BACHELOR OF ARTS WITH A MAJOR IN MATHEMATICS

GW's Department of Mathematics is committed to high-quality teaching and research—providing a curriculum that is designed to give students a solid background in the theory and practice of modern mathematics through three academic tracks: pure, applied, and computational. As a mathematics major, you will be offered a wealth of intellectual challenges and opportunities in D.C.—the city with the highest concentration of mathematicians in non-academic positions. Our students not only have a number of internship options but also have an enormous number of potential career options as analysts, consultants, actuaries, stockbrokers, physicians, attorneys, and educators.

Visit the program website (https://math.columbian.gwu.edu/) for additional information.

ADMISSIONS

For more information on the admission process, please visit the Office of Undergraduate Admissions website (https://undergraduate.admissions.gwu.edu/). Applications may be submitted via the Common Application (https://go.gwu.edu/commonapp/). Supporting documents not submitted online should be mailed to:
Office of Undergraduate Admissions
The George Washington University
800 21st Street NW, Suite 100
Washington DC 20052
Contact for questions: gwadm@gwu.edu or 202-994-6040

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (http://bulletin.gwu.edu/arts-sciences/#degreeregulationtext).

Program-specific curriculum:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MATH 1231</td>
<td>Single-Variable Calculus I (or equivalent)</td>
<td></td>
</tr>
<tr>
<td>MATH 1232</td>
<td>Single-Variable Calculus II</td>
<td></td>
</tr>
<tr>
<td>MATH 2185</td>
<td>Linear Algebra I for Math Majors *</td>
<td></td>
</tr>
<tr>
<td>or MATH 2184</td>
<td>Linear Algebra I</td>
<td></td>
</tr>
<tr>
<td>MATH 2233</td>
<td>Multivariable Calculus</td>
<td></td>
</tr>
<tr>
<td>MATH 2971</td>
<td>Introduction to Mathematical Reasoning</td>
<td></td>
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<tr>
<td>or MATH 2971W</td>
<td>Introduction to Mathematical Reasoning</td>
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One course (3 credits) from the following:

- CSCI 1011 Introduction to Programming with Java
- CSCI 1012 Introduction to Programming with Python
- CSCI 1041 Introduction to FORTRAN Programming
- CSCI 1111 Introduction to Software Development
- CSCI 1121 Introduction to C Programming
- CSCI 1131 Introduction to Programming with C

Students in the pure mathematics concentration may substitute an additional elective, approved by the department, for the CSCI course.

* Of the two options for linear algebra, MATH 2185 is preferred.

Concentration requirement

All students must complete requirements for one of the following three concentrations:

Pure mathematics concentration

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
<td>MATH 4121</td>
<td>Introduction to Abstract Algebra I</td>
<td></td>
</tr>
<tr>
<td>MATH 4239</td>
<td>Real Analysis I</td>
<td></td>
</tr>
<tr>
<td>or MATH 4239W</td>
<td>Real Analysis I</td>
<td></td>
</tr>
</tbody>
</table>

Two courses (6 credits) from the following:

- MATH 3125 Linear Algebra II
- MATH 3257 Introduction to Complex Variables
- MATH 3806 Introduction to Topology
- MATH 4122 Introduction to Abstract Algebra II
- MATH 4240 Real Analysis II

Three additional mathematics (MATH) courses (9 credits) numbered in the 3000 and 4000 ranges.

Applied mathematics concentration

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<td></td>
</tr>
</tbody>
</table>
Coursework for the University General Education Requirement is distributed as follows:

- **Writing**—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- **Humanities**—one approved course in the humanities that involves critical or creative thinking skills.
- **Mathematics or Statistics**—one approved course in either mathematics or statistics.
- **Natural or Physical Science**—one approved laboratory course that employs the process of scientific inquiry.
- **Social Sciences**—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- **Arts**—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- **Global or Cross-Cultural Perspective**—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- **Humanities**—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- **Local or Civic Engagement**—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- **Natural or Physical Science**—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- **Oral Communication**—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

**SPECIAL HONORS**

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must maintain a grade-point average of at least 3.5 in courses in the major; complete 3 credits.
of MATH 4995 Reading and Research in addition to the other required courses in the major; and present an oral defense of a senior thesis prepared for MATH 4995 Reading and Research.