Mathematics

The Field of Mathematics

Mathematics and related subjects play important dual roles in our culture. On the one hand, mathematics is a study in its own right; on the other hand, it is an indispensable tool for expressing and understanding ideas in the sciences, engineering, and an increasing number of other fields. As a consequence, employment opportunities for mathematicians have been expanding in recent years.

Today's mathematical scientist may be involved in a wide range of work — from the creation of new theories, to teaching, to the analysis of scientific and managerial models. Career possibilities are especially good in mathematics teaching and in applied mathematics and statistics. The courses offered by the department are designed to develop basic mathematics skills that will be useful throughout an individual's career.

The Department of Mathematics

The Department of Mathematics has 21 full-time faculty members. Their primary objective is excellence in teaching. Many faculty members are also involved in research in pure and applied mathematics, statistics, mathematics education, and in related academic areas.

High School Preparation

Students should meet California State University's admission requirements in terms of college preparatory course requirements, grade point average, and test scores. The requirement for entrance to the mathematics major and minor programs is completion of two years of algebra, as well as courses in geometry and trigonometry.

Students should complete such study before entrance to the university.

Electives

Electives in applied mathematics prepare students to assume positions in technical industries or government employment, or to continue advanced studies in the applied area.

Electives in pre-college teaching in mathematics provide students with the necessary background for obtaining a California Single Subject Teaching Credential in Mathematics. At the present time, there is a growing demand for well-trained mathematics teachers.

Electives in pure mathematics prepare students for the pursuit of graduate degrees, leading to employment at the college or university level or research in industry.

Electives in statistics and probability provide a foundation for students planning to work as statisticians in industry or for government agencies. Employment opportunities exist in bioscience and health-related fields. Statistics courses (in addition to Calculus I, II and III) are essential for the first two Actuarial Examinations offered by the Society of Actuaries.

Graduate Education

The Department of Mathematics offers a Master of Arts (M.A.) in Mathematics. A bachelor's degree is required in order to be admitted to a graduate program at Fresno State.

In order to be admitted to classified graduate standing, applicants must have undergraduate preparation equivalent to a California State University, Fresno mathematics major, and have a 3.0 grade point average in their upper-division mathematics courses. Applicants lacking the above preparation may be admitted conditionally. These students will become classified after meeting additional requirements as set by the graduate coordinator. Coursework taken to achieve classified standing may not be applied towards credits for the graduate program.

All applicants are required to take the GRE Mathematics subject test. Preference will be given to applicants who score 600 or better on the exam.

In addition, two letters of recommendation from faculty at the applicant's undergraduate institution are required. Letters should be sent directly to the graduate coordinator.

California State University, Fresno

**Department of Mathematics
559.278.2992**

B.A. in Mathematics

Minor in Mathematics

M.A. in Mathematics

- *Traditional*
- *Teaching*

**Teaching Credential
(Single Subject Waiver)**

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The M.A. in mathematics is designed for students who wish to study mathematics at an advanced level. Within this degree program, students may choose to complete the traditional track or the teaching option. The traditional track best satisfies the needs of students who wish to work in industry, teach at community college, or go on to pursue a Ph.D. in mathematics. The teaching option is designed for students who wish to teach at community college, enhance their high school mathematics teaching, assume a leadership role in high school mathematics education and beyond, or pursue an advanced degree in mathematics education.

College Program

Students should consult the university's *General Catalog* for specific major and university requirements. Community college transfers should consult their catalogs to ensure that courses taken are CSU transferable (baccalaureate level).

General Education

Students should complete as many of the Fresno State General Education requirements as possible during the freshman and sophomore years, whether they are attending Fresno State or a community college. Community colleges can certify up to 70 of the units required in California State University, Fresno's General Education pattern.

Course Requirements

Lower Division
Freshman-Sophomore level courses

The following lower-division calculus sequence is required of all math majors:

Calculus I, II, and III (Fresno State MATH 75 or 75A and B, MATH 76, MATH 77)

Upper Division

Junior-Senior level courses

The following upper-division courses are required for all math majors:

Transition to Advanced Mathematics (Fresno State MATH 111)
Principles of Algebra (Fresno State MATH 151)
Linear Algebra (Fresno State MATH 152)
Intermediate Mathematical Analysis I (Fresno State MATH 171)

Applied Complex Analysis (Fresno State MATH 128) or
Differential Geometry (Fresno State MATH 165) or
Intermediate Mathematical Analysis II (Fresno State MATH 172)

Four mathematics courses, upper-division, or MATH 81 (excluding MATH 100, 133, 134, 137, 138, 139, and 149), are required.

Additional Requirements
Introduction to Programming and Problem Solving (Fresno State C SCI 40)
Mechanics and Wave Motion (Fresno State PHYS 4A)

Mathematics Minor

To receive a minor in mathematics, students must complete 20 units in mathematics, MATH 75 (or MATH 75B) or above, including at least two upper-division classes taken at Fresno State, excluding MATH 100, 133, 134, 137, 138, 139, and 149.

Courses in the mathematics minor may be taken credit/no credit (*CR/NC*), subject to university regulations.

Credential Program Requirements

Single Subject Credential students may be required to complete specific coursework. Please contact a credential adviser in the Mathematics Department for these requirements.

For additional information, write

California State University, Fresno Department of Mathematics

5245 North Backer
M/S PB108
Fresno, California
93740-8001

Visit or call

Department of Mathematics

Peters Business Building, Room 381
559.278.2992

www.fresnostate.edu/csm/ math/

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