

MATHEMATICS, MASTER OF SCIENCE (M.S.)

The areas of study available in the Mathematics & Economics Department lead to the Master of Science in or Mathematics and Master of Arts in **Economics**. The MS degree program in Mathematics now has two (2) general concentrations: Mathematics and Mathematics Education. In the Mathematics Concentration, there are two (2) specialties: Pure Mathematics and Applied Mathematics. In the Mathematics Education Concentration, there are also two (2) specialties: Curriculum and Instruction for Secondary Teachers and Curriculum and Instruction for K-8 Mathematics Specialists.

Mathematics

Admission Requirements

In addition to the requirements for admission to the College of Graduate Studies, applicants who wish to pursue a masters degree in the Department of Mathematics must have an undergraduate degree in mathematics or at least 30 undergraduate semester credits hours in mathematical sciences or closely-related field with at least 18 of these credits in upper-level mathematics beyond Calculus.

Program Requirements

The Master of Science in Mathematics has two areas of specialty: Pure Mathematics and Applied Mathematics. The Pure Mathematics includes the areas of Algebra, Analysis and Combinatorics. The Applied Mathematics specialty includes the areas of Computational Mathematics and Statistics.

In order to qualify for a Master of Science Degree in Mathematics:

1. The candidate must successfully complete 12 semesters hours of core course work in Real Analysis I (MATH 530), Algebra I (MATH 520), Numerical Analysis (MATH 540), and Discrete Mathematics (MATH 510).
2. The candidates must successfully complete the requirements in either a non-thesis option or thesis option track.
 - a. Non-thesis option: In addition to the four core courses, candidates in the non-thesis option track must successfully complete six elective courses and pass a comprehensive examination. The comprehensive examination will be based on the material covered in the four core courses.
 - b. Thesis option: In addition to the four core courses, candidates in the thesis option track must successfully complete four elective courses and must complete two semesters of MATH 599 – Research and Thesis course in accordance with the policy stated in the University's graduate catalog by writing a master's thesis on research topic chosen by the candidate and approved by the candidate's advisor.

Mathematics Education Concentration Admission Requirements

The focus of the concentration in mathematics education is mathematical content with specific application to modern paradigms in curriculum and instruction. For admission to the program leading to the Master of Science degree in Mathematics with a concentration in

mathematics education, the applicant must meet one of the following requirements:

1. For emphasis in secondary school mathematics, the applicant must either possess a Virginia teaching license in secondary (6 – 12) mathematics or be eligible for one.
2. For emphasis in the K – 8 Mathematics Specialists endorsement, the applicant must possess a Virginia teaching license in the elementary or middle grades. If the applicant is licensed at the middle school level, the teaching of mathematics must be their primary responsibility.

Program Requirements

Code	Title	Credit Hours
Core Courses		15
MATH 510	Discrete Mathematics	
MATH 525	Linear Algebra	
MATH 530	Real Analysis I	
MATH 548	Differential Equations	
MATH 592	Optimization Theory	
Required Courses		0-6
MATH 598	Comprehensive Exam	
MATH 599	Research & Thesis	
Restricted Electives **		9-15
MATH 501	Geometry	
MATH 511	Coding Theory	
MATH 512	Cryptography & Cmptr Security	
MATH 519	Special Topics in Math	
MATH 520	Algebra I	
MATH 521	Algebra II	
MATH 529	Topics in Algebra	
MATH 531	Real Analysis II	
MATH 532	Complex Analysis	
MATH 533	Functional Analysis	
MATH 539	Topics in Analysis	
MATH 540	Numerical Analysis	
MATH 545	General Topology	
MATH 546	Difference Equations & Appl	
MATH 549	Topics Differential Equations	
MATH 552	Partial Differentiation Equati	
MATH 559	Topics in Geometry	
MATH 560	Algebraic & Numerical Comptuta	
MATH 562	Mathematical Statistics	
MATH 569	Topics in Graph theory	
MATH 570	Number Theory	
MATH 578	Topics Computational Math	
MATH 590	Graph Theory	

Total Credit Hours **24-36**

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MATH 549	Topics Differential Equations	
MATH 552	Partial Differentiation Equati	
MATH 559	Topics in Geometry	
MATH 560	Algebraic & Numerical Computa	
MATH 562	Mathematical Statistics	
MATH 569	Topics in Graph theory	
MATH 570	Number Theory	
MATH 578	Topics Computational Math	
MATH 590	Graph Theory	
Total Credit Hours		24-36

**** Restricted Electives - Students who complete a Thesis must select 9 credit hours of restricted electives. Students who select the Comprehensive Exam must take 15 credit hours of restricted electives.**