

# MATHEMATICS, MS

**Banner Code:** SC-MS-MATH

**Flavia Colonna, Graduate Coordinator**

Exploratory Hall, Room 4215  
Fairfax Campus

Phone: 703-993-1465

Email: fcolonna@gmu.edu

Website: [math.gmu.edu/graduate/ms-in-mathematics.php](http://math.gmu.edu/graduate/ms-in-mathematics.php)

Pure and applied mathematics courses lead to this degree.

## Assistantships

A limited number of merit-based teaching assistantships are available for students taking at least 6 graduate credits each semester. Other sources of support, such as research assistantships, are available as funding permits. Graduate students also have the opportunity to work in the Math Tutoring Center (<http://math.gmu.edu/tutor-center.php>) and the Math Learning Center (<http://math.gmu.edu/math-learning-center.php>).

## Admissions & Policies

### Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (<https://www2.gmu.edu/admissions-aid/apply-now>).

Applicants interested in this program must submit three letters of recommendation. GRE scores are not required.

Students must have taken an upper-division course in advanced calculus (equivalent to MATH 315 Advanced Calculus I), an abstract algebra course (equivalent to MATH 321 Abstract Algebra) and an upper-division course in linear algebra (equivalent to MATH 322 Advanced Linear Algebra). Students should have some computer knowledge.

### Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

MATH 500 through MATH 614 cannot be used for credit, with the exception of MATH 555 Actuarial Modeling I and MATH 556 Actuarial Modeling II.

## Requirements

### Degree Requirements

Total credits: 30

Students should refer to the Admissions & Policies tab for specific policies related to this program.

### Coursework

#### Required Courses

MATH 675	Linear Analysis	3
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#### Coursework Options

Select three from the following:		9
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MATH 621	Algebra I	
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MATH 631	Topology I: Topology of Metric Spaces	
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MATH 677	Ordinary Differential Equations	
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MATH 685	Numerical Analysis	
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#### Additional Approved Coursework

Select four approved graduate courses, at least two of which are MATH courses. <sup>1</sup>		12
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Total Credits		24
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<sup>1</sup> All four courses must be approved by the student's advisor. Courses not listed as MATH courses must be approved by the graduate committee. Different rules apply if the student wishes to count graduate actuarial courses toward his or her degree (consult the graduate coordinator).

### Research and Creative Component

A student may fulfill the research and creative component in one of three ways: Thesis Option, Paper Presentation Option, or Preliminary Exams for the PhD.

Select one of the Research and Creative Component options outlined below		6
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Total Credits		6
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#### Thesis Option

In preparation for this option, the student must form a committee comprising a chair and two other faculty members. The chair and at least one other member must be from the Department of Mathematical Sciences, one member may be from a related field.

The student completes a thesis under the direction of the committee chair. The thesis work is typically completed while students are registered for 6 credits of MATH 799 MS Thesis. A thesis proposal and thesis are submitted in accordance with AP.6 Graduate Policies. The student must give an oral defense of the thesis to the committee and the George Mason community at large. Students are expected to respond to questions on the thesis and related material. The committee determines whether the defense is satisfactory.

Thesis Option		6
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MATH 799	MS Thesis	
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Total Credits		6
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#### Paper Presentation Option

In preparation for this option, the student must form a committee comprising a chair and two other faculty members. The chair and at least one other member must be from the Department of Mathematical Sciences, one member may be from a related field. The student gives an oral presentation of a paper (or series of papers or book chapter) chosen in consultation with the chair of the committee and approved by the full committee. The chosen material must be distinct from work completed in fulfillment of course requirements. The oral presentation is given to the committee and the Mason community at large. Students are expected to

respond to questions on the paper and related material. The committee determines whether the defense is satisfactory.

Select 6 additional credits of electives	6
Total Credits	6

### Preliminary Exams for the PhD

The research and creative component can also be fulfilled by passing three preliminary written examinations, as required for the Mathematics, PhD degree.

## Dual Degree Options

### Mathematics and Statistical Science Dual-Degree MS

This program allows students to earn an MS in Mathematics and an MS in Statistical Science by completing 48 credits of coursework in both areas instead of the 60 that would be required if the degrees were sought independently.

#### Admission Requirements

Applicants must satisfy admission requirements for both the MS in Mathematics and the MS in Statistical Science programs. A joint faculty committee from the Department of Mathematical Sciences and the Department of Statistics make final admission decisions into the dual-degree program.

#### MS-MATH/STAT Dual-Degree Requirements

Total credits: 48

Code	Title	Credits
MATH 621	Algebra I	3
MATH 675	Linear Analysis	3
MATH 677 or MATH 678	Ordinary Differential Equations Partial Differential Equations	3
MATH 685	Numerical Analysis	3
STAT 544	Applied Probability	3
STAT 554	Applied Statistics I	3
STAT 652	Statistical Inference	3
STAT 654	Applied Statistics II	3
Total Credits		24

#### Electives

Code	Title	Credits
Select 12 elective credits in MATH courses numbered 615 or higher <sup>1</sup>		12
Select any STAT courses numbered 540-775		12
Total Credits		24

<sup>1</sup> Excluding MATH 653 Construction and Evaluation of Actuarial Models I, MATH 654 Construction and Evaluation of Actuarial Models II, MATH 655 Pension Valuation, and MATH 799 MS Thesis

#### Notes:

- Students in either the BS/Accelerated MS in Mathematics program or the BS(selected)/Accelerated MS in Statistical Science program cannot get a reduction of 6 credits toward this dual degree. Students

who want to proceed to a PhD degree will only be able to waive the number of credits specified in the associated PhD degree requirements, even though they will have 48 credits at the MS level.

- If a student decides not to complete the required 48 credits, a single MS degree will not be granted unless the student fulfills the requirements for either the MS in Mathematics or the MS in Statistical Science.
- Once a student receives one of the MS degrees from either department, the student will no longer be eligible for the reduction in credit (i.e., will need to complete 30 credits) if the student later decides to earn the other MS degree.

## Accelerated Master's

### Mathematics, BA or BS/Mathematics, Accelerated MS

#### Overview

This degree program allows academically strong Mathematics, BA and Mathematics, BS students to obtain their bachelor's and a Mathematics, MS by successfully completing 144 credits. Well-prepared students may be admitted to this program after the completion of 90 undergraduate credits. Upon completion and conferral of the bachelor's degree and with satisfactory graduate-level performance (3.00 GPA) in graduate courses, students are given advanced standing in the Mathematics, MS program and complete an additional 24 credits to receive the master's degree.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

#### Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admission Policies. Application information for this accelerated master's program can be found on the Department of Mathematical Sciences website (<http://math.gmu.edu>).

Successful applicants will have an overall undergraduate GPA of at least 3.00. Additionally, they will have completed the following courses with a GPA of 3.00 or higher: MATH 315 Advanced Calculus I, MATH 321 Abstract Algebra, and MATH 322 Advanced Linear Algebra.

#### Accelerated Option Requirements

At the beginning of the student's final undergraduate semester, students must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (<http://registrar.gmu.edu>)) to the College of Science's Office of Academic and Student Affairs (<https://cos.gmu.edu/about/contact-us>). Students must begin their master's program in the semester immediately following conferral of the bachelor's degree.

Students must maintain an overall GPA of 3.00 or higher in graduate coursework.

#### Reserve Graduate Credit

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the

undergraduate degree. See AP.1.4.4 Graduate Course Enrollment by Undergraduates.