Bachelor of Arts degree with a major in Mathematics — concentrations in Applied Mathematics, Mathematics Education

Minor in Mathematics

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

Department Chair
Boni Mazzag, Ph.D.

Department of Mathematics
Behavioral & Social Sciences 320
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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.

Students completing this program will have demonstrated:
- competency in the field of mathematics, including the ability to apply mathematics to problems in the natural and social sciences; the ability to read, evaluate, and create mathematical proofs; the ability to write algorithms to investigate questions, solve problems, or test conjectures using standard software tools or specialized mathematical or statistical programs; the ability to analyze the validity and efficacy of mathematical work
- fundamental understanding of the discipline of mathematics including the historical development of mathematical and statistical areas central to the undergraduate curriculum; fundamental understanding of the role and responsibilities of mathematicians and mathematical work in science, engineering, education, and society as a whole
- fluency in mathematical language demonstrated by written work and oral presentations; ability to conduct individual and collaborative project work in which a question or problem is described, methodology is discussed and implemented, results are analyzed, and justifiable conclusions are drawn.

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.

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

Lower Division
CS 111 (4) Computer Science Foundations I
or an approved course in computer programming
MATH 109 (4) Calculus I
MATH 110 (4) Calculus II
MATH 210 (4) Calculus III
MATH 240 (3) Introduction to Mathematical Thought
MATH 241 (3) Elements of Linear Algebra

Upper Division
MATH 313 (4) Ordinary Differential Equations
MATH 316 (4) Real Analysis I
STAT 323 (4) Probability & Statistics
MATH 343 (4) Introduction to Algebraic Structures
MATH 344 (3) Linear Algebra

Plus one of the following:
MATH 416 (3) Real Analysis II, or
MATH 443 (3) Advanced Algebraic Structures

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

Lower Division
Same as the major in mathematics

Upper Division
MATH 313 (4) Ordinary Differential Equations
MATH 316 (4) Real Analysis I
STAT 323 (4) Probability & Statistics
MATH 351 (4) Introduction to Numerical Analysis
MATH 361 (4) Introduction to Mathematical Modeling

Plus one of the following:
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
leading to a single subject teaching credential

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.)

Courses in calculus, computer programming, number theory, geometry, statistics, and history of mathematics 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.
Preparation
Take mathematics each year in high school. Creative writing, reading, art, and computer programming are also helpful.

REQUIREMENTS
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. 61-78.

Please note: 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.

Lower Division
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

Upper Division
MATH 301 [3] Mathematics & Culture: Historical Perspective*, or
MATH 340 [3] Number Theory
MATH 343 [4] Introduction to Algebraic Structures
MATH 470 [3] School Mathematics from an Advanced Viewpoint II

Students also should take:
• an approved, coherent program of not less than eight units in a field of study in which mathematics is applicable (see advisor)
• strongly recommended:
  PHIL 10D [3] Logic

REQUIREMENTS FOR THE MINORS
Mathematics Minor
Lower Division
MATH 110 [4] Calculus II
MATH 210 [4] Calculus III
MATH 240 [3] Introduction to Mathematical Thought
MATH 241 [3] Elements of Linear Algebra

Upper Division
MATH 340 [3] Number Theory, or
MATH 343 [4] Introduction to Algebraic Structures

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

Applied Mathematics Minor
Lower Division
STAT 108i [3] Elementary Statistics with Integrated Support [Coreq: STAT 8], or
STAT 109 [4] Introductory Biostatistics

Plus either of the following groups:
• 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

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