

# MAJOR IN MATHEMATICS

Mathematics is the science of numbers, shapes, probabilities, and measurements. It is a universal language in which information is stated in the simplest possible form. Mathematics has a dual nature—it is an independent discipline valued for its precision and elegance, and it is an essential source of ideas and techniques for other scientific endeavors.

The undergraduate program is structured to provide a broad liberal arts education in mathematics, a strong set of core courses, and flexibility to choose from a broad range of courses. The liberal arts component requires students to acquire a broad background in communication skills, humanities, social sciences, and natural sciences. The major core focuses on developing students' understanding and appreciation of the mathematical sciences, problem solving skills, and their ability to combine knowledge and skills in productive ways. Core mathematics subjects include calculus and advanced calculus, linear algebra, methods of proof, abstract algebra, computer programming, and statistics.

Four concentrations are available in the program: Actuarial Science, Applied Mathematics, General Mathematics, and Mathematics Education.

## Learning Objectives

Graduates will:

1. Obtain a solid background in theoretical mathematics and will be able to participate in mathematical work in a variety of fields or continue on to graduate school.
2. Be able to apply a range of mathematical and statistical tools to a diverse set of problems as presented to them in either employment or the pursuit of further education.
3. Be capable of describing their mathematical assumptions and results to colleagues.

## Accelerated Program

The major in Mathematics, General Mathematics concentration and Mathematics Education concentration, includes an accelerated program option (<https://provost.colostate.edu/accelerated-programs/>) for students to graduate on a faster schedule. Accelerated Programs typically include 15-16 credits each fall and spring semester for three years, plus 6-9 credits over two to three summer sessions. Students who enter CSU with prior credit (AP, IB, transfer, etc.) may use applicable courses to further accelerate their graduation. Visit the Office of the Provost website for additional information about Accelerated Programs (<https://provost.colostate.edu/accelerated-programs/>).

## Potential Occupations

The Mathematics major prepares students for a wide variety of occupations in business, industry, government, and education. Actuarial science graduates who have passed the first two professional actuary exams can expect to find positions with excellent entry-level salaries. Applied mathematics graduates continue to find employment opportunities in government and private industry. Many pursue advanced degrees in mathematics, computational science, or engineering. About one-third of general mathematics graduates continue on to graduate school in mathematics or other disciplines, with the rest finding employment in a large variety of capacities. Education students spend a semester teaching a classroom and have excellent job placement. Participation in internships, volunteer activities, or cooperative education opportunities is highly recommended to enhance practical training and

development. Graduates who continue to pursue advanced degrees can attain more responsible positions with the possibility of rising to top professional levels.

Career opportunities include, but are not limited to: applied mathematician, actuary, engineer, statistician, financial analyst/advisor, computer programmer, computer systems analyst, mortgage officer, market analyst, risk analyst, tax auditor, accountant, math educator.

## Concentrations

- Actuarial Science Concentration (<https://catalog.colostate.edu/general-catalog/colleges/natural-sciences/mathematics/mathematics-major-actuarial-science-concentration/>)
- Applied Mathematics Concentration (<https://catalog.colostate.edu/general-catalog/colleges/natural-sciences/mathematics/mathematics-major-applied-concentration/>)
- General Mathematics Concentration (<https://catalog.colostate.edu/general-catalog/colleges/natural-sciences/mathematics/mathematics-major-general-concentration/>)
- Mathematics Education Concentration (<https://catalog.colostate.edu/general-catalog/colleges/natural-sciences/mathematics/mathematics-major-education-concentration/>)