

MATHEMATICS

Program Description

Bachelor of Science

The Bachelor of Science degree in Mathematics offers five different concentrations described below. Each concentration includes the same core courses in mathematics, statistics, and computer science. This core, beginning with MATH 150: Topics and Careers in Mathematics and culminating with MATH 492: Senior Capstone, is designed to build a common experience of constructing problem-solving strategies and communicating mathematics throughout the curriculum. Additionally, each concentration has specific courses to explore related topics more deeply.

Pursuing a concentration in theoretical Mathematics, students develop powerful problem-solving, logical, and critical thinking skills. By completing the required coursework, students gain an appreciation of the nature of proof, a broad general understanding of mathematics, and a deep comprehension of at least one area of mathematics. Math majors also develop independent learning skills and oral and written mathematical communication skills. Mathematics majors get jobs in a wide variety of areas. CMU graduates have worked for local businesses, have run their own businesses, and have worked for scientific companies. Other graduates have continued their educations by attending graduate school (in mathematics, computer science, and engineering), law school, medical school, and veterinary school.

Students who pursue a concentration in Applied Mathematics will develop powerful problem-solving, logical, and critical thinking skills. Students will use methods of applied mathematics from areas including modeling, linear algebra, ordinary and partial differential equations, numerical methods, computer programming, and statistics to model and solve applied problems. Students will also gain an understanding of the nature of proof and will complete a senior capstone project that includes developing research skills, writing skills, and presentation skills. Applied mathematics graduates can choose to find work in a variety of areas within business, industry, and government or may choose to continue their educations by attending graduate school in areas such as applied mathematics, computer science, and engineering.

The concentration in Secondary Education will prepare students to teach in both middle schools and high schools. While completing this degree, students develop problem-solving and critical thinking skills and are introduced to the logical and historical development of mathematical ideas. Students also learn the professional skills in teaching methods and content necessary for secondary mathematics teachers. Nationally recommended curriculum guidelines are followed in order to ensure that graduates have the mathematical content and conceptual understanding necessary for all high school mathematics courses. Graduates from this program are in demand both locally and statewide with the scarcity of mathematics teachers.

With a concentration in Statistics, students develop problem-solving, logical, and critical thinking skills. While completing the required coursework, students gain an appreciation of the nature of proof, a general understanding of mathematics, and a knowledge of statistical reasoning, necessary assumptions, and the correct use of statistical analysis procedures. Students also develop statistical software skills and oral and written mathematical communication skills. The statistics concentration in mathematics prepares students for graduate work in statistics or to enter the job force. With some additional job-specific

training, students entering the job market could function as applied statisticians working in areas such as actuarial science, wildlife management, marketing, quality control, and epidemiology to name a few.

With a concentration in Actuarial Science, students develop problem-solving, logical, and critical thinking skills. While completing this degree, students develop a general understanding of mathematics and a knowledge of statistical reasoning including the use of statistical software to aid in problem-solving and investigation, applying appropriate statistical procedures, and drawing valid statistical conclusions. Coursework in economics and finance also helps prepare students for graduate work in actuarial science or to enter the job force. After graduation and upon the successful completion of the Society of Actuaries Probability Exam and Financial Mathematics Exam, individuals entering the job market could function as actuaries in the insurance field or as applied statisticians working in areas such as risk management and marketing.

Minors

A Minor in Mathematics is a natural enhancement to many majors outside mathematics where an understanding of mathematics is needed (e.g., physics, computer science, chemistry, biology, geology). A minor in mathematics enables non-mathematics majors to complete a focused course of study in mathematics on a smaller scale.

A Minor in Statistics is a natural enhancement to many majors outside statistics where an understanding of statistical analysis of data is needed (e.g., biology, business, psychology, sociology, history, human performance and wellness, political science). A minor in statistics enables students to complete a focused course of study in statistics on a smaller scale.

Associate of Science

An Associate of Science in Mathematics provides students with a reasonable exposure to foundational college-level mathematics. This degree program includes the Colorado Statewide General Education Core and meets the lower division general education requirements at most public institutions in Colorado. By completing this degree, students should be able to matriculate into a baccalaureate degree in mathematics with only 60 additional hours of coursework.

Graduate Certificate

The Graduate Certificate in Applied Mathematics is intended to provide licensed secondary mathematics teachers the credentials required by the Higher Learning Commission to teach concurrent enrollment classes and to enable other professionals to enhance their knowledge of applied mathematics. For more complete program information: Applied Mathematics (Graduate Certificate). *[This program is inactive and is not currently accepting applicants.]*

Contact Information

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Programs of Study Associates

- Mathematics, Liberal Arts (AS)

Bachelors/Minors

- [Actuarial Science, Mathematics \(BS\)](#)
- [Applied Mathematics, Mathematics \(BS\)](#)
- [Education: Secondary Education, Mathematics \(BS\)](#)
- [Mathematics \(BS\)](#)
- [Mathematics \(Minor\)](#)
- [Statistics \(Minor\)](#)
- [Statistics, Mathematics \(BS\)](#)

Graduate

- [Applied Mathematics \(Graduate Certificate\)](#) [*This program is inactive and is not currently accepting applicants.*]