

# Mathematics, MS

## Requirements

The Master of Science program in mathematics requires a minimum of 30 s.h. of graduate credit. Students earn the degree through courses and comprehensive examinations. There is no MS thesis. Requirements (courses and comprehensive examination areas) may be modified with the department's consent.

Four different programs (I, II, III, and IV) lead to the MS in mathematics.

## Program I

Program I prepares students for further study of pure and applied mathematics and for employment in government and business. Students in Program I take several courses and pass two comprehensive examinations. They must earn a grade of B-minus or higher in six of the courses and maintain a grade-point average (GPA) of at least 2.75 in all mathematics courses taken for the degree.

Program I requires the following courses.

Course #	Title	Hours
MATH:5000 & MATH:5010	Abstract Algebra I-II	6
MATH:5200 & MATH:5210	Introduction to Analysis I-II	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

The two comprehensive examinations are chosen from algebra, analysis, differential equations, and topology.

## Program II

Program II is designed for secondary school teachers. Program II requirements are similar to those for Programs I and III, but Program II students complete two mathematics education courses and a minimum of 24 s.h. in Department of Mathematics courses. The following courses may be used to satisfy the program II mathematics course requirements.

Course #	Title	Hours
MATH:3600	Introduction to Ordinary Differential Equations	2-3

Mathematics courses (prefix MATH) numbered 4000 or above

Students are encouraged to consult with the mathematics education faculty when planning their course of study.

## Program III

Program III focuses on applied mathematics. Students in Program III take several courses and pass two comprehensive examinations. Students must earn a grade of B-minus or higher in six of the courses and maintain a GPA of at least 2.75 in all mathematics courses taken for the degree.

Program III requires the following courses.

Course #	Title	Hours
All of these:		
MATH:5200 & MATH:5210	Introduction to Analysis I-II	6
MATH:5600	Nonlinear Dynamics with Numerical Methods	3
MATH:5700	Introduction to Partial Differential Equations	3
MATH:5800	Numerical Methods I	3
MATH:5810	Numerical Methods II	3
Two elective courses from these:		
MATH:4060	Discrete Mathematical Models	3
MATH:4700	Partial Differential Equations and Applications	3
MATH:4820	Optimization Techniques	3
MATH:5400	Fundamental Groups and Covering Spaces	3
MATH:5410	Introduction to Smooth Manifolds	3
MATH:5750	Mathematical Biology I	3
MATH:5760	Mathematical Biology II	3

The two comprehensive examinations are chosen from analysis, differential equations, numerical analysis, and topology.

## Program IV

Program IV is designed for nondepartmental students working toward a PhD in areas of study that require mathematical knowledge. The program has no specific required courses.

Students in Program IV are considered to have passed the comprehensive examination for the master's degree in mathematics if they have maintained a GPA of at least 3.00 in all mathematics courses taken for the MS in mathematics and have successfully completed the PhD comprehensive examination in their area of study.

Students in Program IV are assigned a mathematics advisor, who works with them and their major advisor to plan an appropriate curriculum for the MS in mathematics. A suitable program of study should be approved by a mathematics advisor before the student takes the PhD comprehensive examination, and a member of the mathematics faculty should serve on the PhD comprehensive examination committee.