MATHEMATICS, MS

Banner Code: SC-MS-MATH

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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

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 675</td>
<td>Linear Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

Coursework Options
Select three from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 621</td>
<td>Algebra I</td>
</tr>
<tr>
<td>MATH 631</td>
<td>Topology I: Topology of Metric Spaces</td>
</tr>
<tr>
<td>MATH 677</td>
<td>Ordinary Differential Equations</td>
</tr>
<tr>
<td>MATH 685</td>
<td>Numerical Analysis</td>
</tr>
</tbody>
</table>

Additional Approved Coursework
Select four approved graduate courses, at least two of which are MATH courses.¹

Total Credits 24

¹ 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

Total Credits 6

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.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 799</td>
<td>MS Thesis</td>
<td>6</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 621</td>
<td>Algebra I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 675</td>
<td>Linear Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MATH 677</td>
<td>Ordinary Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 678</td>
<td>Partial Differential Equations</td>
<td></td>
</tr>
<tr>
<td>MATH 685</td>
<td>Numerical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>STAT 544</td>
<td>Applied Probability</td>
<td>3</td>
</tr>
<tr>
<td>STAT 554</td>
<td>Applied Statistics I</td>
<td>3</td>
</tr>
<tr>
<td>STAT 652</td>
<td>Statistical Inference</td>
<td>3</td>
</tr>
<tr>
<td>STAT 654</td>
<td>Applied Statistics II</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 24

Electives

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Select 12 elective credits in MATH courses numbered 615 or higher 1</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Select any STAT courses numbered 540-775</td>
<td>12</td>
</tr>
</tbody>
</table>

Total Credits 24

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