

# Computational Science, Engineering, and Mathematics (MSCSEM)

The program is unique in its interdisciplinary emphasis. Faculty are drawn from a large number of academic departments representing five schools and colleges. The program is designed for outstanding students who desire expertise in multiple disciplines and are willing to take on new challenges by working alongside faculty involved in research at the forefront of computational science.

Graduate study in computational science, engineering, and mathematics comprises three areas: (1) applicable mathematics, (2) numerical analysis and scientific computation, and (3) mathematical modeling and applications. Within these broad areas, the student may take courses in applied mathematics and statistics, data science, numerical analysis and scientific computing, computational mechanics and physics, parallel computing and computer architecture, and mathematical modeling, and in supporting areas in science and engineering that involve mathematical modeling of physical, biological, social, or engineered systems. Students perform research in a broad range of areas, including scientific computing, uncertainty quantification, machine learning, numerical analysis, optimization, visualization, computational medicine, computational geosciences, computational materials, computational life sciences, computational physical sciences, computational engineering, and many more.

## Graduate Handbook

Graduate handbook information is updated and maintained by each program. Graduate handbooks are available within each program's office and [online](#). Please contact the program with concerns or questions.

## Admission

Students entering the program are expected to have an undergraduate degree in engineering, computer sciences, mathematics, or a natural science such as biology, physics, chemistry, or geology.

## Total hours required: 30

**Thesis: 30**

**Report: 33**

**Coursework only: 36**

## Requirements

Each student develops a program of study that includes a substantial component in each of three areas of concentration: applicable mathematics, numerical analysis and scientific computation, and mathematical modeling for applications in a science or engineering discipline. The program must be reviewed and approved by the Graduate Studies Committee. Lists of courses in the three concentrations are available from the graduate advisor.

This program requires completion of 30 semester hours of approved coursework, including a thesis; 33 semester hours of approved coursework, including a report; or 36 hours of approved coursework. At least 24 hours must be chosen from courses in the three concentration areas, with at least six hours from each area. These 24 hours of approved coursework must be taken on the letter-grade basis.

| Code | Title | Hours |
|------|-------|-------|
|------|-------|-------|

All students must also follow the requirements and policies below:

### Graduate University Requirements

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