DEPARTMENT OF MATHEMATICAL SCIENCES

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Email: dwalnut@gmu.edu
Website: math.gmu.edu

Administration

- David Walnut, Chair
- John Kulesza, Associate Chair
- Igor Griva, Undergraduate Coordinator
- Flavia Colonna, Graduate Coordinator

The Department of Mathematical Sciences offers undergraduate and graduate degree programs in mathematics for students with various interests and career goals. Students may pursue the standard program, or a program focused on actuarial mathematics, applied mathematics, mathematics education or mathematical statistics. Students may complement other interests by taking a double major in mathematics and a related field, such as chemistry, economics, physics, computer science, or engineering.

Math Tutoring Center
The department manages the Math Tutoring Center (http://math.gmu.edu/tutor-center.php?_ga=1.265621830.873783809.1452007880), which offers free tutoring for first- and second-year math courses. Tutoring is given by advanced mathematics students and is available on a drop-in basis with daytime and evening hours throughout the semester.

Math Learning Center
For a fee, the Math Learning Center (http://math.gmu.edu/math-learning-center.php) offers self-paced and classroom noncredit tutorial programs for students who do not place into the math course they need. Special tutors and tutorial software are available to those enrolled in the program. Successful completion of the relevant program enables students to enroll in MATH 105 Precalculus Mathematics, MATH 108 Introductory Calculus with Business Applications (Mason Core), MATH 110 Introductory Probability (Mason Core), MATH 111 Linear Mathematical Modeling (Mason Core), or MATH 125 Discrete Mathematics I (Mason Core).

Certificate in College Teaching
A student enrolled in the Mathematics, MS or Mathematics, PhD who is primarily interested in pursuing a career in undergraduate education at the college level is encouraged to consider enrolling in the College Teaching Graduate Certificate offered through the College of Humanities and Social Sciences.

Credit can be earned for HE 685 Practicum by working one semester as a graduate teaching assistant in the Department of Mathematical Sciences.

Requirements & Policies

Policies

Writing-Intensive Requirement
Mason policy requires all students to complete at least one course designated as “writing intensive” in their major. Students majoring in mathematics fulfill this requirement by successfully completing MATH 290 Introduction to Advanced Mathematics.

Teacher Licensure
Students who wish to become teachers should consult the College of Education and Human Development section of this catalog and attend an information session early in their studies. For more information, visit the Graduate School of Education (http://gse.gmu.edu).

Information on Undergraduate MATH Courses

Admissions & Policies

- For Mathematics Majors
- For Non-mathematics Majors
- For Both Mathematics and Non-mathematics Majors

For Mathematics Majors
The following cannot be used as substitutes for any requirements of the major in mathematics:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 104</td>
<td>Trigonometry and Transcendental Functions</td>
<td>2</td>
</tr>
<tr>
<td>MATH 105</td>
<td>Precalculus Mathematics</td>
<td>4</td>
</tr>
<tr>
<td>MATH 106</td>
<td>Quantitative Reasoning (Mason Core)</td>
<td>3</td>
</tr>
<tr>
<td>MATH 108</td>
<td>Introductory Calculus with Business Applications (Mason Core)</td>
<td>3</td>
</tr>
<tr>
<td>MATH 110</td>
<td>Introductory Probability (Mason Core)</td>
<td>3</td>
</tr>
</tbody>
</table>

Faculty

Department Faculty

Professors
Anderson, Colonna (graduate coordinator), Emelianenko, Goldin, Kulesza (associate chair), Lawrence, Morris, Sachs, Sander, Saperstone, Sauer (COS distinguished scholar), Seshaiyer, Singman, Soltan, Walnut (chair), Wanner

Associate Professors
Antil, Agnarsson, Griva (undergraduate coordinator), Lamba, Lawton

Assistant Professors
Carchedi, Epstein, Holzer

Term Assistant Professors
De la Pena, Eckley, Fox, Nelson

Term Instructors
Andreani, Boyette, Bulancea, Coleson, Crossin, Granfield, Sausville, Whelan

Affiliates
Nash

Emeriti
Cabell, Kiley, Levy, Lin, Polyak, Shapiro
For Both Mathematics and Non-mathematics Majors

- MATH 104 Trigonometry and Transcendental Functions, MATH 105 Precalculus Mathematics, MATH 108 Introductory Calculus with Business Applications (Mason Core), MATH 112 Discrete Mathematics for IT, and MATH 111 Linear Mathematical Modeling (Mason Core) are designed for students in the social and behavioral sciences.
- Liberal arts majors are advised to take MATH 106 Quantitative Reasoning (Mason Core), MATH 110 Introductory Probability (Mason Core), or MATH 111 Linear Mathematical Modeling (Mason Core).
- Students in the natural sciences who plan to do graduate work are advised to add courses from:

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<thead>
<tr>
<th>Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>MATH 313</td>
<td>Introduction to Applied Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MATH 314</td>
<td>Introduction to Applied Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 351</td>
<td>Probability</td>
<td>3</td>
</tr>
<tr>
<td>MATH 352</td>
<td>Statistics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 441</td>
<td>Deterministic Operations Research</td>
<td>3</td>
</tr>
<tr>
<td>MATH 442</td>
<td>Stochastic Operations Research</td>
<td>3</td>
</tr>
<tr>
<td>MATH 446</td>
<td>Numerical Analysis I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 447</td>
<td>Numerical Analysis II</td>
<td>3</td>
</tr>
</tbody>
</table>

For Non-mathematics Majors

- MATH 108 Introductory Calculus with Business Applications (Mason Core), MATH 110 Introductory Probability (Mason Core), and MATH 111 Linear Mathematical Modeling (Mason Core) are designed for students in the social and behavioral sciences.
- Liberal arts majors are advised to take MATH 106 Quantitative Reasoning (Mason Core), MATH 110 Introductory Probability (Mason Core), or MATH 111 Linear Mathematical Modeling (Mason Core).
- Students in the natural sciences who plan to do graduate work are advised to add courses from:

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<tr>
<th>Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>MATH 111</td>
<td>Linear Mathematical Modeling (Mason Core)</td>
<td>3</td>
</tr>
<tr>
<td>MATH 112</td>
<td>Discrete Mathematics for IT</td>
<td>3</td>
</tr>
<tr>
<td>MATH 271</td>
<td>Mathematics for the Elementary School Teachers I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 272</td>
<td>Mathematics for the Elementary School Teachers II</td>
<td>3</td>
</tr>
</tbody>
</table>

For Non-mathematics Majors

- Depending on their test scores, students who do not place into MATH 113 Analytic Geometry and Calculus I (Mason Core) will be advised to take MATH 104 Trigonometry and Transcendental Functions or MATH 105 Precalculus Mathematics or visit the Math Learning Center (http://math.gmu.edu/math-learning-center.php) to prepare for MATH 105 Precalculus Mathematics.
- MATH 104 Trigonometry and Transcendental Functions and MATH 105 Precalculus Mathematics do not fulfill the Mason Core ‘Quantitative Reasoning’ requirement.
- Students may not receive credit for both MATH 214 Elementary Differential Equations and MATH 216 Theory of Differential Equations; both MATH 213 Analytic Geometry and Calculus III and MATH 215 Analytic Geometry and Calculus III (Honors); both MATH 351 Probability and STAT 344 Probability and Statistics for Engineers and Scientists I; and both MATH 352 Statistics and STAT 354 Probability and Statistics for Engineers and Scientists II.
- After receiving a grade of ‘C’ or better in one of the courses listed below on the left, students may not receive credit for the corresponding course on the right:

<table>
<thead>
<tr>
<th>Course</th>
<th>May Not Receive Credit for</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 113 or MATH 123</td>
<td>MATH 105 or MATH 108</td>
</tr>
<tr>
<td>MATH 351 or STAT 344</td>
<td>MATH 110</td>
</tr>
<tr>
<td>MATH 441</td>
<td>MATH 111</td>
</tr>
<tr>
<td>MATH 125</td>
<td>MATH 112</td>
</tr>
</tbody>
</table>

Programs

- Actuarial Sciences Graduate Certificate
- Mathematics Minor
- Mathematics for School of Business Students Minor
- Mathematics, BA
- Mathematics, BS
- Mathematics, MS
- Mathematics, PhD

The sequence MATH 123 Calculus with Algebra/Trigonometry, Part A and MATH 124 Calculus with Algebra/Trigonometry, Part B (Mason Core) is an option for students who need MATH 113 Analytic Geometry and Calculus I (Mason Core) but believe they are not prepared for that course. In these two 3-credit courses, students will learn fundamental algebra and calculus so that upon completion of the sequence, students will be prepared for MATH 114 Analytic Geometry and Calculus II.

- Students who do not achieve the necessary test score needed to take a math course may go to the Math Learning Center (http://math.gmu.edu/math-learning-center.php) or study and retake the test on their own. A student who does not complete the relevant program in the Math Learning Center (http://math.gmu.edu/math-learning-center.php) or does not achieve the necessary score on the Math Placement Test (http://math.gmu.edu/placement_test.php) will not be able to enroll in the class. Depending on their test scores, students who do not place