THE

UNIVERSITY OF WISCONSIN

CATALOGUE

1904-1905

MADISON
Published by the University
1905

U. Wisconsin 1904-05

e years. (Omitted in 1905-06.) Pro-

)pment of the English novel. Study
els. *Throughout the year; Tu., Th.,*
essor LATHROP.
ms to cover the greater part of Spen-
First semester; M., W., F., at 9. As-
ɜE.
verse. The history of English verse-
ter; Th., 2 *to* 4. Assistant Professor

Second semester; M., W., F., at 9.
ODGE.
ɔtation of representative poems. *First*
at 12. Professor HUBBARD.
. Medieval literature in French and
l reference to the *Story of King Ar-*
ance with one of the following sub-
udents who elect this course: Anglo-
d French. *Second semester; M., W.,*

in American Literature. Open to stu-
eted course 40, or its equivalent. The
by semesters. *Tu., Th., at* 8. Assist-

ɔctures on English biographical writ-
ly of classic biographies. *First semes-*
Assistant Professor PYRE.
ɔ to seniors in English. *Throughout*
ssociate Professor LATHROP.

y for Graduates.

ıinary. Subject for 1904-05: Dryden
es. *Throughout the year; Tu.,* 4 *to* 6.
rofessor HUBBARD, and Assistant Pro-

MATHEMATICS.

PROFESSOR VAN VELZER, PROFESSOR SLICHTER, ASSISTANT PROFESSOR SKINNER, ASSISTANT PROFESSOR DOWLING, MR. WOLFF, MR. PERSONS, MISS ALLEN, MR. RANUM, MR. SUTER, AND MR. RASTALL.

Arrangement of Courses.

The courses in Mathematics are divided into three groups, as follows:—

A. Courses 1 to 7 are planned to give a working knowledge of elementary mathematics. All courses are elective except courses 1 and 7, required of students in the Course in Commerce.

Students electing mathematics with a view to teaching it will be expected to complete at least courses 3 and 4, or 4 and 5.

It will be advantageous for all students expecting to elect mathematics to present at least ½ a unit of preparatory work in algebra in addition to the two units in mathematics required for entrance.

B. Courses 11 to 19 are designed for students who desire to continue mathematical study, and who have completed the requisite courses in group A.

C. Courses 20 to 37 are intended primarily for graduate students. They are designed to give some account of the various branches of modern mathematics.

Major in Mathematics.

The requirements for an undergraduate major in mathematics are, in addition to the thesis, 32 semester hours, as a minimum, selected as follows: Courses 1, 2, 4, and 5 from group A, and at least 16 semester hours from group B.

For Undergraduates.

1. Algebra. For students presenting one unit of algebra for entrance. A brief course in University algebra; prerequisite to all other courses in mathematics except 2. *Three hours a week for one semester.*

   First semester:

   Section 1, *M., W., F., at* 8. Assistant Professor SKINNER.
   Section 2, *M., W., F., at* 9. Professor VAN VELZER.
   Section 3, *Tu., Th., S., at* 9. Mr. RANUM.

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Section 4, *M., W., F., at* 10. Miss ALLEN.
Section 5, *Tu., Th., S., at* 10. Assistant Professor SKINNER.
Section 6, *Tu., Th., S., at* 11. Mr. RANUM.
Section 7, *M., W., Th., at* 12. Miss ALLEN.

For Students in the Course in Commerce.

Section 8, *M., W., F., at* 8. Miss ALLEN.
Section 9, *M., W., F., at* 8. Mr. RASTALL.
Section 10, *Tu., Th., S., at* 10. Mr. RASTALL.

Second semester:

M., W., F., at 10. Professor VAN VELZER.

2. Trigonometry. Plane trigonometry and an introduction to spherical trigonometry; prerequisite to all other courses in mathematics except 1, 3, and 7. Open to all students who have had logarithms. *Three hours a week for one semester.*

First semester: *M., W., F., at* 10. Professor VAN VELZER. *Second semester*: Sections and instructors are the same as in sections 1 to 7 in course 1.

3. Algebra. For students presenting one and one-half units of algebra for entrance and elective to students who have taken course 1. Should be preceded by course 2 or taken along with it. *Three hours a week for one semester. First semester; M., W., F., at* 9; *second semester; Tu., Th., S., at* 10. Assistant Professor SKINNER.

4. Analytic Geometry. Elementary course. Straight line, conic sections, general equation of the second degree, transcendental curves, and an introduction to geometry of three dimensions. *Throughout the year; Tu., Th., at* 10. Professor VAN VELZER and Assistant Professor DOWLING.

5. Calculus. Elementary course. Differentiation and integration of functions of one variable with the usual geometric applications. *Throughout the year; M., W., F., at* 10. Assistant Professor DOWLING and Assistant Professor SKINNER.

7. Commercial Algebra. Required of students in the Course in Commerce. *Second semester; three hours a week,* at hours as in sections 8, 9, and 10 in course 1. Assistant Professor DOWLING, Miss ALLEN, and Mr. RASTALL.

For Undergraduates and Graduates.

11. Calculus. Advanced. Partial derivatives and multiple integrals with the usual geometric

out the year; Tu., Th., at 9. Assis

12. Differential Equations. Ordinary a equations with a few geometric a tions. Murray's *Differential Equat* This course must be preceded by along with it. *Throughout the yea* 9. Professor VAN VELZER.

13. Theoretical Mechanics. An elementa mechanics. This course may be ta had analytic geometry and calculus. *M., W., F., at* 11. Professor SLICH

14. Analytic Geometry of Two Dimensior dealing with modern methods in p Must be preceded by course 4. *Th W., F., at* 9. Professor VAN VELZ

15. Projective geometry. Lectures based *der Lage. Throughout the year; T* Professor DOWLING.

16. Analytic Geometry of Three Dimensi be preceded by course 11 or take *the year; Tu., Th., at* 9. Assistant

17. Quarternions. *Second semester, in a F., at* 12. Assistant Professor SKI

18. Theory of Probabilities. A course i to the needs of students of science given occasionally. The mathem year is a prerequisite. *Either se* Professor SLICHTER.

19. Differential Geometry. The applicat calculus to the geometry of twiste *First semester in alternate years;* sistant Professor SKINNER.

Primarily for Gradua

20. Elliptic Functions. This course mus 12. *Throughout the year; M., W.,* 1905-06.) Assistant Professor DOW

21. Theory of Functions. *Throughout t* 9. Alternates with course 20. Ass ING.

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at 10. Miss ALLEN.
., *at* 10. Assistant Professor SKINNER.
., *at* 11. Mr. RANUM.
., *at* 12. Miss ALLEN.
ı *the Course in Commerce.*
at 8. Miss ALLEN.
at 8. Mr. RASTALL.
S., *at* 10. Mr. RASTALL.

ofessor VAN VELZER.
trigonometry and an introduction to
y; prerequisite to all other courses in
, 3, and 7. Open to all students who
Three hours a week for one semes-

W., F., at 10. Professor VAN VELZER.
ctions and instructors are the same
n course 1.
s presenting one and one-half units
ce and elective to students who have
uld be preceded by course 2 or taken
hours a week for one semester. First
at 9; *second semester; Tu., Th., S., at*
sor SKINNER.
Elementary course. Straight line,
l equation of the second degree, tran-
l an introduction to geometry of three
out the year; Tu., Th., at 10. Pro-
ıd Assistant Professor DOWLING.
course. Differentiation and integra-
ne variable with the usual geometric
hout the year; M., W., F., at 10. As-
WLING and Assistant Professor SKIN-

Required of students in the Course
d semester; three hours a week, at
8, 9, and 10 in course 1. Assistant
Miss ALLEN, and Mr. RASTALL.

duates and Graduates.

Partial derivatives and multiple in-

tegrals with the usual geometric applications. *Throughout the year; Tu., Th., at* 9. Assistant Professor SKINNER.

12. Differential Equations. Ordinary and partial differential equations with a few geometric and mechanical applications. Murray's *Differential Equations* is used as a text. This course must be preceded by course 11 or be taken along with it. *Throughout the year; M., at* 8, *Tu., Th. at* 9. Professor VAN VELZER.
13. Theoretical Mechanics. An elementary course in analytical mechanics. This course may be taken by those who have had analytic geometry and calculus. *Throughout the year; M., W., F., at* 11. Professor SLICHTER.
14. Analytic Geometry of Two Dimensions. An advanced course dealing with modern methods in plane analytic geometry. Must be preceded by course 4. *Throughout the year; M., W., F., at* 9. Professor VAN VELZER.
15. Projective geometry. Lectures based upon Reye's *Geometrie der Lage. Throughout the year; Tu., Th., at* 9. Assistant Professor DOWLING.
16. Analytic Geometry of Three Dimensions. This course should be preceded by course 11 or taken with it. *Throughout the year; Tu., Th., at* 9. Assistant Professor SKINNER.
17. Quarternions. *Second semester, in alternate years; M., W., F., at* 12. Assistant Professor SKINNER.
18. Theory of Probabilities. A course in this subject adapted to the needs of students of science and economics will be given occasionally. The mathematics of the freshman year is a prerequisite. *Either semester; twice a week.* Professor SLICHTER.
19. Differential Geometry. The application of the differential calculus to the geometry of twisted curves and surfaces. *First semester in alternate years; M., W., F., at* 12. Assistant Professor SKINNER.

Primarily for Graduates.

20. Elliptic Functions. This course must be preceded by course 12. *Throughout the year; M., W., F., at* 9. (Omitted in 1905-06.) Assistant Professor DOWLING.
21. Theory of Functions. *Throughout the year; M., W., F., at* 9. Alternates with course 20. Assistant Professor DOWLING.

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22. Newtonian Potential Function. Lectures and required readings on the theory of potential with an introduction to spherical harmonics. *Twice a week for one year.* (Omitted in 1905-06.) Professor SLICHTER.

23. Fourier Series and Spherical Harmonics. The theory of the solution of the fundamental equations of applied mathematics is developed, and application made to a variety of scientific problems. An harmonic analyzer of eighty elements is available for use in this course. *Throughout the year.* (Omitted in 1905-06.) Professor SLICHTER.

24. Advanced Projective Geometry. Continuation of course 15. Lectures based on Reye's *Geometrie der Lage.* (Omitted in 1905-06.) Assistant Professor DOWLING.

30. Theoretical Hydrodynamics. Lectures on fluid motion. *Twice a week for one year, in alternate years.* A course in the theory of elasticity may be substituted for this course. Professor SLICHTER.

32. Theory of Invariants. This course must be preceded by courses 3 and 11. *Throughout the year, in alternate years; M., W., at* 2. (Omitted in 1905-06.) Assistant Professor SKINNER.

33. Groups of Finite Order. *Throughout the year, in alternate years; M., W., F., at* 12. (Omitted in 1905-06.) Assistant Professor SKINNER.

34. Theory of Numbers. Congruences, quadratic residues, quadratic forms, etc. The work is based on Dirichlet's *Zahlentheorie. Throughout the year; Tu., Th., at* 11. Professor VAN VELZER.

35. Higher Plane Curves. Presented from the point of view due to Clebsch as it has been perfected by Brill and Noether. *Twice a week for one year.* Assistant Professor DOWLING.

36. Seminary Courses in Pure Mathematics. These courses vary from year to year according to the needs of students in the department. The aim is to make students acquainted with the literature of the subject under consideration, and to enable them to carry on research work. For 1905-06 the subject is: Groups of linear algebraic substitutions. *Two hours a week.* Assistant Professor SKINNER.

37. Seminary Course in some subject in Applied Mathematics. *Two hours a week, throughout the year.* Professor SLICHTER.

CHEMISTRY.

PROFESSOR DANIELLS, PROFESSOR KAHLENBI
ASSOCIATE PROFESSOR LENHER, ASSISTAN
ASSISTANT PROFESSOR FISCHER, DR. J
MR. BRANDEL, MR. BENNER, MR. TIBBA
MR. KEMMERER, MR. HOLTY, M
RABAK, AND MR. M'DA

Primarily for Undergr

1. General Chemistry. Lectures and *study throughout the year.* Assc and assistants.

2. General Chemistry for Freshmen i eering. *Two lectures, one recitat laboratory period a week through* Professor LENHER and assistants.

3. General Chemistry. For students i tory work is especially designed *study for the first semester; th semester.* Associate Professor LE

5. Research Work. Designed for stuc pare a baccalaureate thesis in ch fessor LENHER.

10. Analytical Chemistry. Qualitative. *with lectures and discussions* c DANIELLS and Mr. HUTCHINS.

10a. Qualitative Analysis. For studen *during the first half of the sec* DANIELLS and Mr. BRANDEL.

12. Analytical Chemistry. For soph *laboratory periods a week. Fi* analysis. Professor DANIELLS and

13. Quantitative Chemical Analysis. I tion of course 11. The analysis and economic products. *Three-fif junior year.* Professor DANIELLS

14. Water Analysis. For students i *Second semester; five-fifths stud*

15. Quantitative Analysis. For stude *during the second half of the se* DANIELLS and Mr. BRANDEL.