Mathematics

Bachelor of Arts degree with a major in Mathematics

concentrations available in:
Applied Mathematics
Mathematics Education

Minor in Mathematics

Minor in Applied Mathematics
See also the minor in Applied Statistics.

Department Chair
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The Program

Mathematics students at HSU find an active and supportive atmosphere that provides preparation for mathematics-related careers and mentorship for graduate studies. The department offers a variety of scholarships, need-based and merit-based, for mathematics majors at every level and including transfer students. Students have access to several campus computer labs including one dedicated to mathematical applications. There are many activities outside the classroom including: a weekly Mathematics Colloquium series; the endowed Kieval Mathematics Lecture every semester; a variety of competitions, from our local Integration Bee to the International Mathematical Contest in Modeling; and a very active Mathematics Club. Mathematics is challenging, rewarding, and fun.

Mathematics majors may enter the workforce in a wide variety of positions. Potential careers include: mathematics consultant, statistician, computer programmer; actuary, mathematician, analyst (systems analyst, statistics methods analyst, financial investment analyst, economic analyst…), teacher, demographer.

Courses in calculus, linear algebra, differential equations, computer programming, analysis and statistics comprise the program’s core. Humboldt State offers several computer laboratories with a variety of computers, including mainframe, mini, and microcomputers.

An active Math Club meets weekly and sponsors various activities and talks. A special scholarship fund for outstanding mathematics students was established by professor emeritus Harry S. Kieval. Several other scholarship opportunities are available to Mathematics majors.

It is expected that each graduate of this program will be able to:
- reason mathematically and statistically
- solve complex problems using mathematics and statistics
- communicate mathematical and statistical ideas
- evaluate mathematical and statistical work

Preparation

Take mathematics courses every year in high school. Creative writing, art, music, and computer programming are also helpful.

REQUIREMENTS FOR THE MAJOR

For a description of degree requirements to be fulfilled in addition to those listed below for the major, please see “The Bachelor’s Degree” section of the catalog, pp. 67-82.

Unit Requirements

Lower division core units: 22
Upper division/concentration units: 26
Units required for the major: 48
Units required for the degree: 120

Special Grade Requirement

A minimum grade of C- is required for all courses in the major (all concentrations).

Lower Division Core Courses (22 units)

The following core courses are required for all majors.
CS 111  [4] Computer Science Foundations I, or an approved course in computer programming
MATH 110  [4] Calculus II
MATH 210  [4] Calculus III
MATH 240  [3] Introduction to Mathematical Thought
MATH 241  [3] Elements of Linear Algebra

Mathematics (26 units)

Upper Division Courses

Complete the following courses to fulfill the requirements of the mathematics major (no concentration).
MATH 316  [4] Real Analysis I
MATH 343  [4] Introduction to Algebraic Structures
MATH 344  [3] Linear Algebra
MATH 416  [3] Real Analysis II, or

Plus an approved program of upper division and graduate math courses to bring the total units at or above the 300 level to 26.

Applied Mathematics Concentration (26 units)

This concentration provides a theoretical foundation and skills necessary to apply mathematics or mathematical computing to problems encountered in other disciplines.

See lower division core courses.

Upper Division

MATH 316  [4] Real Analysis I
MATH 351  [4] Introduction to Numerical Analysis
MATH 361  [4] Introduction to Mathematical Modeling
MATH 315  [4] Advanced Calculus, or
MATH 344  [3] Linear Algebra

Plus an approved program of upper division and graduate math courses to bring the total units at or above the 300 level to 26.

Mathematics Education Concentration (26 units)

This concentration prepares students primarily for teaching math in junior high school and high school. (For information on preliminary and professional clear teaching credentials, see Education.)

Degree requirements listed here do not include professional education courses required for the credential.

Students earning this degree may waive CSET assessments before entering the credential program. Before applying to the secondary education credential program, students must meet the prerequisite of 45 hours early field experience or enroll in SED 210/SED 410.

See lower division core courses.
Upper Division

MATH 301 (3) Mathematics & Culture: Historical Perspective*, or
MATH 401 (3) History of Mathematics
MATH 340 (3) Number Theory
MATH 343 (4) Introduction to Algebraic Structures
MATH 370 (3) School Mathematics from Advanced Viewpoint I
MATH 371 (3) Geometry
MATH 470 (3) School Mathematics from an Advanced Viewpoint II
STAT 323 (4) Probability & Statistics

Students also should take:

- sufficient units in approved upper division mathematics courses to bring the total to 26 — recommended:
  MATH 316 (4) Real Analysis I
  MATH 474 (3) Graph Theory
  MATH 481 (1) Workshop in Tutoring Mathematics

- an approved, coherent program of not less than 8 units in a field of study in which mathematics is applicable [see advisor]

- strongly recommended:
  PHIL 100 (3) Logic
  ART 105B (3) Fundamentals of Drawing

Requirements for the Minors

Mathematics Minor

Total units required for the minor: 28

Lower Division (18 units)

MATH 109 (4) Calculus I
MATH 110 (4) Calculus II
MATH 210 (4) Calculus III
MATH 241 (3) Introduction to Mathematical Thought
MATH 241 (3) Elements of Linear Algebra

Upper Division (10 units)

MATH 340 (3) Number Theory, or
MATH 343 (4) Introduction to Algebraic Structures

Complete approved courses to bring the total to 10 upper division units.

Applied Mathematics Minor

Total units required for the minor: 22-29

Lower Division (12-19 units)

STAT 108 (3) Elementary Statistics, or
STAT 108i (3) Elementary Statistics with Integrated Support [Coreq: STAT 8], or
STAT 109 (4) Introductory Biostatistics

Complete either:

MATH 109 (4) Calculus I
MATH 110 (4) Calculus II
MATH 210 (4) Calculus III
MATH 241 (3) Elements of Linear Algebra

OR

MATH 105 (3) Calculus for the Biological Sciences & Natural Resources
MATH 215 (3) Multivariate Calculus for the Biological Sciences & Natural Resources
MATH 241 (3) Elements of Linear Algebra

Upper Division (10 units)

MATH 313 (4) Ordinary Differential Equations, or
MATH 361 (4) Introduction to Mathematical Modeling

Complete approved courses to bring the total to 10 upper division units.

* MATH 301 does not count toward 26 units of 300-level (or above) courses.