

# MATHEMATICS

## **Bachelor of Arts degree with a major in Mathematics**

**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**

Jeffrey Haag, Ph.D.

## **Department of Mathematics**

Behavioral & Social Sciences 320

707-826-3143

www.humboldt.edu/math

## **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:

- competence 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. 61-77, and "The Master's Degree" section of the catalog, pp. 78-80.*

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 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 301 (3) Mathematics & Culture: Historical Perspective\*, or

MATH 401 (3) History of Mathematics I

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 eight 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

##### Lower Division

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 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 108 (4) Elementary Statistics, 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 (NR)
- MATH 205 (3) Multivariate Calculus for the Biological Sciences & NR
- MATH 241 (3) Elements of Linear Algebra

#### Upper Division

MATH 313 (4) Ordinary Differential Equations, or

MATH 361 (4) Introduction to Mathematical Modeling

Plus 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.

