MATHEMATICS, MS

Banner Code: SC-MS-MATH

Academic Advising

Email: gradmath@gmu.edu
Website: science.gmu.edu/academics/departments-units/mathematical-sciences/mathematics-ms

This program provides exciting opportunities for students interested in studying advanced mathematics.

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).

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) section of this catalog. International students and students having earned international degrees should also refer to Admission of International Students (https://catalog.gmu.edu/admissions/international-students/) for additional requirements.

Eligibility

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 also have some computer knowledge.

Application Requirements

To apply for this program, prospective students should submit the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/) and its required supplemental documentation, and three letters of recommendation.

The GRE is not required for admission into this program.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/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.

Transferring Previous Graduate Credit into this Program

Previously earned and relevant graduate credits may be eligible for transfer into this program; details can be found in the Credit by Exam or Transfer (https://catalog.gmu.edu/policies/academic/graduate-policies/) section of this catalog.

Requirements

Degree Requirements

Total credits: 30

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

Coursework

Code	Title	Credits
Required Courses		
MATH 675	Linear Analysis	3
Coursework Options		
Select three from the following:		9
MATH 621	Algebra I	
MATH 631	Topology I: Topology of Metric Spaces	
MATH 677	Ordinary Differential Equations	
MATH 685	Numerical Analysis	
Additional Approved Coursework		**12**
Select 12 credits of approved graduate courses, at least 6 credits of which must be in MATH courses. [1]		
Total Credits		**24**

[1]
- All twelve credits 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 their degree (consult the graduate coordinator).
- Please note that no more than 6 total credits of MATH 798 Directed Reading or Research and MATH 799 MS Thesis may be applied to this program.

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.

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 (https://catalog.gmu.edu/colleges-schools/science/mathematical-sciences/), one member may be from a related field.

The student completes a thesis by taking 6 credits of MATH 798 Directed Reading or Research and MATH 799 MS Thesis under the direction of the committee chair. It is recommended that students complete 3 credits of MATH 798 before completing the required minimum 3 credits of MATH 799.

A thesis proposal and thesis must be submitted in accordance with AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/). The student must give an oral defense of the thesis to the committee and the George Mason University community at large. Students are expected to respond to questions on the thesis and related material. The committee determines whether the defense is satisfactory.

Code	Title	Credits
Select 6 credits from the following: [1]		6
MATH 798	Directed Reading or Research	
MATH 799	MS Thesis (for at least 3 of the 6 credits)	
Total Credits		**6**

[1] Please note that no more than 6 total credits of MATH 798 and MATH 799 may be applied to this program.

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 (https://catalog.gmu.edu/colleges-schools/science/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.

Code	Title	Credits
Select 6 credits from the following: [1]		6
MATH 798	Directed Reading or Research	
Select other elective courses in consultation with an advisor.		
Total Credits		**6**

[1] Please note that no more than 6 total credits of MATH 798 and MATH 799 may be applied to this program.

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 (https://catalog.gmu.edu/colleges-schools/science/mathematical-sciences/mathematics-phd/) degree.

Code	Title	Credits
Select 6 credits of electives in consultation with an advisor. [1]		6
Total Credits		**6**

[1] MATH 798 may count toward fulfilling this requirement. Please note that no more than 6 total credits of MATH 798 and MATH 799 may be applied to this program.

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 (https://catalog.gmu.edu/colleges-schools/engineering-computing/school-computing/statistics/statistical-science-ms/#text) 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 (https://catalog.gmu.edu/colleges-schools/engineering-computing/school-computing/statistics/statistical-science-ms/) programs. A joint faculty committee from the Department of Mathematical Sciences (https://catalog.gmu.edu/colleges-schools/science/mathematical-sciences/) and the Department of Statistics (https://catalog.gmu.edu/colleges-schools/engineering-computing/school-computing/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	Ordinary Differential Equations	3
or MATH 678	Partial Differential Equations	
MATH 685	Numerical Analysis	3
STAT 544	Applied Probability	3
STAT 554	Applied Statistics I	3
STAT 634	Case Studies in Data Analysis	3
STAT 652	Statistical Inference	3
STAT 654	Applied Statistics II	3
Total Credits		**27**

Electives

Code	Title	Credits
Select 12 elective credits in MATH courses numbered 615 or higher (https://catalog.gmu.edu/courses/math/) [1]		12
Select any STAT courses numbered 540-778 (https://catalog.gmu.edu/courses/stat/)		9
Total Credits		**21**

[1] 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 (https://catalog.gmu.edu/colleges-schools/engineering-computing/school-computing/statistics/statistical-science-ms/#acceleratedmasterstext) 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 (https://catalog.gmu.edu/colleges-schools/engineering-computing/school-computing/statistics/statistical-science-ms/).
- 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 bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain the Mathematics, BA (https://catalog.gmu.edu/colleges-schools/science/mathematical-sciences/mathematics-ba/) or Mathematics, BS (https://catalog.gmu.edu/colleges-schools/science/mathematical-sciences/mathematics-bs/) and the Mathematics, MS degrees within an accelerated timeframe. Upon completion of this 138 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7). For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/). For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

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 the Graduate Admission Policies (https://catalog.gmu.edu/admissions/graduate-policies/) section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www.gmu.edu/admissions-aid/accelerated-masters/).

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

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.

Code	Title	Credits
MATH 315	Advanced Calculus I	3
MATH 321	Abstract Algebra	3
MATH 322	Advanced Linear Algebra	3

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credit

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate and graduate degrees plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
MATH 621	Algebra I	3
MATH 631	Topology I: Topology of Metric Spaces	3
MATH 675	Linear Analysis	3
MATH 677	Ordinary Differential Equations	3
MATH 685	Numerical Analysis	3