CATALOGUE

The following bulletins, all biennial except Parts V and IX and the App
comprise the Catalogue of the University; bulletin number and date of
are given in parentheses:

1. Part I: Fellowships, Scholarships, Tutorships and Assistantships,
Loan Funds, Main University (No. 3403: January 15, 1934).
2. Part II: College of Pharmacy (No. 3408: February 22, 1934).
3. Part III: School of Business Administration (No. 3410: March
4. Part IV: College of Engineering (No. 3412: March 22, 1934).
5. Part V: General Information, Main University (No. 3516: A
1935).
6. Part VI: College of Arts and Sciences and School of Education
3517: May 1, 1935).
7. Part VII: Graduate School (No. 3519: May 15, 1935).
8. Part VIII: School of Law (No. 3429: August 1, 1934).
9. Part IX: Medical Branch (No. 3505: February 1, 1935).
10. Appendix to Parts I–VIII: Annual Register of Students, Main U
(Directory of the Main University and of the Extramural Divisions,
No. 3441, with student supplement completing the Long Session of 19
and including the Summer Session of 1934).

GENERAL PURPOSE OF THE CATALOGUE

The Catalogue of the Main University is intended to give general infor
to record the work of the biennium about to close, and to make announce
for the ensuing biennium.

As to the courses to be offered the following Long Sessions, the Cat
contains only a preliminary announcement and is superseded by the
Announcement of Courses, printed in September of each year.

The Catalogue contains the official regulations for the next two years
as to degree requirements, these regulations are not valid beyond th

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CATALOGUE NUMBER

Part VI: College of Arts and Sciences and
School of Education

1933–1934 and 1934–1935

With Announcements for
1935–1936 and 1936–1937

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U. Texas 1934-35

A student on final trial whose score cannot be determined because of postponed grades is dropped from the rolls of the University.

Final trial is for a definite period, during which the student, while still in attendance upon his classes, must show marked improvement in his studies, in default of which his connection with the University terminates with the period.

Class attendance.—The University expects, and has a right to expect, that a student on special observation or final trial will attend classes with unfailing regularity, will be punctual in reports and other written work, and will make every effort to show marked improvement in his courses. A failing student unwilling to put forth every effort to keep up with his classes should be withdrawn from the University.

In case of illness or any other imperative reason for absence, a student should file a written explanation of each absence with the Dean to be entered upon his record card.

Return after failure.—A student scholastically dropped from the University by reason of failure in work may register again, if dropped during the Long Session, not earlier than the next Summer Session or the beginning of the next Long Session. A student scholastically dropped at the end of the second semester may register in the next term of the Summer Session but not in the next Long Session earlier than the second semester except as provided under the required minimum of work rule.

A student who has been on special observation or final trial or who has been forced to withdraw by reason of failure in work is permitted to register subsequently in good scholastic standing only if he has remained continuously out of school as long as four semesters of the Long Session.

The foregoing requirements and the rules governing special observation and final trial apply to all students, and the Dean is without discretion except in the case of mature students over 25 years of age.

DEGREES

In the College of Arts and Sciences six degrees are offered: Bachelor of Arts, Bachelor of Journalism, Bachelor of Science in Home Economics, Bachelor of Science in Geology, Bachelor of Science in Medicine, and Bachelor of Science in Nursing.

GENERAL REQUIREMENTS

No honorary degree will be conferred by The University of Texas.

No degree will be conferred except publicly and on Commencement Day, in June or in August.

It is desired that all candidates attend the Commencement at which their degree is to be conferred. However, those not wishing to do so may secure exemption from attendance by giving the Registrar written notice at least ten days in advance and providing the address and postage for mailing the diploma.

A candidate absent without having given such notice will not be graduated as scheduled but, in order to secure his degree, must apply in the regular way at a later Commencement.

No degree will be conferred without a residence in the Main University 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, and the completion in residence of at least thirty semester hours of work in the College of Arts and Sciences counting toward the degree.

At least twenty-four of the last thirty semester hours offered for an undergraduate degree must be taken in the Main University, but not necessarily in residence. In the case of the Degree Preparatory to Law, the degree of Bachelor of Science in Medicine, the degree of Bachelor of Science in Nursing, and Scheme II of Degrees Preparatory to Medicine, this rule applies to the academic work only.

Of the courses offered for any undergraduate degree, at least six semester hours in advanced courses in the major subject must be completed in residence at the Main University.

Not more than half of the semester hours required for any degree offered in the College of Arts and Sciences may be done by correspondence.

No second bachelor's degree will be conferred until the candidate has completed at least twenty-four semester hours in addition to those counted toward his first bachelor's degree.

A candidate for a degree must register in the University and apply to his Dean for his degree not later than May 1 if it is to be conferred in June, and not later than August 1 if it is to be conferred in August.

Seniors will not be approved for graduation unless they have complied with the regulations regarding physical training. See the General Information Bulletin.

GRADUATION UNDER A PARTICULAR CATALOGUE

A student registering either for the first time or in a later year in the College of Arts and Sciences may obtain a degree in the College of Arts and Sciences according to the requirements of the catalogue then in force.

A student registering in the College of Arts and Sciences in the Summer Session may obtain a degree in this College according to the requirements either of the catalogue applying to the previous Long Session or of the one for the next Long Session.

A student completing in the Division of Extension, either in extension classes or by correspondence or in both ways together, by February 15 of any year, at least twelve semester hours of work counting toward a degree in the College of Arts and Sciences may obtain that degree in accordance with the requirements of the catalogue applying to that year.

All of the above provisions, however, are subject to the restriction that all requirements for a degree in the College of Arts and Sciences must be completed within six years of the date of the catalogue chosen.

A student may always graduate under the current catalogue.

Dep't. of App. Math + Astronomy

u. Texas 1934 - 35

Dept. of
App. Math
+
Astronomy

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APPLYING FOR A DEGREE

A candidate for a degree must register in the University and should apply for the degree at the time of registration. Application must be made not later than May 1 for the Long Session, or August 1 for the Summer Session.

To apply for a degree, the applicant

(a) Must file with the Dean a "Degree Card." This card will be filled out in the Registrar's office upon request of the applicant, and should be applied for as early as March 1 of the junior year previous to graduation in June or August. Attention to this matter will save the student trouble and delay in registration.

(b) Must register in the University with the Dean and must not withdraw before graduation.

(c) Must fill out a "Diploma Card" at registration and get the Dean to sign it.

In advising and in registering students, the Dean and his assistants try to prevent errors. Avoidance of errors is the main purpose of the Degree Card. But the student himself is expected to remember that graduation is attained according to some one catalogue, and is expected to study the requirements set forth in that one catalogue and to register in accordance therewith; and he finally registers entirely at his own risk.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF ARTS

PLAN I

A. Prescribed Work

1. Twelve semester hours in English (English 1, and 12 or 13).

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2. Six semester hours in mathematics or six semester hours in Latin (Latin 1) or six semester hours in Greek (Greek 1 if no units in Greek were credited toward admission; Greek 12 if two units were so credited). A student who offers a course in one of the classical languages in satisfaction of this requirement may not offer the same course toward the satisfaction of Requirement 3.

3. Twelve semester hours of numbered courses in one foreign language, either ancient or modern. In satisfying this requirement Latin B counts as a numbered course.

4. Twelve semester hours in the natural sciences, six being Chemistry 1 or 5 or Physics 1, 2, or 9, and six being Botany 1, or Geology 1, or Zoology 1 or 6. Any one may be taken first.

5. Three semester hours in American Government (Government 310). Three semester hours in economics; recommended, but not compulsory, for women.

6. Three semester hours in philosophy or psychology.

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

8. Thirty semester hours of advanced courses. Courses of senior rank count as twice their value in satisfying this requirement, but not more than six semester hours of senior courses may be counted in this manner. (See "Rank

and Credit Value" of courses in the General Information bulletin.) Not more than twelve of the thirty semester hours of advanced courses of this requirement may be taken outside of the College of Arts and Sciences. At least six semester hours in advanced courses in the major subject must be completed in residence at the Main University.

9. Enough other courses to make 120 semester hours, chosen by the student subject to the rules set forth in D below.

B. Special Requirements

1. The student must make an average of at least fifteen points per semester hour on the courses taken at the University which are required and counted toward the degree, an A grade on a semester hour counting as 21 points; a B as 18 points; a C as 15 points; a D as 12 points; an E, an F, or a G as zero.

A student whose average is at least twenty points per semester hour with an A on the major examination is graduated "with highest honors"; a student whose average is at least nineteen points per semester hour with an A on the major examination is graduated "with high honors"; a student whose average is at least eighteen points per semester hour with at least a B on the major examination is graduated "with honors."

In the case of students majoring in departments that do not require a major examination, honors are determined as in the preceding paragraph except that for the grade in the major examination there is substituted a grade, voted by the major department, for the student's work considered as a whole.

2. A student majoring in a department which requires a major examination must pass a general four-hour written examination in his major subject on May 7 of the second semester of his senior year, or on May 7 or August 10 following the completion of the requirement in the major subject. Not later than ten days before the date set for the examination the Dean sends to the chairmen of the several departments a list of students eligible for the examination. The chairman of the department in which the major is taken fixes the place of the examination and supervises the giving of it. August candidates may take this examination in May or on August 10. Students taking this examination will not be counted as absent from classes while actually taking it. In the modern foreign language group the examination may be partly oral to test the candidate's command of the spoken language. 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 the following May or August, but in no case will a special examination be given.

3. The student must, before May 15 of his senior year if a June candidate, or August 5 if an August candidate, 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

THE UNIVERSITY OF TEXAS AT AUSTIN

(theses, reports, quizzes, examination papers, etc.) of every student in all his courses 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 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. 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.

4. The student must show such ability to read one foreign language as to satisfy the Committee on Foreign Language Requirements. This requirement may be met by the student at the end of his sophomore year or later. Petition to appear before the Committee for examination should be filed with the Registrar in accordance with the dates announced in the official calendar.

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

C.   Degree Groups

The courses laid down in one of these six groups must be included in the 120 semester hours required for the B.A. degree.

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

All students intending to major in any subject are strongly advised to consult with the chairman of their major department well in advance of their registration for an advanced course.

The student will note that it is possible so to arrange his minors and electives as to take in effect two majors, belonging either to the same or to different groups. Such an arrangement is especially desirable for those who wish to teach two subjects.

Courses in education, law, engineering, and business administration do not count either as majors or minors, except that business administration may be used as a minor when either economics or government is a major.

A course taken to meet the requirements under "A. Prescribed Work" counts also toward satisfying the requirements laid down in that subject in these groups.

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

1.   Classical (Greek or Latin) Group

Major Subject: Twenty-four semester hours in Greek or twenty-eight semester hours in Latin. In either case at least twelve semester hours must be advanced courses.

Minor Subject: Either (a) twelve semester hours of numbered courses in a second foreign language, preferably Greek if the major subject be Latin,

and if the major subject be Greek; or (b) twelve semester hours of advanced courses in English.

Not more than sixty-six semester hours may be counted in foreign language.

2.   English Group

Major Subject: Eighteen semester hours of advanced courses in English, six semester hours of which must be in senior work.

Minor Subject: Twelve semester hours of numbered courses in Latin or German or Greek or French or Italian.

Six semester hours in history.

Six additional semester hours of numbered courses in foreign language (either ancient or modern); or eighteen semester hours in social science (under the required history); or twelve semester hours in social science (under the required history) and six semester hours in journalism or in public speaking.

3.   Pure and Applied Mathematics Group

Major Subject: Thirty semester hours in mathematics, of which at least twelve must be in advanced courses.

Minor Subject: Eighteen semester hours in a second subject, preferably physics or philosophy or chemistry or economics.

Six semester hours in philosophy.

4.   Modern Foreign Languages Group

Major Subject: Twenty-four semester hours of numbered courses in French or German or Spanish or Czech.

Minor Subjects: Twelve semester hours of numbered courses in a second foreign language (either ancient or modern), and either (a) six semester hours of advanced courses in this second foreign language, or (b) six semester hours of numbered courses in a third foreign language, or (c) six semester hours of advanced courses in English, or (d) six semester hours of advanced courses in social science.

Six semester hours in history.

Not more than sixty-six semester hours may be counted in foreign language.

5.   Natural Science (Botany and Bacteriology, Chemistry, Geology, Physics, and Zoology) Group

Major Subject: Twenty-four semester hours in one natural science. (If the major subject be chemistry, there must be included at least six semester hours in general chemistry, six in quantitative analysis, six in organic chemistry, and four in physical chemistry, and at least twelve of the twenty-four semester hours must be advanced.)

Minor Subjects: Twelve semester hours in a second natural science, unless the major subject be physics, in which case there must be twelve semester hours in mathematics and six semester hours in chemistry; or unless the major subject be chemistry, in which case there must be either twelve semester hours

U Texas 1934–35

Dep't. of App. Math + Astronomy

especially of Texas. Emphasis on evidences of the evolution of the arts. Prerequisite: Twelve semester hours of advanced courses in anthropology or six semester hours of advanced courses in anthropology and graduate standing. MWF 8. Mr. Pearce. (Alternates with Anthropology 81; omitted in 1935-1936.)

81. *Old World Archaeology.*—A synthetic view of the conceptions of modern archaeologists with regard to the long periods of man's social development preceding written history. Special emphasis upon Europe, but some attention also to Mesopotamia, Egypt, Persia, India, Turkestan, China, and Japan. Prerequisite: Twelve semester hours of advanced courses in anthropology and ability to read at least one foreign language. TTS 8. Mr. Engerrand. (Alternates with Anthropology 80; given in 1935-1936.)

98. *Thesis Course for the Master's Degree.*—Mr. Pearce, Mr. Engerrand.

DEPARTMENT OF APPLIED MATHEMATICS AND ASTRONOMY

Professor Cooper, Chairman

Professors Benedict, Calhoun, Cooper; Associate Professor Keller, Adjunct Professors Cleveland, Craig, Haskell; Instructor Udinski

APPLIED MATHEMATICS

For Undergraduates

01f, 01s. *Algebra.*—Non-credit; required of all engineering students. Six sections.

202f, 202s. *Solid Geometry.*—Required of candidates for engineering degrees who do not present solid geometry for entrance. Counts toward academic degrees but not toward engineering degrees. TT 8.

303s. *Mathematics for Home Economics Students.*—May not be used to satisfy the mathematics requirement for any degree in the College of Arts and Sciences except the degree of Bachelor of Science in Home Economics. TTS 10.

304f. *Plane Trigonometry.*—Applied Mathematics 304 and Pure Mathematics 301 may not both be counted for credit by the same student. Six sections.

304s. *Plane Trigonometry.*—Repetition of Applied Mathematics 304f. Section 1, MWF 9; Section 2, TTS 10.

305f. *Analytic Geometry.*—Prerequisite: Applied Mathematics 304. Applied Mathematics 305 and Pure Mathematics 302 may not both be counted for credit by the same student. Section 1, MWF 10; Section 2, TTS 9.

305s. *Analytic Geometry.*—Repetition of Applied Mathematics 305f. Four sections.

[306s. *Mathematics of Investment.*—Designed for students who expect to enter the School of Business Administration. Cannot be used to satisfy the mathematics requirement for any degree in the College of Arts and Sciences. (Not given after 1933-1934.)]

307f. *Mathematics of Investment.*—Study of the mathematical processes employed in certain business administration courses. Designed for students who expect to enter the School of Business Administration; cannot be used to satisfy the mathematics requirement for degrees in the College of Arts and Sciences. Section 1, MWF 10; Section 2, TTS 11. (Given for the first time in 1934-1935.)

308s. *Mathematics of Investment.*—Continuation of Applied Mathematics 307. Prerequisite: Applied Mathematics 307. Cannot be used to satisfy the mathematics requirement for degrees in the College of Arts and Sciences. Section 1, MWF 10; Section 2, TTS 11. (Given for the first time in 1934-1935.)

13. *Calculus.*—First course in differential and integral calculus. Prerequisite: Applied Mathematics 305. Applied Mathematics 13 and Pure Mathematics 13 may not both be counted for credit by the same student. Four sections.

13as. *Calculus.*—The first half of Applied Mathematics 13 given in the second semester. Section 1, MWF 11; Section 2, TTS 9.

13bf. *Calculus.*—The second half of Applied Mathematics 13 given in the first semester. Prerequisite: Applied Mathematics 13a. Section 2, TTS 8; Section 4, TTS 11.

For Undergraduates and Graduates

22. *Differential Equations and Applications.*—Solutions of differential equations of physics, chemistry, and engineering. Prerequisite: Applied Mathematics 13. The same as Pure Mathematics 22; counts in the same manner as Pure Mathematics 22. MWF 8. Mr. Ettlinger.

25f. *Advanced Calculus.*—A rigorous treatment of the theories underlying Applied Mathematics 13 and applications to a wider range of problems; series, determinants, hyperbolic functions, partial differentiation, elementary Fourier series. Prerequisite: Applied Mathematics 13. Section 1, MWF 12; Section 2, TTS 11; Section 3, MWF 12; Section 4, TTS 12.

[25. *Advanced Calculus for Civil Engineers.*—Prerequisite: Applied Mathematics 13. Mr. Haskell. (Not given after 1934-1935.)]

26s. *Advanced Calculus.*—Simple types of ordinary and partial differential equations which occur most frequently in electrical and mechanical engineering. Prerequisite: Applied Mathematics 13. Section 1, MWF 12; Section 2, TTS 11; Section 3, MWF 12; Section 4, TTS 12.

41. *Analytical Mechanics.*—Equilibrium and motion of a particle and rigid body in two or three dimensions. Prerequisite: Applied Mathematics 13. The

U Texas 1934-35

same as Pure Mathematics 41; counts in the same manner as Pure Mathematics 41. Mr. ETTLINGER. (Not given in 1933–1934, 1935–1936, or 1936–1937.)]

62. *Potential Theory.*—Newtonian potential and boundary value problems for partial differential equations. Prerequisite: Pure Mathematics 21 or Applied Mathematics 325 and 326. Hours to be arranged. Mr. HASKELL.

64. *Vector and Tensor Analysis.*—Vector algebra, differential calculus of vectors, differential operators, integral transformations, tensors. Applications to differential geometry and physics. Prerequisite: Applied Mathematics 325 and 326 or Pure Mathematics 21. MWF 12. Mr. CRAIG.

65. *Advanced Applied Mathematics.*—Explanation and application of operational calculus, functions of a complex variable, vector analysis, partial differential equations, dimensional analysis, integral equations, and Lagrange's equations to problems in applied physics and research engineering of General Electric Company, Westinghouse, Bell Telephone, etc. Prerequisite: Applied Mathematics 325 and 326. Hours to be arranged. Mr. KELLER.

66. *Applications of Tensor Analysis.*—Tensor analysis, including differentiation processes, with emphasis on the applications. Specifically, applications will be made to Riemannian geometry, mechanics, electricity and magnetism, special relativity, and gravitation. Prerequisite: Three semester hours of Applied Mathematics 64. Mr. CRAIG. (Not given in 1933–1934 or 1934–1935.)

367s. *Non-Linearity in Astronomy, Engineering, and Physics.*—Application of modern theories of differential equations in three- and four-body problems. Applications of Cotton's, Schmidt's, and Volterra's and Lalesco's non-linear integral equations to circuit problems, dynamic braking of synchronous machines, and oscillation problems of physics and engineering. Prerequisite: Applied Mathematics 22 or 65. Hours to be arranged. Mr. KELLER. (Not given in 1934–1935.)

69. *Mathematical Analysis for Advanced Physical Chemistry.*—Atomic and molecular mechanics, kinetic theory and statistical mechanics, all with special reference to the recent developments in chemistry. Prerequisite: Applied Mathematics 22, or 325 and 326. MWF 12. Mr. HASKELL. (Not given in 1933–1934 or 1934–1935.)

For Graduates

Graduate standing is a prerequisite for all graduate courses except on permission of the instructor in charge.

380f. *Dynamics.*—The Lagrange and Hamiltonian form of the equations of a dynamical system, with emphasis on their application to modern atomic theories. Prerequisite: Applied Mathematics 325 and 326. Hours to be arranged. Mr. HASKELL. (Not given in 1933–1934 or 1934–1935.)

92. *Partial Differential Equations.*—Recommended for advanced students of physics and engineering. Prerequisite: Applied Mathematics 22. The same

as Pure Mathematics 92. Mr. ETTLINGER. (Not given in 1933–1934, 1934–1935, or 1936–1937.)

96. *Thesis Course for the Master's Degree.*—Candidates for the master's degree who are writing theses should register for this course. Credit given on basis of work done.

99. *Thesis Course for the Degree of Doctor of Philosophy.*—Candidates for the doctor of philosophy degree who are writing theses should register for this course. Credit given on basis of work done.

Pure Mathematics 387f. Continuous Groups.—For description see Department of Pure Mathematics. Mr. COOPER.

ASTRONOMY

For Undergraduates

308. *Popular Astronomy.*—Descriptive non-mathematical treatment of the solar system. Use is made of slides, nine-inch equatorial telescope, and planetarium. Two hours of lecture and one hour of observation. MWF 10. Astronomy 308 and 314 may not both be counted for credit by the same student. Mr. KELLER. (Offered for the first time in 1935–1936.)

309. *Popular Astronomy.*—Descriptive non-mathematical treatment of the stellar and extragalactic systems. Two hours of lecture and one hour of observation. MWF 10. Mr. KELLER. (Given also as 309f in 1934–1935.)

[314. *Popular Astronomy.*—Only an elementary treatment of the mathematical side of astronomy will be given. Use will be made of a nine-inch equatorial. Prerequisite: Six semester hours in mathematics. Mr. KELLER. (Not given after 1933–1934.)]

For Undergraduates and Graduates

360. *Celestial Mechanics.*—Prerequisite: Applied Mathematics 25. Hours to be arranged. Mr. KELLER. (Not given in 1933–1934; given as 360s in 1934–1935.)

361. *Periodic Orbits.*—Preliminary study of theories of analytic differential equations. Solution of general system of nth order differential equations as functions of parameters, independent variable, and initial values of dependent variables. Cauchy-Lipschitz and Picard approximation processes. Application of theory to oscillating satellites in problem of three bodies. Prerequisite: Applied Mathematics 22. Hours to be arranged. Mr. KELLER. (Not given in 1933–1934 or 1934–1935.)

Physics 343s. Astrophysics.—For description see Department of Physics. Mr. KUEHNE.