

# Mathematics - Teaching Option, B.S.

## DEPARTMENT

### Department of Mathematics

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MN in Mathematics, Minor  
BS in Mathematics - General Math Option, B.S.  
BS in Mathematics - Pure Math Option, B.S.  
BS in Mathematics - Applied Math Option, B.S.  
BS in Mathematics - Statistics Option, B.S.  
BS in Mathematics - Teaching Option, B.S.  
BS in Mathematics - Integrated Credential Option, B.S.  
MS in Mathematics, M.S.  
CRED in Single Subject Credential - Mathematics  
Courses Offered

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. The courses offered by the department are designed to develop skills in, and an appreciation and understanding of, both roles.

Because there are so many different areas in which a trained mathematician can find employment or continue studies, the department offers a large number of electives within the mathematics major. By selecting appropriate courses, students have considerable flexibility to accommodate their individual interests. Students should consult with a department adviser for specific recommendations as to which electives are suited to their career paths.

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 Secondary Teaching Credential in mathematics. In order to complete the credential requirements, a fifth year of education courses, classroom observation, and practice teaching is needed. At the present time, there is an increasing demand for well-trained people in this area.

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

Electives in statistics and probability provide a foundation for students planning to work as statisticians for industry or government agencies. They also can enhance employment opportunities in the bioscience and health-related fields. Statistics courses (in addition to MATH 75 [or 75A and B], 76, and 77) are essential for the first two Actuarial Examinations offered by the Society of Actuaries.

## REQUIREMENTS

### Bachelor of Science Degree Requirements

#### Teaching Option

The requirement for entrance to the major and minor programs is completion of two years of algebra as well as courses in geometry and trigonometry, or a sequence of courses containing their equivalents, such as MATH 3 and 5. It is strongly recommended that such study be completed before entrance to the university.

#### 1. Major requirements (60-61 units)

Core curriculum (35 units)

MATH 75 (or 75A and B), 76, 77, 81 (15 units)  
MATH 101 (4 units)  
MATH 111 (4 units)  
MATH 151, 152 (8 units)  
MATH 171 (4 units)

**Option specific electives (17-18 units)**

MATH 143 (4 units)  
MATH 145 (3 units)  
MATH 149S (4 units)  
MATH 161 (3 units)  
MATH Elective/Any three seminars (see note 1) (3-4 units)

**Additional requirements (8 units)**

MATH 191T (1 unit)  
CSCI 40 (4 units)  
PHYS 4A (see note 2) (3 units)

**2. General Education requirements (49 units)** (see notes 2 and 3)

**3. Other requirements (6 units)**

Upper-division writing and Multicultural and International (MI)

**4. Sufficient elective units to meet required total units** (varies)

**5. Total units (120)\***

\* G.E. and MI courses can be double-counted with major requirements. The writing requirement may be met by taking the upper-division writing exam. See advisor for details.

The culminating experience for the Teaching Option is MATH 149S.

**Major Advising Notes**

1. The fifth MATH elective can be any 3-4 unit mathematics course, upper division or graduate, excluding MATH 100, 133, 134, 137, 138, 139, or any combination of seminars totaling 3 units. MATH 191T as Additional Requirement cannot be used for double counting of the requirements. Special conditions apply for graduate courses; see department advisor.
2. PHYS 4AL is not required for the math major. If students wish to include PHYS 4A as a General Education Breadth course, they must also take PHYS 4AL.
3. Three units of MATH 75 (or MATH 75A) also will satisfy the G.E. Foundation B4 requirement.
4. See Mathematics Road Map at <http://www.fresnostate.edu/degreeroadmap/>

**Advising Requirements.** It is strongly recommended, to all math majors, to have an advising session at least once a semester. See the department chair for assignment to an advisor.

**Grade Requirements.** All courses required as prerequisites for a mathematics course must be completed with a grade of C or better before registration will be permitted. All courses taken to fulfill major or minor requirements must be completed with a grade of C or better.

## FACULTY

For faculty phone numbers and e-mail, see the campus directory.

For more on the faculty, see the faculty pages.

The faculty pages are updated by the department or program.