding in kinematics, dynamics, statics, kinetics, and the elements of precision of measurements, properties of matter, thermometry, expansion, calorimetry, heat and work, change of state, vaporization, radiation, magnetism, the magnetic field, magnetic induction, electrostatics, electrodynamics, radioactivity.

Prerequisite: Mathematics 13 concurrently. Credit value: Eight semester hours. Fee: \$4.00 per semester. Three lectures and three laboratory hours per week for two semesters. (Replaced by Physics 612 and 413 beginning in 1948-1949.)

**612f. Physics**

Mechanics, heat, wave motion, and sound. For students in Civil and Mining Engineering.

Prerequisite: Mathematics 13 concurrently. Credit value: Six semester hours. Fee: \$4.00. Five lectures and three laboratory hours per week for one semester.

**413s. Physics**

Electricity, magnetism, and light. For students in Civil and Mining Engineering.

Prerequisite: Physics 612f and credit or registration in Mathematics 13. Credit value: Four semester hours. Fee: \$4.00. Three lectures and three laboratory hours per week for one semester. Neither Physics 612f nor Physics 413s may be counted for credit for a student who earns credit for Physics 12.

**222s. Sound and Light**

Prerequisite: Physics 812. Credit value: Two semester hours. Fee: \$2.00. One lecture and three laboratory hours per week for one semester.

**834. Electricity and Magnetism**

Prerequisite: Physics 12 or 812 and Mathematics 13. Credit value: Eight semester hours. Fee: \$4.00 per semester. Three lectures and three laboratory hours per week for two semesters. Not counted in addition to Physics 34. (Formerly Physics 34.)



**438f. Theory and Applications of Electron Tubes**

Principles of electronics and their application to vacuum tubes, covering the more important aspects of thermionic and gaseous conduction; includes photo-sensitive cells, rectifiers, thyratrons, cathode-ray oscillographs, and corresponding circuit elements.

Prerequisite: Mathematics 13 and Physics 12. Credit value: Four semester hours. Fee: \$4.00. Three hours of lecture and three hours of laboratory per week for one semester. Not counted in addition to Physics 38. (Formerly Physics 38a.)

**339f. Heat**

Advanced topics.

Prerequisite: Mathematics 13 and six semester hours of physics. Credit value: Three semester hours. Three recitations per week for one semester.

**340s. Light**

Advanced topics.

Prerequisite: Mathematics 13 and six semester hours of physics. Credit value: Three semester hours. Three lectures per week for one semester.

**341f. Analytical Mechanics**

Equilibrium and motion of a particle and of a rigid body in two and three dimensions. May be counted as three advanced hours in Mathematics.

Prerequisite: Mathematics 13 and twelve credit hours in Physics. Credit value: Three semester hours. Three lectures per week for one semester. Not counted in addition to Mathematics 34. (Formerly Physics 41a.)

**342s. Analytical Mechanics**

Continuation of Physics 341. May be counted as three advanced hours in mathematics.

Prerequisite: Physics 341. Credit value: Three semester hours. Three lectures per week for one semester. Not counted in addition to Mathematics 342. (Formerly Physics 41b.)

**445s. Electron Tube Circuits**

Continuation of Physics 438.

Prerequisite: Physics 438. Credit value: Four semester hours. Fee: \$4.00. Three hours of lecture and three hours of laboratory per week for one semester. Not counted in addition to Physics 38. (Formerly Physics 38b.)

**351f. The Particles of Modern Physics**

A study of gaseous ions, electrons, cathode rays, isotopes, alpha, beta, and gamma rays, positrons, neutrons, atomic nuclei, atomic fission, and the various accelerators of charged particles. The most recent developments and applications will be emphasized.

Prerequisite: Mathematics 13 and Physics 12. Credit value: Three semester hours. Three lectures per week for one semester.

**352a. The Particles of Modern Physics**

Continuation of Physics 351. Further study of positrons, neutrons, cosmic rays, mesons, artificial radioactivity, and atomic fission. A short introduction to wave mechanics is given.

Prerequisite: Physics 351. Credit value: Three semester hours. Three lectures per week for one semester.

**MINING AND METALLURGY**

PROFESSORS GRAHAM, THOMAS; ASSOCIATE PROFESSOR INCERSOLL;  
ASSISTANT PROFESSOR JENNES; INSTRUCTOR NELSON

**MINING****521f. Mining Methods**

A comprehensive study of mining methods, including prospecting, development, exploitation, earth and rock excavation, explosives, tunneling, shaft sinking, timbering, boring, underground transport, and hoisting.

Prerequisite: Geology 316, Drawing 302, and Physics 812. Credit value: Five semester hours. Five lectures per week for one semester.

**223a. Coal Mining**

The extraction, cleaning, and marketing of coal, and the manufacture of coke and collection of all the by-products are considered.

Prerequisite: Mining 521. Credit value: Two semester hours. Two lectures per week for one semester.

**231a. Mining Hygiene**

Lectures and recitations. Prevention of communicable diseases, personal hygiene, public health, food, air, water, soil, ventilation and heating, sewage disposal, disinfection, camp sanitation, mine sanitation, prevention of industrial diseases. The course is supplemented by field work in sanitary surveys, and drawing of apparatus. The course also includes work in first aid and rescue work.

Prerequisite: Junior standing. Credit value: Two semester hours. Two lectures per week for one semester.

**260f. Mine Plant**

A detailed study of underground transport, hoisting plant, skips and cages, compressed air plant, rock drills, mechanical ventilation, and drainage. Emphasis is placed on calculation of problems in connection with choice of equipment.

Prerequisite: Senior standing. Credit value: Two semester hours. Two lectures per week for one semester.

**261a. Mine Plant**

A continuation of the work given in Mining 260. The laboratory is devoted to a practical study of rock drills and drilling methods; and ventilation.

Prerequisite: Mining 260. Credit value: Two semester hours. Laboratory fee: \$2.00. One lecture and three laboratory hours per week for one semester.

**262a. Mine Plant Design**

The student is required, from a sampled mine or drilling exploration, to determine the value of the property, select a mining system, choose suitable equipment, and write a detailed report.

Prerequisite: Mining 260 and Mining 267. Credit value: Two semester hours. Fee: \$2.00. Six laboratory hours per week for one semester.

**267f. Management**

Mine examination, sampling, reporting, welfare, organization, financing, and other interesting management problems are considered in a lecture course given only to students who will complete the requirement for the Bachelor of Science degree by the end of the following Fall semester.

Prerequisite: Completion of requirements for the Bachelor of Science degree by the end of the following Fall semester. Credit value: Two semester hours. Two lectures per week for one semester.

**269a. Management**

A continuation of the work given in Mining 267.

Prerequisite: Mining 267. Credit value: Two semester hours. Two lectures per week for one semester.

**074a. Mining Trip**

At the end of the senior year, graduating seniors spend the last two weeks of the second semester on a trip of inspection which will include visits to the mining and metallurgical departments of companies within the scope of the planned itinerary. In 1947 the class visited properties in New Mexico, Colorado, and Arizona, but the route selected will be governed by conditions existing at the time of the trip.

Prerequisite: Completion of the requirements for the Bachelor of Science degree by the end of the following Fall semester. Credit value: None; but required for graduation. Fee: \$50.00.

**METALLURGY**

**321a. General Metallurgy**

Introductory course covering a description of the various processes for treating all the ordinary metals, with a calculation of slags and furnace charges.

Prerequisite: Chemistry 413, Physics 812, Geology 316 and 217. Credit value: Three semester hours. Three lectures per week for one semester.

**423f. Ore Dressing and Milling**

A study of the principles governing the processes employed in the liberation and separation of the minerals, including crushing and grinding, screening, classification, amalgamation, gravity concentration, magnetic

separation, and flotation. In the laboratory the student becomes familiar with milling machinery and methods of separation.

Prerequisite: Geology 217 and Physics 812. Credit value: Four semester hours. Fee: \$4.00. Three lectures and three laboratory hours per week for one semester.

#### **324s. Assaying**

The determination of gold, silver, and lead by fire methods in minerals, ores, and products of mills and smelters.

Prerequisite: Chemistry 323. Credit value: Three semester hours. Fee: \$2.00. One lecture and six laboratory hours per week for one semester.

#### **325f. Non-metallics**

A survey course of the non-metallic and ceramic industries, not including coal, oil or sulphur. Emphasis is placed upon the present economic utilization of, and possible future demands for, those minerals which are classed as non-metallic.

Prerequisite: Metallurgy 423 must have been completed, or if not, must be taken concurrently. Credit value: Three semester hours. Three lecture hours per week for one semester.

#### **252f. Principles of Copper Smelting**

In this course little attempt is made to study the mechanical features of copper-smelting. The place of roasting, smelting, and refining in the pyrometallurgical reduction of a copper ore is given the primary attention, coupled with the calculation of furnace charges and slags.

Offered subject to demand. Credit value: Two semester hours. Two lectures per week for one semester.

#### **253s. Electric Furnaces**

A foundation course in electric smelting and the commercial applications of the electric furnace.

Offered subject to demand. Credit value: Two semester hours. Two lectures per week for one semester.

#### **361f. Iron, Copper, and Lead**

A study of the metallurgy of the three common metals. One-third of the course will be devoted to calculations pertaining to the above subjects.

Prerequisite: Metallurgy 321. Credit value: Three semester hours. Three lectures per week for one semester.

#### **261f. Iron, Copper, and Lead**

This course is intended for those students who select the mining option and is the same as Metallurgy 361 except that the calculations are omitted.

Prerequisite: Metallurgy 321. Credit value: Two semester hours. Two lectures per week for one semester.

**362f. Metallurgy of Leaching Processes**

Study of the chemical and physical properties of the metals and such of their compounds as are of importance in connection with the leaching processes, the cyanide process, and leaching methods employed in the metallurgy of copper, lead, and zinc.

Prerequisite: Metallurgy 321. Credit value: Three semester hours. Fee: \$2.00. Two lectures and three laboratory hours per week for one semester.

**263f. Advanced Ore Dressing**

A study of the engineering features of ore dressing, including computations and design of bins, milling machinery, and mill circuits.

Prerequisite: Metallurgy 423. Credit value: Two semester hours. Two lectures per week for one semester.

**364s. Metallurgical Laboratory**

In this course the student receives an individual problem, or problems, which he handles as research work. At times this work will consist of problems submitted to the College from various fields of metallurgy.

Prerequisite: Metallurgy 361 and Metallurgy 362. Credit value: Three semester hours. Fee: \$2.00. Nine laboratory hours per week for one semester.

**264s. Metallurgical Laboratory**

This course handles part of the work covered by Metallurgy 364 and is intended for those students who wish to do some research work but cannot devote the time necessary for full credit toward graduation.

Prerequisite: Metallurgy 361. Credit value: Two semester hours. Fee: \$2.00. Six laboratory hours per week for one semester.

**265f. Ore Dressing and Milling**

Ore testing and mill design.

Prerequisite: Metallurgy 263 in advance or concurrently. Credit value: Two semester hours. Fee: \$2.00. Six laboratory hours per week for one semester. (Not to be offered after 1947-1948.)

**365s. Ore Dressing and Milling**

Ore testing and mill design.

Prerequisite: Metallurgy 263. Credit value: Three semester hours. Fee: \$2.00. Nine laboratory hours per week for one semester. (To be offered in 1948-1949.)

**473s. Metallography**

An elementary course in the metallography of various metals and products and the heat treatment of iron and steel.

Prerequisite: Metallurgy 261. Credit value: Four semester hours. Fee: \$4.00. Three lectures and three laboratory hours per week for one semester.

**074a. Metallurgical Trip**

At the present time this trip will be taken with Mining 074. When it is to the best interests of the metallurgical students to deviate from the route of the Mining 074 trip, such changes will be made, but in the main, the two trips will be taken together.

Prerequisite: Completion of the requirements for the Bachelor of Science degree by the end of the following Fall semester. Credit value: None, but required for graduation. Fee: \$50.00.

**MODERN LANGUAGES**

PROFESSORS RUFF, BACHMANN; VISITING PROFESSOR DANTON; ASSISTANT PROFESSORS SHARP, WEBB; INSTRUCTORS ABAT, GABRIEL, TAPPAN; ASSISTANT BOYLAN

Students entering with two units of high-school language will enter Course 1a or 801b (whichever is offered) in the same language. With three units they will enter 1b, and with four units they may enter 12a if their preparation seems adequate to the department; otherwise, they will be placed in 1b.

Students entering with one unit of high-school language and those who show exceptional proficiency may take a placement test to determine which course they should enter to their best advantage.

A student with no high-school language will register for Course 801a.

**FRENCH, GERMAN, AND SPANISH****801. Fundamentals of Reading, Writing and Speaking**

Oral drill, dictation, grammar, reading of elementary and intermediate texts, conversation, written exercises.

Credit value: Eight semester hours. Three recitation and two workshop hours per week for two semesters.

**1. Reading, Composition and Grammar**

Reading of intermediate texts; written exercises, dictation, grammar review.

Prerequisite: Course A or two admission units in the language. Credit value: Six semester hours. Three recitation hours per week for two semesters.

**12. Intermediate Readings in the Modern Period**

Selected readings from the nineteenth and twentieth centuries. Some grammar review, reports, conferences and outside readings.

Prerequisite: Course I or 801. Credit value: Six semester hours. Three recitations per week for two semesters.

**FRENCH****336f. Modern Drama: Early Period**

From Molière to Musset, including representative plays by outstanding classical and romantic dramatists such as Corneille, Racine, Dumas, Hugo and de Vigny.

Prerequisite: French 12. Credit value: Three semester hours. Three lecture hours per week for one semester.

**340s. Modern Drama: Later Period**

Representative plays from Dumas *filis* to Claudel, including the outstanding works of Augier, Becque, Brieux, Rostand, Bernstein, Lenormand, etc.

Prerequisite: French 12. Credit value: Three semester hours. Three lecture hours per week for one semester.

**358s. Contemporary Literature**

A consideration of the outstanding French authors since the turn of the century, including Barrès, Bazin, Bordeaux, Bourget, Duhamel, Gide and Romains. Outside reading and reports.

Prerequisite: French 12. Credit value: Three semester hours. Three lecture hours per week for one semester.

**377f. History of French Poetry**

A survey of French poetry from the early epics to the present day. Outside reading and reports.

Prerequisite: French 12. Credit value: Three semester hours. Three lecture hours per week for one semester.

SPANISH

**310s. Cultura hispanica**

Elementary and illustrated lectures in Spanish on general cultural aspects of the contemporary Spanish world. Each lecture will be followed by at least one recitation thereon with discussion of additional assigned topics. Extensive use of visual and recording aids to conversation. Intended for students who do not already speak Spanish. May not be used to satisfy language requirement. Conducted in Spanish.

Prerequisite: Course 15 or 801b. Credit value: Three semester hours. One lecture and two recitation periods per week for one semester.

**324s. Literary History of Mexico**

A survey of the principal movements and writers in Mexican literature. Emphasis on the modern novel. Reading of selected works in class. Outside assignments and reports.

Prerequisite: Spanish 12. Credit value: Three semester hours. Three lecture hours per week for one semester.

**328f. Golden Age Drama**

A study of the leading dramatists such as Lope de Vega, Tirso de Molina, Calderon de la Barca, Ruiz de Alarcón, Moreto and others. Readings of selected masterpieces; outside reading and reports.

Prerequisite: Spanish 12. Credit value: Three semester hours. Three lecture hours per week for one semester.

**333s. Masterpieces of Spanish Literature**

A survey of masterpieces of Spanish literature, including the *Libro de Buen Amor*, the *Celestina*, etc. Special consideration of their literary value and influence. At least four important works will be read in class. Outside reading and reports.

Prerequisite: Spanish 12. Credit value: Three semester hours. Three lecture hours per week for one semester.

**336f. Modern Drama: Early Period**

A study of the trends in the development of the Spanish drama from the latter part of the eighteenth century to the latter part of the nineteenth century. Readings from the dramatists Moratin, Martínez de la Rosa, Bretón de los Herreros, López de Ayala, Tamayo y Baus, etc.; outside reading reports.

Prerequisite: Spanish 12. Credit value: Three semester hours. Three lecture hours per week for one semester.

**339. The Cuento and Short Story**

A study of the various types of shorter fictional forms in Spain and Spanish America, from the time of Juan Manuel to the present. Emphasis on the modern period. Outside reading reports.

Prerequisite: Spanish 12. Credit value: Three semester hours. Three lecture hours per week for one semester.

**340s. Modern Drama: Later Period**

A study of the Spanish drama from the latter part of the nineteenth century to the present. Readings from the works of representative dramatists, including Echegaray, Pérez Galdós, Benavente, los Quinteros, etc.; outside reading reports.

Prerequisite: Spanish 12. Credit value: Three semester hours. Three lecture hours per week for one semester.

**357f. Advanced Composition and Grammar Review**

Examination of the best modern Spanish business, epistolary, journalistic and polemic styles. Original composition on topics of current interest.

Prerequisite: Spanish 12. Credit value: Three semester hours. Three lecture hours per week for one semester.

**358. Contemporary Literature**

A consideration of the movements in contemporary Spanish literature, with study of representative authors. Outside reading reports.

Prerequisite: Spanish 12. Credit value: Three semester hours. Three lecture hours per week for one semester.

**360s. The Regional and Historical Novel in South America**

A study of the famous regional and historical novels of South America, exclusive of Brazil. At least one representative author of each country or important region is read. Special attention to major regional language differences. Outside reading reports.



Prerequisite: Spanish 12. Credit value: Three semester hours. Three lecture hours per week for one semester.

**361f. Don Quixote**

An examination of the literary value and influence of the Quixote. Traditional and modern interpretations. The life and times of Cervantes. Collateral readings and reports.

Prerequisite: Spanish 12. Credit value: Three semester hours. Three lecture hours per week for one semester.

**362. The New World in Spanish Literature**

A literary study of the diaries, accounts and biographies of the Spanish explorers in the New World: Columbus' *Diario de Navegación*, Cortés' *Cartas de Relación*, etc. Special attention to the American Southwest.

Prerequisite: Spanish 12. Credit value: Three semester hours. Three lecture hours per week for one semester.

**364f. Contemporary Poets of Latin America**

A survey of the most significant works of the leading poets of Latin America. Special attention to the poets laureate of the various countries. Outside reports.

Prerequisite: Spanish 12. Credit value: Three semester hours. Three lecture hours per week for one semester.

**98. Thesis Course for the Master's Degree**

Confer with the departmental head immediately after registration.

Prerequisite: Twelve semester hours of advanced courses in Spanish; graduate standing. Credit value: Six semester hours.

**MUSIC**

PROFESSOR HEMMLE; INSTRUCTORS NEWMAN, SENNING

The Department of Music has as its chief aim not only to give ample opportunity for musical expression to the students on the campus, but also to give a full, rounded and practical course of training to the students planning to enter the field of instrumental or choral direction.

Any student having completed the course of study as outlined will have fulfilled all the requirements of the State Board of Education for full-time teaching in the Public Schools of Texas, either primary or secondary.

**THEORY**

**1. Theory**

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.

Open to all students. Credit value: Six semester hours. Three lectures and two workshop hours per week for two semesters.

**11. Theory**

Continuation of melodic and harmonic dictation and part writing; harmonic analysis and simple forms; seventh chords; altered chords; keyboard practice.

Prerequisite: Theory 1. Credit value: Six semester hours. Three lectures and two workshop hours per week for two semesters.

**21. Theory: Counterpoint**

Continuation of melodic and harmonic dictation; mixed chords; foreign modulation. Survey of Sixteenth and Eighteenth Century contrapuntal techniques as exemplified in Palestrina and Bach.

Prerequisite: Theory 11. Credit value: Six semester hours. Three lectures and two workshop hours per week for two semesters.

**LITERATURE****301k. Introduction to Musical Literature**

A non-technical course for all students. Through directed listening, aiming to increase the enjoyment and appreciation of potential music lovers.

Three class periods per week for one semester. Credit value: Three semester hours.

**301l. Trends in Musical Literature**

A survey, through directed listening, of the trends found in the great musical literature of the world, stressing appreciative rather than technical aspects. Not limited to music majors.

Three class periods per week for one semester. Credit value: Three semester hours.

**31. Music History**

A chronological survey of the composers and their works, through directed listening, beginning with Gregorian Chant and continuing through contemporary music. Detailed study of form and analysis of representative works.

Prerequisite: Theory 21. Three class periods per week for two semesters. Credit value: Six semester hours.

**MUSIC METHODS****310. Elementary Music Education**

Consideration of music in relation to the child voice and song repertory; rhythms; dramatic play; discriminating listening. Discussion and presentation of curricular plans and materials. Recommended for Education Majors (Elementary School Teachers).

Prerequisite: Sophomore standing. Three class periods per week for one semester. Credit value: Three semester hours.

**352a. Conducting**

Designed for the student who has had no previous conducting experience. *Posture technique of the baton; fundamental principles in obtaining tone balance, color shading, interpretation, score reading, etc.* Program building and practical application of the conducting of smaller concert numbers.

Prerequisite: - Education 317 and four hours of music. Three class periods per week for one semester. Credit value: Three semester hours.

**376. Teaching and Supervision of Music in the Elementary School**

The study of procedures in the teaching of music in the first six grades. The child voice, its development and classification. Introduction of notation, all kinds of song materials, rhythm bands, appreciation methods and creative music for children.

Prerequisite: Education 318 and four hours of music. Three class periods per week for one semester. Credit value: Three semester hours.

**376k. Teaching and Supervision of Music in the Junior and Senior High School**

The study of procedures in the teaching of music in the upper level grades and in high school. General treatment of choral and instrumental music; music appreciation; theory and integration. Public school music as it is related to the life and needs of a community is fully studied.

Prerequisite: Education 317 and six hours of music. Three class periods per week for one semester. Credit value: Three semester hours.

**377. Methods and Administration of Band Supervision**

Band organization, teaching methods, promotion of program in the community, instrumentation plans, equipping and housing of the band.

Prerequisite: Education 317 and nine hours of music. Three class periods per week for one semester. Credit value: Three semester hours.

**APPLIED MUSIC**

Music Theory Majors are required to minor in Applied Music.

1. Students must pass satisfactorily a placement test to determine level of study in the minor field.
2. The minor may be chosen to cover several areas of study; however six advanced hours in one field is required. Should the student desire to qualify for a teachers certificate eight hours of piano are required.
3. The minor may be chosen to cover only one area of study: piano, voice, organ, violin, orchestral and band instruments. Six advanced hours in the chosen field must be included.

**PIANO**

**Primary**

406. Oxford Book for Adult Beginners; Goodrich, Preludes; Thompson, Keyboard Frolics; Ornstein, Sketch Book, Vol. 1; Pre-Czerny, Quail; Czerny-Germer, Vol. 1, part 1, or studies of similar difficulty; Burgmuller,

Op. 100; Bach-Carroll, Book 1, or Bach pieces of similar difficulty; Sonatinas; modern compositions of similar difficulty.

One thirty-minute lesson and six practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Four semester hours.

416. Czerny-Germer, Vol. 1, part 2, or studies of same grade; Heller, "Studies," Op. 47; Bach-Carroll, Book II, or other Bach pieces of this grade; Sonatinas by Clementi and Kuhlau; Romantic and Modern compositions. (Schumann Album for the Young.)

One thirty-minute lesson and six practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Four semester hours.

426. Czerny, Op. 299 "School of Velocity"; or similar grade of studies; Heller Studies, Op. 47 (more difficult); Bach, Two-part Inventions; Sonatinas by Haydn, Mozart and Beethoven. Romantic and Modern compositions.

One thirty-minute lesson and six practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Four semester hours.

#### **Secondary**

9. Bach, Two and Three-part Inventions; Sonatas, Haydn, Mozart and Beethoven, Op. 49; Romantic and Modern Compositions; Studies, Cramer and others of similar grade of difficulty.

Two thirty-minute lessons and nine practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Six semester hours.

19. Bach, Three-part Inventions; Czerny, Op. 740, or studies of similar grade; Sonatas, Scarlatti, Haydn, Mozart, Beethoven, Op. 10, No. 1 or Op. 14; Romantic and Modern compositions.

Two thirty-minute lessons and nine practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Six semester hours.

29. Bach, French Suites, Preludes and Fugues, Well-tempered Clavichord; Sonatas, Beethoven, equivalent in difficulty to Op. 90; Chopin, Preludes, Mazurkas, Waltzes and Nocturnes; Schumann, Op. 12 and 15 and compositions by Schubert, Mendelssohn and Liszt; also, works by such modern composers as Debussy, Poulenc, Shostakovich, Rachmaninoff. Student recital.

Two thirty-minute lessons and nine practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Six semester hours.

39. Czerny, Op. 740 Studies; Clementi, Gradus ad Parnassum; Bach, English Suites or Partitas, Well-tempered Clavichord; Beethoven, Sonatas equivalent in grade of difficulty to Op. 31; Classical or Modern Concertos; Romantic compositions by Brahms, Schubert, Schumann, Mendelssohn or Chopin; Modern and contemporary composers. Student recital.

Two thirty-minute lessons and nine practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Six semester hours.

#### ORGAN

All organ students must be able to pass the same requirements in piano as the secondary piano students.

##### Primary

Organ 405. Manual Technique (organ *lagato*, repeated notes, fingering, substitution), Pedal Technique (Weight control, Manual and pedal independence, Scales and Arpeggios at slow tempo), Simple Hymns in four parts; Two "Eight Little Preludes and Fugues."

One thirty-minute lesson and nine practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Four semester hours.

##### Secondary

Organ 8. Gleason, "Method of Organ Playing," Yon, "Art of Pedal Technique," Five selections from Bach, "Orgelbuchlein," Five additional selections from "Eight Preludes and Fugues" (Two from memory), Chorale and Hymn playing, Reading Open Score vocal music at the organ.

Two, thirty-minute lessons and nine practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Six semester hours.

Organ 18. Hawke, "10 Pedal Studies," Trios for Manuals and Pedal, Bach, "Canzona," "Corello B Minor Fugue," Mendelssohn, "Second Sonata," Five additional selections from "Orgelbuchlein," Three Preludes and Fugues from Schirmer Books II, III, IV; Organ accompaniments to popular Church Anthems.

Two thirty-minute lessons and nine practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Six semester hours.

Organ 28. Three additional Preludes and Fugues, Books II, III, IV. Franck, "Fantasie in G Minor," "Cantabile, Prelude, Fugue and Variation," "Pastorale," "Piece Heroique," Mendelssohn, Sonatas, Modern Compositions. Organ accompaniment to two Oratorios; Junior Recital.

Two thirty-minute lessons and nine practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Six semester hours.

Organ 38. Bach, Selections from Trios and Sonatas, "Prelude and Fugue in E flat (St. Anne's)," "Fantasie and Fugue in G Minor," "Pascaglia and Fugue in C Minor," Franck, "Three Chorales," Selections from Vierne, Widor, Concertos for Organ and Chamber Orchestra, Sight reading, Modulation. Improvisation, Senior Recital.

Two thirty-minute lessons and nine practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Six semester hours.

### VIOLIN

#### Primary

Violin 405. Wohlfahrt, "Method," Opus 38; or Dancla, "Method"; Rieding, *Concertos Faciles*, Opus 34, 35, or 36 (first half).

Ability to tune own instrument. Continuation of Wohlfahrt studies, Opus 74, or Opus 45. Rieding, "Concertos Faciles," Opus 21. Dancla, "Six Little Fantasies," Opus 126.

*Scales*—Major scales of G, A, B flat, C, D, and minor scales (melodic) of C, A, C, and D in two octaves, quarter notes with separate bows in moderate tempo and also slurred.

*Arpeggios*—Same as above.

One thirty minute lesson and nine practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Four semester hours.

Violin 415. Dancla, "School of the Five Positions," Opus 122; A. Seitz, *Concertos No. 1, No. 3*; Viotti, *Concerto No. 23* (first half).

Schradiack, "Technical Violin School," Part 1; Rode, *Concertos No. 4, No. 7, No. 8*; Kreutzer, "Etudes."

*Scales*—Major and minor scales (melodic and harmonic) of G, A, B flat, C, D, A flat, B, E, E flat, and F in three octaves.

*Arpeggios*—Major and minor triads of G, A, B flat, C, D, and A flat, B, E flat, E and F, separate bow and slurred.

One thirty-minute lesson and nine practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Four semester hours.

#### Secondary

All students expecting to enroll in secondary violin classes must be prepared to take an examination over materials found in Violin 415.

Violin 7. Kreutzer, "Etudes"; Viotti, *Concertos Nos. 22, 28, 29*; Rode, *Caprices*; Casorti, "Bowings."

*Scales*—Any major or minor scales (melodic and harmonic) in three octaves, quarter notes with separate bows, also slurred with one bow for each octave and with one bow for the entire scale (ascending scale with down bow, descending scale with up bow). Any major or minor scales to be played in octaves and thirds in quarter notes, separate bows.

*Arpeggios*—Any major or minor triads to be played in separate bows and also slurred with three and nine notes in one bow.

Two thirty-minute lessons and nine practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Six semester hours.

Violin 17. Rode, "Caprices"; Leonard, "Twenty-four Etudes Classiques"; DeBeriot, "Scenes de Ballet," and "Concertos No. 2, No. 7, and No. 9";

Vieuxtemps, Fantasia Appassionata; or works which are of the same class of difficulty.

*Scales and Arpeggios*—Same as in Violin 7. Junior placement test.

Two thirty-minute lessons and nine practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Six semester hours.

Violin 27. Rode, "Caprices"; Wieniawski, "Caprices," Opus 18; Rovelli, "12 Caprices." Concertos: Spohr, Nos. 2, 6; Mozart, G Major and A Major; Burleigh, "2nd Concerto"; Mozart, violin and piano sonatas.

Major or minor scales (three octaves), broken triads, and chords of the seventh, chromatic scales; also thirds, sixths, simple octaves, fingered octaves and tenths. Junior recital.

Two thirty-minute lessons and nine practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Six semester hours.

#### ORCHESTRAL AND BAND INSTRUMENTS

##### *Private Instruction*

#### 405. Private Instruction in Orchestral and Band Instruments

Private instruction in the below named instruments is given on the same basis as in voice, piano, organ, and violin. Lessons are taught by section leaders of the El Paso Symphony Orchestra. For full description of course of study in any individual instrument consult the Chairman of the Department of Music.

Flute	Cornet or Trumpet
Oboe	Trombone or Baritone
Clarinet	Tuba
Bassoon	Horn
Saxophone	Percussion
Violoncello	Harp

One thirty-minute lesson and six practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Four semester hours.

##### *Class Instruction*

#### 325. Brass and Percussion Instruments

The care of the instrument; position at the instrument; tone production; physical development; scales; exercises; studies and repertoire selected from standardized methods and literature of music to develop the student according to the degree of his advancement.

Prerequisite: Twelve semester hours of music. Three class periods and nine hours practice per week for one semester. Course fee: \$2.00. Credit value: Three semester hours.

**326. Reed and Woodwind Instruments**

The care of the instrument; position at the instrument; tone production; physical development; scales; exercises; studies and repertoire selected from standardized methods and literature of music to develop the student according to the degree of his advancement.

Prerequisite: Twelve semester hours of music. Three class periods and nine hours practice per week for one semester. Course fee: \$2.00. Credit value: Three semester hours.

**VOICE****Primary**

209. This course is designed for those students whose principal instrument is not voice. Standard vocalises and repertoire chosen from Early Italian and English Schools.

One thirty-minute lesson and six practice hours per week for one semester. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Two semester hours.

212. Continuation of 209 with the student singing more advanced exercises and song materials.

One thirty-minute lesson and six practice hours per week for one semester. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Two semester hours.

**Secondary**

4. Principles of correct posture; correct breathing and breath control; correct tone placement; correct articulation of vowels and consonants; elementary exercises for development of the voice; Panofka, Concone, Vaccai covering major scales, arpeggi; physical, mental, and vocal coordination in interpretation of simple songs in English, Italian.

Participation in weekly recital programs.

Two thirty-minute lessons and nine practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Six semester hours.

14. Review posture, breathing, and articulation, carry on with more involved exercises in arpeggi, minor scales, legato, staccato, embellishment exercises—Vaccai, Panofka, Concone, Marchesi, Lamperti, Song literature of Romantic period in German, French, Italian, and English. Schumann, Schubert, Brahms, Handel, and French composers such as Debussy, Massenet, Here, and others. Introduction to lighter sacred song literature; lighter arias from opera and more work on interpretation of song literature; participation in weekly recital program.

Two thirty-minute lessons and nine practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Six semester hours.

24. More advanced technical study of vocalises for flexibility and velocity. Bordogni, Marchesi, Lamperti, Sieber, Viardot—recitative, free



and measured forms—opera, oratorio, song, literature through modern American, English, French, Italian, German. Participation in weekly recitals and Junior recital.

Two thirty-minute lessons and nine practice hours per week for two semesters. Course fee: \$10.00 per semester. Additional fee required for private instruction. Credit value: Six semester hours.

**ORGANIZATIONS**

Only eight semester hours of organizational credit may be offered.

**Band 201\***

Marching practice and maneuvers; exercise and concert materials for large and small groups. This course is required for all students expecting to study wind instruments for credit.

Prerequisite: Audition. Course fee: \$2.00 per semester. Five hours per week for two semesters. Credit value: Two semester hours.

**211. Band Ensemble**

Field maneuvers as practiced by the full band. More advanced exercises and study material.

Prerequisite: Band 201. Course fee: \$2.00 per semester. Five hours per week for two semesters. Credit value: Two semester hours. Physical Education credit in the Fall semester for non-band majors.

**221. Band Ensemble**

Marching formations as practiced by the full band. Study material in keeping with the advancement of the students. Concert numbers to include overtures, symphony movements of Beethoven, Bizet, Massenet, Verdi, Rossini, and others.

Prerequisite: Band 211. Course fee: \$2.00 per semester. Five hours per week for two semesters. Credit value: Two semester hours.

**231. Band Ensemble**

Marching formations as practiced by the full band. Overtures, symphonic works of Debussy, Dvorak, Liszt, Ravel, Rimsky-Korsakoff, Tschai-kowsky, von Suppe, Wagner. Concert numbers also include some of the larger works of the moderns. (For band majors: more advanced study and experience in conducting, with the study of more important concert forms. A public performance in conducting will be required.)

Prerequisite: Band 221. Course fee: \$2.00 per semester. Five hours per week for two semesters. Credit value; Two semester hours.

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\*During the Fall semester only, a student with the permission of the instructor of Band and Gold Diggers may attend Band 201 or Gold Diggers 204 instead of a regular section of required Physical Education. In this case the student will be registered for Physical Education, will receive credit in Physical Education (but not in Band or Gold Diggers), and will pay the course fee of \$2.00 per semester for Physical Education.

**Choir 202**

The mixed A Cappella choral ensemble on the campus is open to all students who have had previous vocal experience (solo or glee club).

Prerequisite: Audition. Course fee: \$2.00 per semester. Five hours per week for two semesters. Credit value: Two semester hours.

**Choir 212**

Choral repertoire of advanced difficulty.

Prerequisite: Choir 202. Course fee: \$2.00 per semester. Five hours per week for two semesters. Credit value: Two semester hours.

**Choir 222**

Study material in keeping with the advancement of the student.

Prerequisite: Choir 212. Course fee: \$2.00 per semester. Five hours per week for two semesters. Credit value: Two semester hours.

**Choir 232**

Study material of advanced difficulty. Participation in small ensembles.

Prerequisite: Choir 222. Course fee: \$2.00 per semester. Five hours per week for two semesters. Credit value: Two semester hours.

**Gold Diggers 204\***

A precision marching organization. This group participates as a show unit with band productions.

Prerequisite: Permission of Director of Instrumental Music. Course fee: \$2.00 per semester. Five hours per week for two semesters. Credit value: Two semester hours.

**Chorus 205 (All College)**

This mixed singing organization is open to all students interested in any kind of choral work. The song materials cover folk music, ballads, and light opera selections.

No prerequisite. Five hours per week for two semesters. Credit value: Two semester hours.

**Orchestra 203**

This organization is open to all string and wind instrumentalists who are interested in performing the finest of instrumental ensemble music.

Five hours per week for two semesters. Credit value: Two semester hours.

**PHILOSOPHY AND PSYCHOLOGY**

PROFESSOR ROTH; ASSISTANT PROFESSOR HUTCHINS

**PHILOSOPHY****312f. Logic**

Introduction to essentials of correct thinking; deductive and inductive reasoning; fallacies and argumentation; scientific methodology.

Prerequisite: Sophomore standing. Credit value: Three semester hours. Three class hours per week for one semester.

**314f. Problems of Philosophy**

An introduction to the main general problems of philosophy such as those of matter, mind, life, truth and value.

Prerequisite: Sophomore standing. Credit value: Three semester hours. Three class hours per week for one semester.

**316a. Philosophies of Life**

A study of the various classical philosophies of life and their moral, religious and esthetic values.

Prerequisite: Sophomore standing. Credit value: Three semester hours. Three class hours per week for one semester.

**317a. The Philosophy of Civilization**

A comprehensive study of the development of civilization and culture; man's place in the world today and his potential destiny.

Prerequisite: Sophomore standing. Credit value: Three semester hours. Three class hours per week for one semester.

**330f. Ethics of Human Relationships**

An attempt to find functional bases for the practical solution of realistic problems involved in human relationships; the implications of man's biological interrelatedness, psychological motivations, social and economic interdependence will be stressed.

Prerequisite: Junior standing. Credit value: Three semester hours. Three class hours per week for one semester.

**331f. Integration of the Fields of Knowledge**

An attempt to show the interrelationship of the several branches of human knowledge; the close bond existing among the physical, biological and social sciences; our quest to synthesize such knowledge so as to evolve therefrom a clearer perspective as to the purpose of God and the Universe, man's place in the world and his ultimate destiny.

Prerequisite: Junior standing. Credit value: Three semester hours. Three class hours per week for one semester.

**PSYCHOLOGY**

**310f. Introductory Psychology**

A survey of the field of general psychology.

Prerequisite: Sophomore standing. Credit value: Three semester hours. Three class hours per week for one semester.

**311a. Fields of Psychology**

Survey of applied, business, industrial, abnormal and social psychology; mental measurements and experimental methods.

Prerequisite: Psychology 310 or its equivalent. Credit value: Three semester hours. Three class hours per week for one semester.

**314f. Child Psychology**

A study of the changes which take place in the life of the child as related to the processes of elementary education.

Prerequisite: Psychology 310 and Sophomore standing. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Education 314.)

**316a. Business Psychology**

A study of the psychological factors and principles involved in modern business, industry, marketing, advertising and salesmanship.

Prerequisite: Psychology 310 or its equivalent, or Junior standing in Business Administration. Credit value: Three semester hours. Three class hours per week for one semester.

**318f. Psychology of Adolescence**

A study of the nature and development of the individual through the adolescent period as related to the processes of secondary education. Emphasis is placed on the nature of individual differences and especially on the development of proper habits and the correct integration of behavior patterns into a socially desirable personality.

Prerequisite: Psychology 310 and Sophomore standing. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Education 316.)

**320f. The Psychology of Personality**

A study of the fundamental traits of personality, their origin, development and control; maladjustments and disorders of the personality and their treatment.

Prerequisite: Psychology 310, and three additional semester hours of either philosophy or psychology. Credit value: Three semester hours. Three class hours per week for one semester.

**321. History of Psychology**

A history of the development of psychological theories beginning with that of the early Greeks and leading up to the present time.

Prerequisite: Six semester hours of psychology or philosophy or both. Credit value: Three semester hours. Three class hours per week for one semester.

**339. Counseling and Vocational Guidance**

A study of the principles and methods used in counseling and vocational guidance. The counseling techniques used in school, home, personal life and social situations. The use of tests, interviews and other techniques in vocational selection and training.

Prerequisite: Twelve semester hours of psychology or education or permission of the Chairman of the Department. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Education 339K.)

**340. Psychology of the Handicapped Child**

The psychology of all types of handicapped children and a consideration of the attendant emotional and social problems. Regular lectures augmented by those of visiting specialists.

Prerequisite: Six semester hours of psychology or philosophy or both. Credit value: Three semester hours. Three class hours per week for one semester. (May not be taken in addition to Education 340K.)

**343. Lectures in Clinical Psychology**

A study of clinical problems, case study methods and discussion of psychological tests used in intelligence, personality and special aptitudes with analysis and interpretation of results.

Prerequisite: Six semester hours of psychology. Credit value: Three semester hours. Three class hours per week for one semester.

**344a. Mental Hygiene**

Prerequisite: Six semester hours in psychology or philosophy, or both. Credit value: Three semester hours. Three class hours per week for one semester.

**351f. Social Psychology**

A study of social phenomena; social motivation, behavior and control. Credit value: Three semester hours. Three class hours per week for one semester. Prerequisite: Six semester hours in philosophy or psychology or both.

**352a. Abnormal Psychology**

Suggestibility and hypnotism; dreams; nervous and mental disorders; mental effect of drugs; normal and abnormal motivation; the concept of insanity; spiritistic phenomena: Lectures and demonstrations.

Prerequisite: Six semester hours of psychology or philosophy, or both. Credit value: Three semester hours. Three class hours per week for one semester.

**355a. Mental and Educational Measurement**

Introduction to measurement in education. Typical methods of measuring intelligence, character, and achievement. Elementary statistical terms and processes. Preparation for use of mental and educational tests.

Prerequisite: Six semester hours of psychology or education and Junior standing. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted for credit in addition to Education 355.)

**357. Mental Hygiene and the Problems of Children**

A study of the conditions and factors essential for healthful mental development. Methods of unfolding the youthful personality and of reconstructing same will be attempted with special stress on the problems peculiar and unique to the school child.

Prerequisite: Six semester hours of psychology or philosophy, or both. Credit value: Three semester hours. Three class hours per week for one semester. (May not be counted in addition to Education 357.)

**361. Physiological Psychology**

Basic psychological processes in relation to structure and function.

Prerequisite: Six semester hours of psychology or Psychology 310 and Zoology 301 and 302. Credit value: Three semester hours. Three class hours per week for one semester.

**362. General Experimental Psychology**

This course acquaints the student with the basic facts, principles and methods of psychological science. Lecture, classroom demonstrations and laboratory experiments.

Prerequisite: Six semester hours of psychology. Credit value: Three semester hours. Fee: \$2.00. Two lectures and three laboratory hours per week for one semester.

**HEALTH, PHYSICAL EDUCATION AND RECREATION**

PROFESSOR CURTICE; ASSOCIATE PROFESSOR WATERS; INSTRUCTORS  
KANE, SMITH, MOORE, ELLISON, COLLINS

The service courses are provided (1) to promote vigorous, mental, emotional, social and physical health; (2) to further the education of the individual through physical activities; (3) to develop motor skills; and (4) to prepare for leisure time activity. Definite instruction is given in class periods and students are graded on skills, knowledge and achievement. Class instruction is supplemented by a varied program of intramural sports for men and for women which give an opportunity for additional participation and recreation.

The service courses for men are designed to provide vigorous, strenuous, and aggressive activities that will be of lasting value. All men students will be given instruction in the following activities: touch football, tumbling, gymnastics, speedball, boxing, wrestling, track, swimming, and other minor sports.

The service courses for women are designed to provide activities that are mentally and physically stimulating, as well as promoting grace, vigor and poise through group and individual instruction in dancing, swimming, riding, field hockey, archery, volleyball, tennis, tumbling, and other minor sports.

Four semesters of service courses in Physical Education are required of each student for graduation. One semester hour of credit is allowed for each semester of service courses.

**PHYSICAL EDUCATION**

The majors in Physical Education are strongly urged to have one minor in Health Education and a second minor in another teaching field.

Those who wish to qualify as physical education teachers or as coaches must meet the following requirements set up by the Texas State Department of Education.

1. Full-time teachers must have 24 semester hours in Physical and Health Education. (A person who coaches athletics and teaches one or more classes in Physical Education is considered a part-time teacher.)

2. Part-time teachers must have 12 hours in Physical and Health Education. (Any person who teaches as many as two classes in Physical Education per day in combination with other subjects or who coaches athletics and teaches some subject other than Physical Education is considered a part-time teacher.)

3. All beginning classroom teachers who direct or teach any part of the Physical or Health Education program must have at least six semester hours of college credit in professional teacher-training courses in that field. Beginning teachers should register for Health Education 310 and Physical Education 321.

**\*201. Service Course for Freshman Men**

Runs throughout both semesters. Credit value: Two semester hours. Course fee: \$2.00 per semester. (If student elects horseback riding, \$10.00 additional per month.) Three hours per week for two semesters.

**\*202. Service Course for Freshman Women**

Runs throughout both semesters. Credit value: Two semester hours. Course fee: \$2.00 per semester. (If student elects horseback riding \$10.00 additional per month.) Three hours per week for two semesters.

**\*203. Service Course for Sophomore Men**

Runs throughout both semesters. Credit value: Two semester hours. Course fee: \$2.00 per semester. (If student elects horseback riding \$10.00 additional per month.) Three hours per week for two semesters.

**\*204. Service Course for Sophomore Women.**

Runs throughout both semesters. Credit value: Two semester hours. Course fee: \$2.00 per semester. (If student elects horseback riding, \$10.00 additional per month.) Three hours per week for two semesters.

**305. Fundamentals of Major and Minor Sports**

Rules, playing-regulations, teaching procedure of the following sports: football, basketball, handball, tennis, baseball, speedball, and soccer.

Credit value: Three semester hours. Three hours of lecture per week for one semester. Open to men only.

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\*During the Fall semester only, a student with the permission of the instructor in Band and Gold Diggers may attend Band 201 or Gold Diggers 204 instead of a regular section of required Physical Education. In this case the student will be registered for Physical Education, will receive credit in Physical Education (but not in Band or Gold Diggers), and will pay the course fee of \$2.00 per semester for Physical Education.

**306. Methods in Physical Education**

Theory and practice in Physical Education activities that are applicable to the elementary and junior high-school boy, with special emphasis on elementary tumbling, apparatus, calisthenics, pyramid building, stunts, and games.

Credit value: Three semester hours. Open to men only. Three hours of lecture per week for one semester. (Formerly Physical Education 312.)

**16. Major Sports**

Coaching methods in football, basketball, and track. Training conditioning, practice schedules, and sport fundamentals are stressed.

Prerequisite: Sophomore standing. Credit value: Six semester hours. Three lecture hours per week for two semesters.

**319. Organization and Administration of Physical Education**

The place of Physical Education in the total educational situation will be presented, along with fundamental aspects of a well-rounded Physical Education program. Particular emphasis will be placed on the administrative problems underlying a functional program.

Prerequisite: Sophomore standing. Credit value: Three semester hours. Three hours of lecture per week for one semester.

**321. Curriculum Construction**

A study of the principles of curriculum construction, the philosophy of play, content, progression and organization of the play program for all levels of the educational program. A curriculum to meet a specific situation will be outlined.

Prerequisite: Junior standing. Credit value: Three semester hours. Three hours of lecture per week for one semester.

**324. Kinesiology**

The mechanical anatomical study of the Physical Education program as a basis for the analysis of activities in coaching, the selection and adaptation of activities in curriculum construction, and in corrective procedures.

Prerequisite: Junior standing. Three lecture hours per week for one semester. Credit value: Three semesters hours.

**350. Organization of Community Recreation**

Methods of organizing and directing community recreation. The nature and scope of a public recreation program, the various agencies providing recreation and the problems for administering a comprehensive program.

Prerequisite: Junior standing. Credit value: Three semester hours. Three hours of lecture per week for one semester.

**351. Recreational Leadership**

Students will be given an opportunity to assemble a wide variety of recreational materials suitable to the varied interests of children, adolescents and adults. Actual leadership experience will be provided.



Prerequisite: Junior standing. Credit value: Three semester hours. Three hours of lecture per week for one semester.

**355. Corrective Physical Education**

The need for emphasis on prevention and correction of defects as a part of the Physical Education program. The specific exercise treatment for certain functional and structural conditions in coöperation with the school physician.

Prerequisite: Junior standing. Credit value: Three semester hours. Three hours of lecture per week and special field trips for one semester.

**356. Tests and Measurements in Health and Physical Education**

A study of tests will be made, both in Health and Physical Education as to their purpose and use, scoring and interpretation.

Prerequisite: Junior standing. Credit value: Three semester hours. Three hours of lecture per week for one semester.

**364. Administration of Athletics in School and Colleges**

A study will be made of current controversies and problems in the conduct of athletics, organization of athletic departments, selection of staff, sports program, purchases and care of athletic equipment, management of varsity and intramural athletics, maintenance of facilities and equipment.

Prerequisite: Junior standing. Credit value: Three semester hours. Three hours of lecture per week for one semester.

**HEALTH EDUCATION**

**310. Individual Hygiene**

Study of home and community health problems. Emphasis and stress on physical fitness, prevention of disease, safety, establishment of proper health habits, and knowledge to use effectively medical science.

Prerequisite: Sophomore standing. Credit value: Three semester hours. Three hours of lecture per week for one semester.

**320. Community Hygiene**

Consideration of health of people as a group and with the social and governmental agencies which are concerned with environmental control and health protection.

Prerequisite: Health Education 310 or approval of the department head. Credit value: Three semester hours. Three hours of lecture per week and special field trips for one semester.

**330. School Health Problems**

Major problems of the organization and administration of school health programs will be analyzed.

Prerequisite: Health Education 310 or 320 or approval of the department head. Credit value: Three semester hours. Three hours of lecture and special field trips for one semester.

**341. Principles of Health Education**

Individual and community health problems will be discussed. Hygienic effects to be realized from an organized health program. Discussion and prevention of communicable diseases will be treated in schools, communities, and cities.

Prerequisite: Junior standing. Credit value: Three semester hours. Five class periods per week for one semester.

**344. Mental Hygiene (Psychology)**

Educational psychology may be counted as one of the prerequisites.

Prerequisite: Six semester hours in psychology or in philosophy or both. Credit value: Three semester hours. Three lecture periods per week for one semester.

**360. Methods and Materials in Health Education**

The field of health education, problems in administering the program, teaching aids for the health teacher, the teacher's part in health protection of children.

Prerequisite: Health Education 310 and 320 or approval of the department head. Credit value: Three semester hours. Three lecture hours per week for one semester.

## DEGREES CONFERRED IN MAY, 1947

### Bachelor of Science in Mining Engineering

Antonio Alvarez R.  
Frederic Harrison Brooks  
James Spencer Collins  
Charles M. Cooley  
James Deane Davenport

George Joseph  
Odis Paul Lance  
Ezequiel Montes  
John Paul Moore

### Bachelor of Arts

Marion E. Alexander  
Frank Altus  
Gloria J. Armijo  
Armida Aspeitia  
Mary Frances June Bower  
Lyle Martin Brown  
Betty Buhler  
Nancy Lee Burns  
Joseph Albert Calamia, Jr.  
Martha Ann Cary  
Hamilton Collins  
Allis Jan Cook  
Edward E. Crowe, Jr.  
Armand N. Cuen  
William Gray DeWitt  
Sam J. Dwyer, Jr.  
John H. Estes, Jr.  
Edna Jean Ferguson  
Robin Lucile Ferlet  
Rafael Maza Fernandez  
Dewey E. Fitzgerald  
Marjorie Frances Fleming  
Elvira Flores  
Louis Sierra Flores  
Eldridge D. Flournoy, Jr.  
Frances Ophelia Gregory  
Lorene Sue Harms  
Ann Louise Harris  
Richard Beidler Herr  
Ralph W. Hodges  
Elma Louise Hoffman  
Gloria Georgina Jacquin  
Ruth Gail Jennings  
Charlie Glen Johnson

Carol C. Koger  
Laura Lardizabal  
Robert O. Leyva  
Marvaine Lindsey  
Roberta R. Lochausen  
Robert Martin  
Mary Maveety Melton  
Gladiolus B. Moore  
Carmen Amanda Napoles  
Betty Louise Neugebauer  
Robert A. Newman  
David R. Owen, Jr.  
Dorothy Lee Smith Page  
Conchita Pangburn  
Albert Bernard Perches  
Sharley Carpenter Randal  
Betty Rose Rapier  
Ethel Wallace Reed  
Dorothy Corinne Reinhardt  
Lucy Anne Richards  
Graciela Rivas  
Elizabeth Howe Rogers  
Isela C. Romero  
Dover Roth  
Elizabeth Anne Rowe  
Gloria Jane Sadler  
George Ellis Saucier  
John David Slauter  
Edna Ella Snowden  
Charles M. Stewart  
William Cole Swan  
Martha Trujillo  
Georgette Mary Wardy

**Bachelor of Science in the Sciences**

Howard L. Bell, Jr.  
Irvin Brand  
Joanne Buckner  
Glen Ansel Cook  
William Robert Hintze  
Wayne Lane Lorentzen  
John Albert Manning, Jr.  
Wilson Lee Newell, Jr.  
Maryan Louise Pickel

Jack R. Pytcher  
Vernon Jack Shiner, Jr.  
Sybil I. Tipton  
Josefina N. Valenzuela  
Jose C. Vasquez  
Vance Virginia Walt  
Harold B. Woodul  
Paul C. Yates, Jr.

**Bachelor of Business Administration**

Ruth Evelyn Durham  
Frank Charles Prade, Jr.

Edith Julia Snowden

## DEGREES CONFERRED IN AUGUST, 1947

### Bachelor of Science in Mining Engineering

Joseph M. Downey  
Alejandro C. Esparza  
Jesse Cavaldon

Robert D. Graves  
Charles H. Oppenheim

### Bachelor of Arts

Arline Beahler Abbott  
Katherine Annette Anderson  
George D. Carameros, Jr.  
Oscar Miranda Cortazar  
Orville Edward Egbert  
Dorothy Faye Morris Fitzpatrick  
Jack Gill  
John J. Gorman  
James Fountain Hales  
Eldon Phillips Harvey  
Lloyd A. Hughes  
William Morrison Kennedy  
Lucene Laurie Lide  
Bill McCray

Mary Marasovich  
Harry Martin, Jr.  
Gretchen Helene Munzinger  
Albert Charles O'Leary  
Joe Kittrell Parrish  
John Eugene Puckett  
Mary Ellen Rivera  
Anthony F. Salem  
Betty Jane Slack  
Amelda Spikes  
Carolyn Lewis Taylor  
Roberta Ruth Potts Walker  
Coletta LaVern Ward  
Eddie Mae Young

### Bachelor of Science in the Sciences

Gabriel Abraham Ekery  
Carlos A. Fernandez  
Richard Earl Fletcher  
Mildred Martha Hamlyn  
Isela Margaret Jacques

Odis Paul Lance  
Bowen Raydo Lenoard, Jr.  
Donald Rathbun, Jr.  
Irving Lee Snider

### Bachelor of Business Administration

Jack D. Melton  
John Raymond Mitchell  
Edward R. Neugebauer

John V. Robinson  
Ray Marshall Snelson

### Master of Arts

Viola Hadlock Anderson

Herman E. Charles

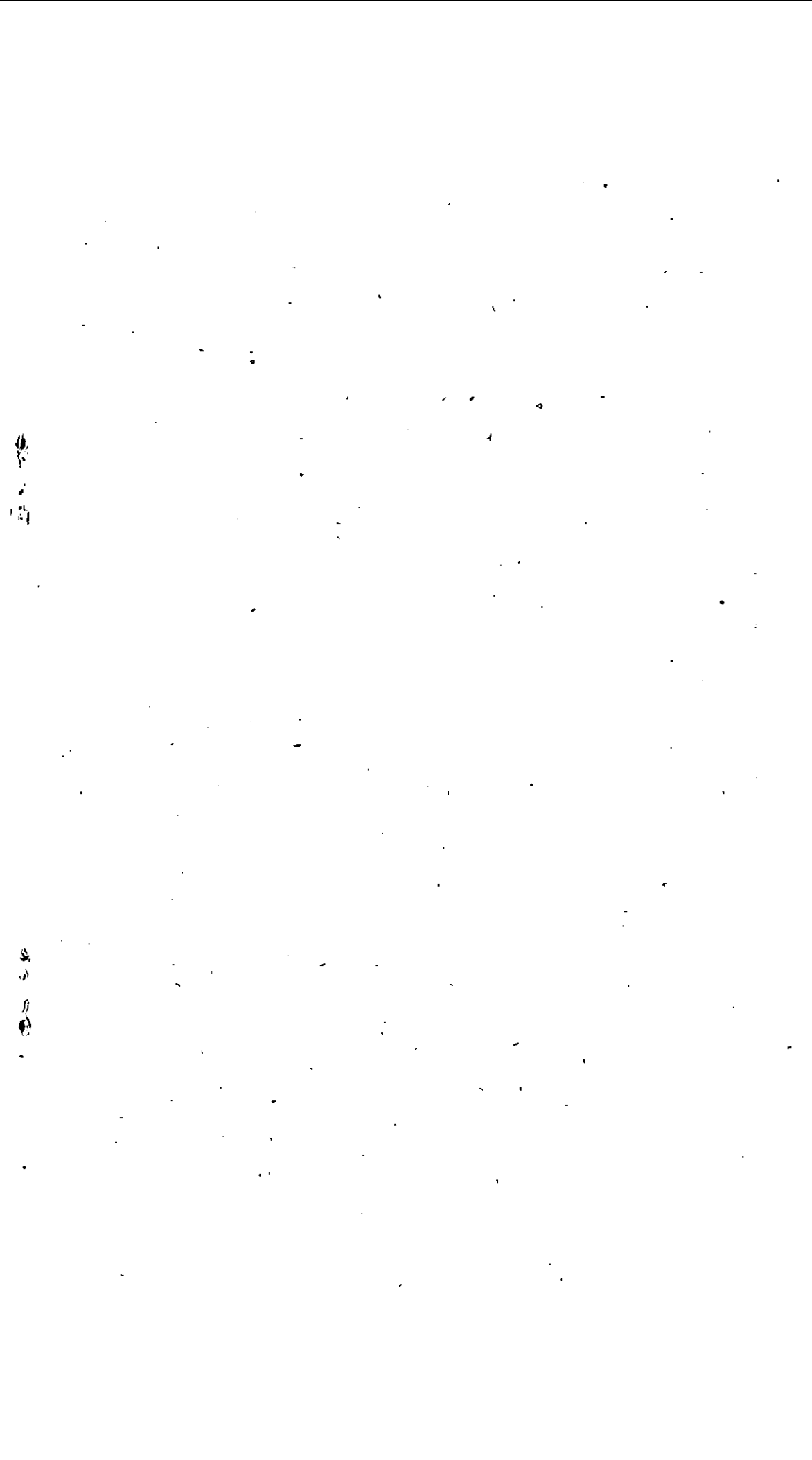
## STATISTICAL SUMMARIES

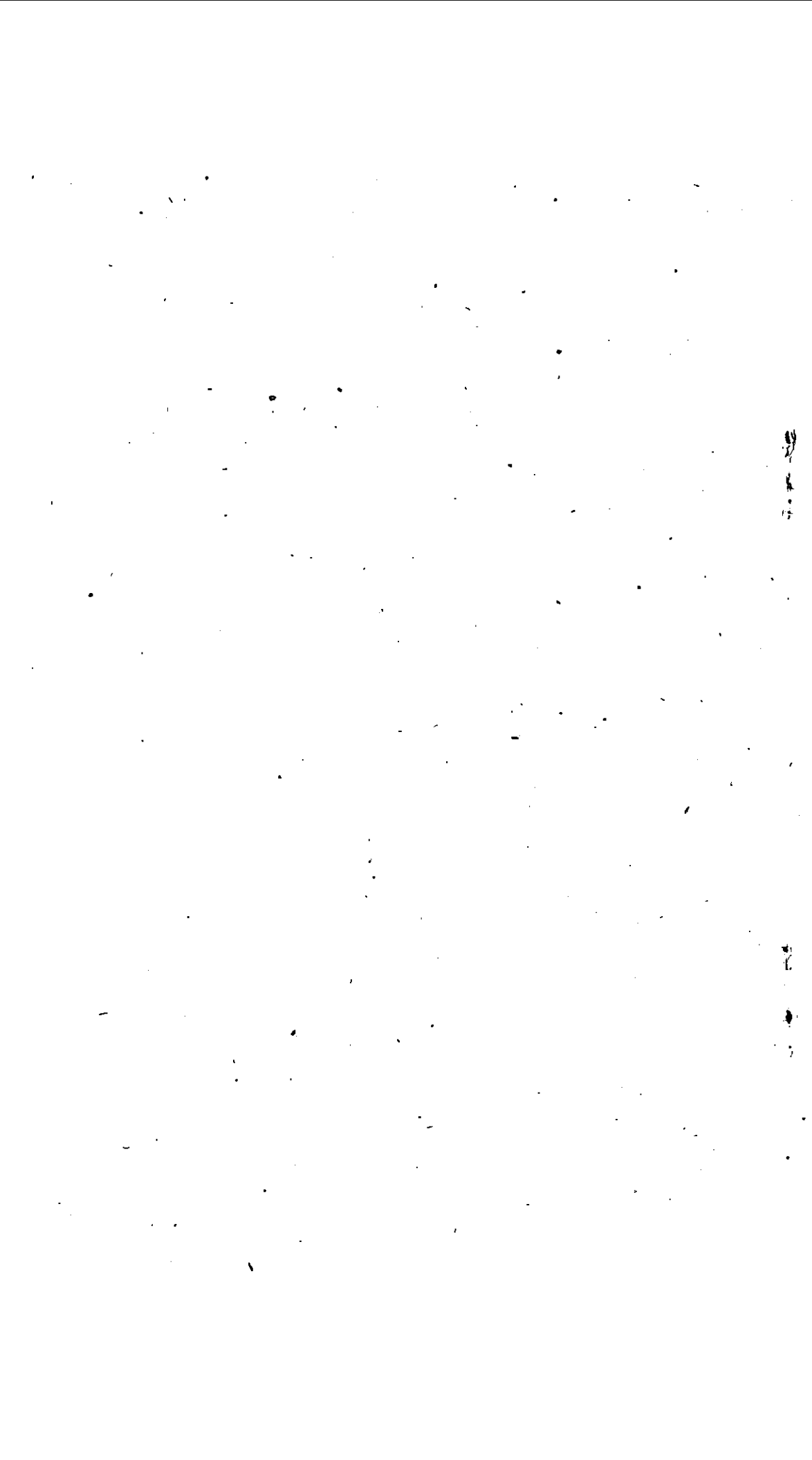
### Students

	Long Session, 1946-1947		
	Men	Women	Total
<b>Engineering</b>			
Postgraduates	2	0	2
Seniors	20	0	20
Juniors	36	0	36
Sophomores	95	0	95
Freshmen	358	0	358
Non-credits	2	0	2
Unclassified	8	0	8
Total	521	0	521
<b>Arts and Sciences</b>			
Postgraduates	35	101	136
Seniors	60	54	114
Juniors	92	85	177
Sophomores	126	130	256
Freshmen	642	295	937
Non-credits	11	4	15
Unclassified	27	67	102
Total	993	736	1729
<b>Total Individual Students</b>	<b>1514</b>	<b>736</b>	<b>2250</b>

	Summer Session, 1947		
	Men	Women	Total
Students registered in the first term	762	328	1090
Students registered in the second term	681	234	915
Total	1443	562	2005
<b>Total Individual Students in the Summer Session</b>	<b>856</b>	<b>398</b>	<b>1254</b>









T·C·M