

# Mathematics, MS

## Requirements

The Master of Science program in mathematics requires a minimum of 30 s.h. of graduate credit. Students choose from two subprograms, program I and program II. Students must earn a Graduate College major program grade-point average of 2.75.

3 s.h. of MATH:7990 Reading Research and mathematics courses (prefix MATH) numbered 7000 and above may be counted toward the degree.

The Master of Science in mathematics requires the following coursework.

## Program I Requirements

Program I is intended for master's students who have been admitted by the Department of Mathematics. It also provides a path for PhD students in mathematics or applied mathematical and computational sciences to earn a master's degree during their course of study. Students complete 30 s.h. in mathematics courses (prefix MATH), including at least 18 s.h. in 5000-level courses and 12 s.h. in courses numbered 3000 and above. They must also pass two qualifying examinations. The qualifying examinations may be chosen from algebra, analysis, differential equations, topology, and numerical analysis.

### 5000-Level Courses

Students must complete at least 18 s.h. from the following courses.

Course #	Title	Hours
One of these sequences:		
MATH:5000 & MATH:5010	Abstract Algebra I and Abstract Algebra II	6
MATH:5200 & MATH:5210	Introduction to Analysis I and Introduction to Analysis II	6
Four courses from these:		
MATH:5000 & MATH:5010	Abstract Algebra I and Abstract Algebra II (if not taken as a required sequence)	6
MATH:5200 & MATH:5210	Introduction to Analysis I and Introduction to Analysis II (if not taken as a required sequence)	6
MATH:5400	Fundamental Groups and Covering Spaces	3
MATH:5410	Introduction to Smooth Manifolds	3
MATH:5600	Nonlinear Dynamics With Numerical Methods	3
MATH:5700	Introduction to Partial Differential Equations	3
MATH:5750	Mathematical Biology I	3
MATH:5760	Mathematical Biology II	3
MATH:5800	Numerical Methods I	3
MATH:5810	Numerical Methods II	3

Mathematics courses (prefix MATH) numbered 6000 and above with departmental approval

## Program II Requirements

Program II is intended for students pursuing graduate degrees in other departments and students on the undergraduate-to-graduate (U2G) pathway. Students are advised to meet with the director of graduate studies (DGS) at the beginning of the master's program to understand the expectations for fulfilling the program requirements.

Students complete 30 s.h. in mathematics courses (prefix MATH), including at least 18 s.h. in 5000-level courses and 12 s.h. in courses numbered 3000 and above.

### 5000-Level Courses

Course #	Title	Hours
18 s.h. from these:		
MATH:5000	Abstract Algebra I	3
MATH:5010	Abstract Algebra II	3
MATH:5200	Introduction to Analysis I	3
MATH:5210	Introduction to Analysis II	3
MATH:5400	Fundamental Groups and Covering Spaces	3
MATH:5410	Introduction to Smooth Manifolds	3
MATH:5600	Nonlinear Dynamics With Numerical Methods	3
MATH:5700	Introduction to Partial Differential Equations	3
MATH:5750	Mathematical Biology I	3
MATH:5760	Mathematical Biology II	3
MATH:5800	Numerical Methods I	3
MATH:5810	Numerical Methods II	3

## Depth Requirement

The depth requirement may be fulfilled one of three ways:

- achieve a master's pass or above in two of the five mathematics qualifying exams (algebra, analysis, differential equations, topology, and numerical analysis);
- fulfill a qualifying exam or similar requirement from a different graduate program at the University of Iowa, subject to approval of the Department of Mathematics; or
- complete a final project supervised or co-supervised by a faculty member in the Department of Mathematics, subject to departmental approval. The acting director of graduate studies and at least two members of the qualifying committee representing two different subject areas must agree that the final project constitutes master's level work. Students are required to submit a Project Plan Form by the first week of their final semester.