

BULLETIN
OF
THE UNIVERSITY OF TEXAS
1915: No. 5

JANUARY 20

1915

School of
Applied Math

CATALOGUE
1914-1915

INCLUDING ANNOUNCEMENTS FOR
1915-1916

MAIN UNIVERSITY
AUSTIN

DEPARTMENT OF MEDICINE
GALVESTON



Published by the University six times a month and entered as second-class matter at the postoffice at Austin, Texas.

Applied Mathematics and Pure Mathematics: ADJUNCT PROFESSOR E. L. DODD.

Germanic Languages and Romance Languages: PROFESSOR E. PROKOSCH.

Botany, Geology, and Zoology: ASSOCIATE PROFESSOR I. M. LEWIS.

Chemistry and Physics: PROFESSOR W. T. MATHER.

REQUIREMENTS FOR DEGREES

General Rules

In the College of Arts two degrees are offered: Bachelor of Arts (B. A.) and Bachelor of Science in Medicine (B. S. in Med.).

No honorary degrees will be conferred by the University of Texas.

Degrees will be conferred publicly on Commencement Day.

No degree will be conferred without a residence of at least one year at the University.

An application must be filed at the opening of the session in which the degree is sought.

Bachelor of Arts

To secure the degree of Bachelor of Arts the student must complete the work prescribed under A and satisfy the requirements set down under B below. A student entering the University after the session of 1911-1912, but applying for the B. A. degree in 1913, 1914, or 1915, will be absolved from prescription A. 4 if he completes one course in a natural science requiring laboratory work (as laid down in the catalogue of 1910-1911), and will not be required to satisfy prescription A. 7, or B. 2, or B. 3.

A. Prescribed Work.

1. Two courses in English (English 1, and 2 or 3).
2. One course in mathematics (Mathematics 1ega, 1abc, or 1acd if the student presents for admission in mathematics only algebra and plane geometry; Mathematics 1abc or 1acd, if he presents, in addition, solid geometry; Mathematics 1egb, 1egc, or 1bcd, if he presents, in addition, not solid geometry but trigonometry; Math-

ematics 1bcd, if he presents both solid geometry and trigonometry).

3. Two numbered courses in one foreign language, either ancient or modern.

4. Two courses in natural science, one being in chemistry or physics, the other being either Botany 1, or Geology 1, or Zoology 1, or Zoology 16. Either may be taken first.

5. One course in economics (Economics 1) or government (Government 1): recommended but not compulsory for women.*

6. One-third of a course in philosophy or psychology.*

7. The courses set down in one of the groups below under C.

8. Five advanced courses.**

9. Enough other courses to make twenty, chosen by the student subject to the rules set forth in D below.

10. Two years' work in physical training, the second year's work not compulsory for men till in the judgment of the president adequate facilities are provided.

B. Special Requirements.

1. The student must make an average grade of at least C in his last ten courses. In striking an average any B will balance any D, any A any two D's, the value of the courses being equal.

*Students are urged to take the courses required under A. 5 and 6 in the sophomore or junior year.

**The following rules govern the counting of advanced courses:

a. A course counts as advanced if it is open only to students who have completed two numbered courses in the same subject (except in economics, government, institutional history, and philosophy, where one previous course is sufficient); and in general literature, where the prerequisite of English 1 and 2 is sufficient).

b. With the approval of the committee on courses a course also counts as advanced if by a special statement in the description of it in the Announcement of Courses it is open only to the following students: (1) Students who have completed two numbered courses in the same subject; (2) students who, by reason of having attained at least junior standing and having completed one numbered course in the same subject with an average grade of C or over, are allowed to take along with the higher course the second course ordinarily prerequisite, this second course to be completed before the higher course can be counted towards the degree.

c. Courses counted advanced under a and b are marked A in the Announcement of Courses.

d. Either Mathematics 3 or Mathematics 15 counts as advanced when both are completed.

e. Courses in education count as advanced on the same basis as those in economics, government, institutional history, and philosophy, Education 203fv and 104s together, or Education 45 being treated as the first course precedent to all higher work.

f. Courses in law or engineering do not count as advanced.

2. The student must, before May 15 of his senior year, show such ability to write clear and correct English as to satisfy the committee on students' use of English. To promote the habitual use of clear and correct English the written work of every student in all his courses (theses, reports, quizzes, examination papers, etc.) is subject to inspection by the committee. It is the duty of each member of the teaching staff to require that his students shall be careful in their use of English, to give due weight in the making up of grades to the students' use of English, and to report promptly to the committee, submitting the evidence, any student whose use of English is seriously defective. Each session the committee will pass on the written work of every student above the rank of freshman. If any student be found deficient, the committee will prescribe for him such work as in its judgment is proper, and this work must be done to the satisfaction of the committee before the student can obtain his degree.

3. The student must show such ability to read one foreign language as to satisfy the committee on foreign language requirements. To meet this requirement he may present himself to the committee at the end of his sophomore year, or at the beginning or end of his junior year, and, unless he has previously satisfied the committee, must present himself at the beginning of his senior year. If at this time he fail to satisfy the committee, he shall have one further opportunity the following spring before March 15.

It is the intent of this requirement that the student should have such a control of the language chosen by him that he can understand and translate prose of moderate difficulty, preferably, in the case of the modern languages, in the field of his major subject.

C. Degree Groups.

The courses laid down in one of these groups must be included in the twenty required for the B. A. degree.

The student is advised to choose his group as early as possible in his college career, but not required to do so till the beginning of his junior year.

The student will note that it is possible so to arrange his minors and electives as to take in effect two majors, belong-

ing either to the same or to different groups. Such an arrangement is especially desirable for those who wish to teach two subjects.

Courses taken to satisfy a requirement in any subject laid down above under A. 1-6 count also towards satisfying the requirements laid down in that subject in these groups.

CLASSICAL GROUP (GREEK, LATIN)

Major subject: Four and two-thirds courses in Greek or Latin.

Minor subject: Two and two-thirds courses in the ancient language not chosen for the major subject.

Not more than eleven courses may be counted in foreign language.

ENGLISH AND GENERAL LITERATURE GROUP (ENGLISH, GENERAL LITERATURE, PUBLIC SPEAKING)

Major subject: Four courses in English or two courses in general literature.

Minor subjects: Two numbered courses in Latin or German or Greek or French.

One course in history.

A third numbered course in foreign language (either ancient or modern); or three courses in social science (besides the required history); or two courses in social science (besides the required history) and one course in public speaking.

MATHEMATICS GROUP (PURE AND APPLIED MATHEMATICS)

Major subject: Five courses in mathematics.

Minor subjects: Three courses in a second subject, preferably physics, or philosophy, or chemistry, or economics.

One course in philosophy.

MODERN FOREIGN LANGUAGE GROUP (FRENCH, GERMAN, SPANISH)

Major subject: Four numbered courses in French, or German, or Spanish.

Minor subjects: Three numbered courses in a second foreign language (either ancient or modern), or three numbered courses in two foreign languages (either ancient or modern).

One course in history.

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M

Not more than eleven courses may be counted in foreign language.

NATURAL SCIENCE GROUP (BOTANY, CHEMISTRY, GEOLOGY, PHYSICS, ZOOLOGY)

Major subject: Four courses in one natural science.

Minor subjects: Two courses in a second natural science; unless the major subject be physics, in which case there must be two courses in mathematics (Mathematics 1 and 3), and one course in chemistry.

Two numbered courses in German.

The total number of courses in natural science and mathematics together must not be less than nine, nor more than eleven.

SOCIAL SCIENCE GROUP* (ECONOMICS, GOVERNMENT, HISTORY, INSTITUTIONAL HISTORY, PHILOSOPHY AND PSYCHOLOGY)

Major subject: Four courses in one social science.

Minor subjects: Two courses in a second social science, or in another subject if the major subject be philosophy and psychology.

One course in a third social science.

Not more than eleven courses may be counted in the social sciences.

D. Rules Governing the Order and Choice of Work.

1. The following work is prescribed for the freshman year:

a. English 1.

b. One course in mathematics (Mathematics 1ega, 1abc, or 1acd, if the student presents for admission in mathematics only algebra and plane geometry; Mathematics 1abc, or 1acd, if he presents, in addition, solid geometry; Mathematics 1egb, 1egc, or 1bcd, if he presents, in addition, not solid

*For juniors and seniors of the sessions of 1914-1916, Business Training may be treated as a member of the Social Science group for the B. A. degree, provided that not more than five courses be counted in Business Training, not more than five in any combination of Business Training with the Schools of Domestic Economy, Journalism, and Music and the professional departments.

School of
Applied Math

PRELIMINARY ANNOUNCEMENT OF COURSES OF INSTRUCTION FOR 1915-1916

The Final Announcement of Courses for 1915-1916 will be issued in September. It will include any changes that may be necessary in the present statement, and such new courses as may be approved. In registering, the Final and not the Preliminary Announcement should always be used.

Full courses are designated by numbers under 100, one-third courses by numbers beginning with 100, two-thirds courses by numbers beginning with 200, four-thirds courses by numbers beginning with 400, and so on.

The lower-case letters f, w, s, following a course number show the term (fall, winter, spring) in which the course is given. All other courses run throughout the year.

The lower case letters a, b, c, d, e, g, following a course number designate a particular portion of the course, and also show that this portion may not be counted till the whole course is completed.

A term initial in parenthesis (f), (w), (s), after a course number shows that that term's work is only a part of the course and may not be counted till the whole course is completed.

The capital letter F following a course number means that the course is open to freshmen; the letter A, that it is intended for undergraduates and graduates, and counts as advanced in satisfying degree requirements; the letter G, that it is intended primarily for graduates.

Where no hours are set down for class or laboratory work, they will be fixed by conference between professor and student.

Sections with odd numbers meet on Monday, Wednesday, or Friday; sections with even numbers meet on Tuesday, Thursday, or Saturday; except sections of the beginners' courses in French, German, and Spanish, which meet five times a week.

The days of the week are indicated by their initial letters.

Roman numerals in parenthesis indicate the examination group in which the course is found. No student may choose two studies in the same examination group.

SCHOOL OF APPLIED MATHEMATICS

HARRY YANDELL BENEDICT, PH. D., *Professor of Applied Mathematics.*

CHARLES DONNELL RICE, M. S., *Associate Professor of Applied Mathematics, Chairman.*

DAVID FRANCIS BARROW, PH. D., *Instructor in Applied Mathematics.*

HYMAN JOSEPH EITTLINGER, M. A., *Instructor in Applied Mathematics.*

ERNEST BAKER, *Assistant in Applied Mathematics.*

WYNDHAM EVERETTE BROWN, JR., *Assistant in Applied Mathematics.*

WILLIAM JASPER MILLER, *Assistant in Applied Mathematics.*

While the work of the school is open to academic students, and may be counted on the academic degree, the courses of instruction are particularly adapted to the needs of the engineering student.

Course 111s is to be taken by engineering students who have not had solid geometry before entering the University.

The success or failure of students in Courses 1, 202ws, and 3 in applied mathematics depends to a large extent upon their preparation in algebra. It is not sufficient that the student once knew the subject; it is important that he know it at the beginning of his work in the University. All students of engineering should have an actual working knowledge of elementary algebra through quadratics. A half-year's work beyond quadratics is strongly recommended to such students. Before entering the University the student should make a thorough review of algebra in order to avoid the loss of much time in having to learn again what was once known.

For Undergraduates

1abc. F. *Introductory Course for Engineering Students.*

Applied Mathematics 1a, 1b, and 1c together constitute a single course and may not be counted separately.

Required for Applied Mathematics 3 and 106f; Civil En-

in high school

C

gineering 126s and 30; Electrical Engineering 20, 29, and 231.

Sections 1 and 3, M. W. F. 9 (I); Sections 2 and 4, T. T. S. 9 (II).
Mr. ETTLINGER and Dr. BARROW.

1a. *F. Plane Trigonometry and Review of Algebra.*

Given in the fall and winter terms.

1b. *F. College Algebra.*

Given in the winter and spring terms.

1c. *F. Introductory Course in Analytics.*

Given in the spring and summer terms.

11s. *F. Solid Geometry for Engineering Students.*

The fundamental principles of lines and planes in space, with emphasis upon the more important propositions. Special attention is given to the mensuration of surfaces and solids.

104f. *Second Course in Analytics.*

Prerequisite: Introductory Course in Analytics (1c).

Required for Applied Mathematics 209 and Electrical Engineering 20, 29, and 231.

Special attention is given to geometric interpretation of equations and algebraic processes. The topics treated will be the conic sections, special loci, tangents, and the general equation of the second degree.

Given in the fall and summer terms.

(Omitted in 1915-1916.)

209ab(ws). *Calculus for Engineering Students.*

Applied Mathematics 209a and 209b together constitute a two-thirds course and may not be counted separately.

Prerequisite: Applied Mathematics 104f.

Required for Civil Engineering 32 and Electrical Engineering 22, 206, and 20.

209a. *Differential Calculus.*

Prerequisite: Applied Mathematics 104f.

There will be given the topics of variables, functions, limits, differentiation, maxima and minima, points of inflection, and the first notions of integration.

Given in the winter and summer terms.

209b. *Integral Calculus.*

Prerequisite: Applied Mathematics 209a.

The central topic will be integration and its application. The differentiation of functions will be continued.

Given in the spring and summer terms.

(Omitted in 1915-1916.)

3abc. *Calculus for Engineering Students.*

Applied Mathematics 3a, 3b, and 3c together constitute a single course and may not be counted separately.

Prerequisite: Applied Mathematics 104f.

Required for Civil Engineering 32 and Electrical Engineering 206, 219ws, and 22.

Sections 1 and 3, M. W. F. 11 (V); Section 2, T. T. S. 11 (VI).

Associate Professor RICE, Mr. ETTLINGER, and Dr. BARROW.

3a. *Differential Calculus.*

Prerequisite: Applied Mathematics 104f.

There will be given the topics of variables, functions, limits, differentiation, maxima and minima, points of inflection, and the first notions of integration.

Given in the fall and summer terms.

3b. *Integral Calculus.*

Prerequisite: Applied Mathematics 3a.

The central topic will be integration and its application. The differentiation of functions will be continued.

Given in the winter and summer terms.

3c. *Applications of Calculus.*

Prerequisite: Applied Mathematics 3b.

This is a continuation of the work in calculus. More advanced applications will be given.

Given in the spring and summer terms.

106f. *Advanced Trigonometry for Civil Engineering Students.*

Prerequisite: Applied Mathematics 1.

Required for Civil Engineering 207fw.

This course is intended primarily for students of civil engineering. In it will be included a rapid review of the

fundamental formulas of plane trigonometry, practical applications of the same to engineering problems, and the basic principles of spherical trigonometry. M. W. F. 10 (III).

Associate Professor RICE.

214ws. *Popular Astronomy.*

An acquaintance with the elements of plane trigonometry and with high-school physics is prerequisite. The mathematical side of elementary astronomy will not be emphasized but will not be wholly neglected. The course will be illustrated by lantern slides and some use will be made of a five-inch equatorial. Prerequisite: Applied Mathematics 1 or Mathematics 1. M. W. F. 9 (I).

Professor BENEDICT.

For Undergraduates and Graduates

The following courses are not open to students who have completed less than two full courses in mathematics.

207fw. A. *Advanced Calculus for Civil Engineering Students.*

Prerequisite: Applied Mathematics 3.

Required for Civil Engineering 31 and 117f.

While this course is open to students of mathematics in general, the topics treated will be selected to suit the needs of those directly interested in civil engineering. T. T. S. 9 (II).

Associate Professor RICE.

208. A. *Advanced Calculus for Electrical Engineering Students.*

Prerequisite: Applied Mathematics 3.

This course is open to all students interested in mathematics, but the topics discussed will be especially adapted to the needs of the electrical engineering student. T. T. S. 11 (VI).

Mr. ETTLINGER.

15. A. *Advanced Calculus for Engineering Students.*

The topics treated will be selected to suit the needs of those interested in engineering.

(Omitted in 1915-1916.)

10. A. *Advanced Applied Mathematics.*

Whenever a sufficient number of students apply and time permits, a course, more or less advanced, will be given. It

will deal with one or more of the following topics: (a) advanced mechanics; (b) calculation of orbits; (c) celestial mechanics; (d) vector analysis. As far as possible the course will be arranged to meet the needs of the students electing it.

SCHOOL OF BOTANY

ISAAC MCKINNEY LEWIS, PH. D., *Associate Professor of Botany, Chairman.*

FREDERICK MCALLISTER, PH. D., *Adjunct Professor of Botany.*

MARY SOPHIE YOUNG, PH. D., *Instructor in Botany.*

BENJAMIN CARROLL THARP, B. A., *Tutor in Botany.*

WILLIAM CHARLES HOMEYER, *Assistant in Botany.*

ELIDA MARION PEARSON, B. A., *Assistant in Botany.*

FREDERICK CONRAD WERKENTHIN, *Assistant in Botany.*

Botany 1 is the basal course and is prerequisite to all other lines of botany. Candidates for the degree of Bachelor of Arts who elect botany as a major are advised to take Botany 1, 418 or 428, 21 or 27, and 406.

Students who expect to become teachers of botany in the secondary schools should complete Botany 1 and 418 and Education 146 as a minimum, with the addition of Botany 406 and 27 if possible.

Botany 418, 428, 232, 20, 21, 27, and 29 all have an economic bearing and are recommended to students wishing to fit themselves for government or experiment station work.

No student will be given credit for graduate work in botany as a major without the previous completion of Botany 1, 418, and 406, or the equivalent.

Students selecting botany as a major under the Natural Science Group are advised to choose either zoology, chemistry, or agriculture as a minor. The following are some of the lines recommended:

I. General Botany.

Major: Botany 1, 418, 27, 406, and 223 if possible.

Minor: Zoology 1 and 3, with 410 and 16 if possible.

This group is desirable for those wishing to fit themselves to be teachers of biology.

tered for as such. Prerequisite: Latin 1 and 102, and one course in education. M. W. F. 3 (XI).

Associate Professor PENICK.

For Undergraduates and Graduates

The following courses are not open to students who have completed less than two and one-third courses in Latin:

5. A. Reading Course.

Advanced prose and poetry. The authors read in Latin 5 vary from year to year. Latin 3 is prerequisite, and 104 is strongly advised. M. W. F. 9 (I).

106. A. Composition and Style.

This course is varied from year to year. Prerequisite: Latin 104. Th. 3 (XII).

8. A. Reading Course.

Advanced prose and poetry. Latin 5 is prerequisite. M. W. F. 11 (V).

109. A. Composition and Style.

An extension of Latin 106. Th. 3 (XII).

111. A. Selected Chapters in Historical Latin Grammar.

This course is open to advanced students only, and is recommended only to those who have taken Greek and either Old English or Gothic, or to those who wish to study the origin of the Romance languages.

112 (113). A. Latin 111 in successive years.

For Graduates

13. G. Conference Course.

In 1915-1916, Catullus.

In 1914-1915 a course was given devoted to the critical study of the comedy of Plautus. The same author is not offered in consecutive years. This course is open, if a sufficient number of students apply, to those who have completed successfully Latin 5, 106, 8, and 109, or to students

engaged upon Latin 8 and 109. A reading knowledge of German and French is highly desirable. T. T. S. 9 (II).
Professor FAY.

14. C. Sanskrit for Beginners.

Professor FAY.

115. G. Advanced Sanskrit.

Professor FAY.

Latin 107w, 111, 14, and 115 are not all offered in any one year. The authors read and the exercise books used are liable to change from year to year, but the student should have the following books of reference: Harper's *Latin Dictionary* or Lewis's *Elementary Latin Dictionary*; Seyffert's *Dictionary of Classical Antiquities*; Kiepert's or Perthes's *Atlas Antiquus*; and Gildersleeve-Lodge's *Latin Grammar* (School or College Edition).

Students preparing to teach Latin in the high schools of Texas will not be recommended, save in very unusual instances, till they shall have completed upwards of three full courses in Latin. Such persons should combine Latin with Greek (not less than two courses), with Spanish or English (not less than three courses), with French or German (not less than three courses). History might also be profitably combined with Latin in the school-room, and History 1 ought to be taken along with Latin 1.

Candidates for the advanced degrees who elect Latin for a major should select their minors upon consultation with their instructors in the major subject.

SCHOOL OF PURE MATHEMATICS

MILTON BROCKETT PORTER, PH. D., *Professor of Pure Mathematics.*

JOHN WILLIAM CALHOUN, M. A., *Adjunct Professor of Pure Mathematics, Chairman.*

EDWARD LEWIS DODD, PH. D., *Adjunct Professor of Actuarial Mathematics.*

MARY ELIZABETH DECHERD, M. A., *Instructor in Pure Mathematics.*

FRANK ALEXANDER VON LAMOTTE, M. A., M. S., *Instructor in Pure Mathematics.*

GOLDIE PRINTIS HORTON, M. A., *Tutor in Pure Mathematics.*

HUGH PORTER, *Assistant in Pure Mathematics.*

HILDA LUCILLE ROBISON, *Assistant in Pure Mathematics.*