

MATHEMATICS

Bachelor of Arts degree

with a major in Mathematics—

option available in applied mathematics

Minor in Mathematics

Minor in Applied Mathematics

For a minor in biometrics, see Biometrics.

For a master of science degree with an option in mathematical modeling, see Environmental Systems.

Department Chair

Mark Rizzardi, Ph.D.

Department of Mathematics

Behavioral & Social Sciences 320

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The Program

Students completing this program will have demonstrated:

- competence in the field of mathematics, including the ability to apply the techniques of calculus to mathematics, science, natural resources, and environmental engineering; the ability to develop and analyze standard models (primarily linear models) for systems in mathematics, science, natural resources, and environmental engineering; the ability to read, evaluate, and create mathematical proof; the ability to write algorithms to investigate questions, solve problems, or test conjectures using standard tools (e.g. spreadsheet), specialized programs (e.g. MATLAB) and statistical programs (e.g. SASS); the ability to analyze the validity and efficacy of mathematical work

- fundamental understanding of the discipline of mathematics including the historical development of the main mathematical and statistical areas in the undergraduate curriculum; the ability to apply knowledge from one branch of mathematics to another and from mathematics to other disciplines; the role and responsibilities of mathematicians and mathematical work in science, engineering, education, and the broader society

- fluency in mathematical language through communication of their mathematical work including competence in written presentations of pure and applied mathematical work that follows normal conventions for logic and syntax; oral presentation of pure and applied mathematical work which is technically correct and is engaging for the audience; individual and collaborative project work in which a project question is described, method-

ologically discussed and implemented, results are analyzed, and justifiable conclusions are drawn.

Mathematics students find an active and supportive department atmosphere that provides relevant preparation for mathematics related careers and/or excellent mentorship for graduate studies. To complement their studies, students have access to several campus computer labs, including one dedicated to mathematical applications. Students are active in the Math Club and there is a weekly Math Colloquium series.

Endowments honoring Michael Tucker and Harry Kieval enable the mathematics department to award a total of \$2500 in scholarships to two or three outstanding math majors each year. The Harry S. Kieval endowment also provides for guest lecturers twice each year and for an annual scholarship (\$300 per student) for one or two students transferring to Humboldt State University with the intention of majoring in mathematics.

Potential careers: systems analyst, statistics methods analyst, teacher, demographer, economic analyst, mathematics consultant, statistician, applied science programmer, financial investment analyst, actuary, and mathematician.

Preparation

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

REQUIREMENTS FOR THE MAJOR

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

Lower Division

CS 131 Intro to Computer Science
or CIS 130 Intro to Programming, and
CIS 230 C++ Programming
or an approved course in computer programming

MATH 109 Calculus I
MATH 110 Calculus II
MATH 210 Calculus III
MATH 240 Introduction to Mathematical Thought
MATH 241 Elements of Linear Algebra

Upper Division

MATH 313 Ordinary Differential Equations

MATH 343 Introduction to Algebraic Structures
MATH 415 Introduction to Real Analysis

Plus one of the following:

MATH 344 Linear Algebra
MATH 413 Advanced Ordinary Differential Equations
MATH 416 Introduction to Real Analysis
MATH 443 Advanced Algebraic Structures

Plus one of the following:

MATH 351 Introduction to Numerical Analysis
MATH 361 Introduction to Mathematical Modeling
STAT 323 Probability & Mathematical Statistics I

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 Option

This option 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 Ordinary Differential Equations
MATH 351 Introduction to Numerical Analysis
MATH 361 Introduction to Mathematical Modeling
STAT 323 Probability & Mathematical Statistics I
MATH 315 Advanced Calculus or
MATH 415 Introduction to Real Analysis

Plus an approved program of upper division and graduate math courses to bring the total units at or above the 300 level to 26. Note that the combined package of upper division courses must include at least one 400-level course.

REQUIREMENTS FOR THE MINORS

Mathematics Minor

Lower Division

CS 131 Intro to Computer Science
or CIS 130 Intro to Programming, and
CIS 230 C++ Programming
or an approved course in computer programming

MATH 109 Calculus I
MATH 110 Calculus II
MATH 210 Calculus III
MATH 240 Introduction to
Mathematical Thought
MATH 241 Elements of Linear Algebra

Upper Division

MATH 343 Introduction to Algebraic
Structures or
MATH 340 Number Theory
Plus approved courses to bring the total
to 10 upper division units.

Applied Mathematics Minor

Lower Division

CS 131 Intro to Computer Science
or CIS 130 Intro to Programming and
CIS 230 C++ Programming
or an approved course in computer programming

- STAT 108 Elementary Statistics or
- BIOM 109 Introductory Biometrics

Plus either of the following groups:

- MATH 109 Calculus I
MATH 110 Calculus II
MATH 210 Calculus III
MATH 241 Elements of Linear Algebra

OR

- MATH 105 Calculus for the
Biological Sciences &
Natural Resources (NR)
MATH 205 Multivariate Calculus
for the Biological
Sciences & NR
MATH 241 Elements of Linear
Algebra

Upper Division

MATH 313 Ordinary Differential
Equations or
MATH 361 Introduction to
Mathematical Modeling
Plus approved courses to bring the total to
10 upper division units.

