Mathematics for Teaching (BA)

The Computational Mathematics Concentration provides broad math education with an emphasis on computer and mathematical models as tools to solve real-world problems. Students graduating in this concentration would be qualified to look for jobs, for example, in actuarial companies, finance, machine learning industry or apply to grad schools in computational and data-driven sciences, like computer science, engineering or medical research.

Common Requirements

All students pursuing a Math BS Degree must complete the Core Requirement, Capstone Requirement, and Grade Requirement.

Core Requirement

The following eleven courses are required by all concentrations.

- MATH 140 - Calculus I
- MATH 141 - Calculus II
- MATH 242 - Multivariable and Vector Calculus
- MATH 260 - Linear Algebra I
- MATH 265 - Discrete Structures in Mathematics
- MATH 270/310 - Applied Ordinary Differential Equations
- MATH 291 Mathematical Software
- MATH 280/314 - Introduction to Proofs
- MATH 345 - Probability and Statistics
- PHYSIC 113 - Fundamentals of Physics I
- CS 110 - Introduction to Computer Programming

Capstone Requirement

The capstone allows a student to demonstrate the ability to use the knowledge, concepts, and methods acquired in the mathematics major. The capstone requirement may be met through any of the courses with numbers between 420-499.

Grade Requirement

No courses taken pass/fail may be applied toward the major, and a cumulative GPA of 2.0 or higher (C average) is required.

Concentration Requirement

In addition, students declaring the Computational Math concentration must take the following courses:

- MATH 360 Abstract Algebra I
- MATH 370 History of Mathematics
- MATH 458 Theory of Numbers
- MATH 460 Topics in Geometry
- Two other mathematics courses, numbered 300 or higher

Learning Outcomes

After completion of this concentration the student should be able to:

- Demonstrate the understanding of rigorous mathematical proof.
- Explain some of the key mathematical concepts, which are important in high school mathematics, such as Euclidean and non-Euclidean geometries and number theory.
- Explain the historical development of mathematics.
- Explain the interconnectivity of mathematical fields and concepts.
- Explain how mathematics is used to solve problems.
- Communicate key mathematical concepts effectively.
- Use modern computer tools to aid mathematical computations and learning.