



MS & PhD in Applied Mathematics & Statistics - Computational & Applied Mathematics Emphasis

The Department of Applied Mathematics and Statistics prepares the next generation of mathematical and statistical scientists to be leaders in a world driven by increasingly complex technology and challenges. Our department is at the forefront of research in mathematical and statistical methods that are used to address the opportunities and challenges of the future.

The MS program is designed to prepare candidates for careers in industry or government or for further study at the PhD level, while the PhD degree program is sufficiently flexible to prepare candidates for careers in industry, government and academia. A course of study leading to the PhD degree can be designed either for the student who has already completed the MS degree or for the student who has completed just a bachelor's degree.

The Master's program in Computational and Applied Mathematics (CAM) provides the opportunity for students to pursue 30 specialized credits through either a thesis or non-thesis degree program.

The Doctor of Philosophy program requires 72 credit hours beyond a bachelor's degree. At least 24 of these hours must be thesis hours. Doctoral students must pass the comprehensive examination (a qualifying examination and thesis proposal), complete a satisfactory thesis and successfully defend their thesis.

All MS and PhD candidates pursuing CAM will complete the following six courses

- MATH 500 Linear Vector Spaces
- MATH 501 Applied Analysis
- MATH 514 Applied Mathematics I
- MATH 515 Applied Mathematics II
- MATH 550 Numerical Solutions to PDEs
- MATH 551 Computational Linear Algebra
- SYGN 502 Introduction to Research Ethics *
- MATH 589 Applied Mathematics and Statistics Teaching Seminar **
 - * Required for students receiving federal support
 - ** Required only for students employed by the department as graduate teaching assistants and student instructor/lecturers

All MS and PhD candidates pursuing CAM will take at least two of the following courses

- MATH 408 Computational Methods for Differential Equations
- MATH 540 Parallel Scientific Computing
- MATH 454 Complex Analysis
- MATH 455 Partial Differential Equations
- MATH 557 Integral Equations
- MATH 458 Abstract Algebra
- MATH 484 Mathematical and Computational Modeling - capstone
- MATH 502 Real and Abstract Analysis
- MATH 503 Functional Analysis
- MATH 506 Complex Analysis II
- MATH 510 ODEs and Dynamical Systems
- MATH 556 Modeling with Symbolic Software

The above courses account for at least 24 credit hours of required course work for all students. For non-thesis M.S. students, up to six credits of elective courses (at the 400-500 level) may be taken in other departments on campus. Thesis students must complete at least 6 research credits. Minors are also an option.

DEPARTMENT QUICK FACTS

90 Undergraduate Students

36 Graduate Students

21 Faculty

RESEARCH

The Department of Applied Mathematics & Statistics has a strong emphasis on research, both internally and collaboratively. Internally, our faculty members have formed several collaborative research groups in Applied Mathematics and Statistics. Additionally, our faculty members are active in many of the Research Centers that exist on campus to support interdisciplinary research.

Our faculty engages in research in areas including:

- Uncertainty Quantification
- Mathematical Biology
- STEM Education & Assessment
- Scientific Computing
- Spatial & Multivariate Statistics
- Comput'l PDEs & Integral Equations
- Wave Phenomena
- Multiscale Analysis & Stimulation

ADMISSIONS

For admission requirements and the online application, visit:
mines.edu/graduate_admissions

PROGRAM CONTACT

Professor William Navidi
Director of Graduate Studies
wnavidi@mines.edu