MATHEMATICS, BA

Banner Code: SC-BA-MATH

Academic Advising

Website: https://science.gmu.edu/academics/departments-units/mathematical-sciences/mathematics-ba

This bachelor's program provides exciting opportunities for students interested in mathematics.

Teacher Licensure

Students who wish to become teachers can pursue either the Mathematics, BA or the Mathematics, BS (https://catalog.gmu.edu/colleges-schools/science/mathematical-sciences/mathematics-bs/) in addition to obtaining teaching credentials. For more information, visit the Secondary Education program's webpage (https://education.gmu.edu/secondary-education/).

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies (https://catalog.gmu.edu/admissions/undergraduate-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).

Transferring into the Mathematics, BA[1]

Students transferring into the Mathematics, BA are required to meet the following criteria:

1. Holding a minimum cumulative GPA of 2.0, and
2. Holding a minimum GPA of 2.5 in mathematics coursework.

[1] This does not apply to newly admitted George Mason students or to students who do not have prior college-level coursework on their record.

Policies

Students must fulfill all Requirements for Bachelor's Degrees (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-3-2), including the Mason Core (https://catalog.gmu.edu/mason-core/). As outlined in the Requirements tab, students in this bachelor's program must also complete the additional College Requirements for the BA Degree.

MATH 300 Introduction to Advanced Mathematics (Mason Core) (https://catalog.gmu.edu/mason-core/) meets the writing intensive requirement for this major.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies (https://catalog.gmu.edu/policies/academic/undergraduate-policies/).

Graduating seniors are required to have an exit interview.

Course Recommendations and Policies

Students intending to enter graduate school in mathematics are strongly advised to take MATH 315 Advanced Calculus I and MATH 321 Abstract Algebra.

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:

Course	May Not Receive Credit for
MATH 113 or MATH 123	MATH 105 or MATH 108
MATH 351 or STAT 344	MATH 110
MATH 441	MATH 111

Requirements

Degree Requirements

Total credits: minimum 120

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

A maximum of 6 credits of grades below 2.00 in coursework designated MATH or STAT may be applied toward the major.

Required Courses

Code	Title	Credits
Core Courses		
MATH 113	Analytic Geometry and Calculus I (Mason Core) (https://catalog.gmu.edu/mason-core/)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 125	Discrete Mathematics I (Mason Core) (https://catalog.gmu.edu/mason-core/)	3
MATH 203	Linear Algebra	3
MATH 213	Analytic Geometry and Calculus III	3
or MATH 215	Analytic Geometry and Calculus III (Honors)	
MATH 214	Elementary Differential Equations	3
or MATH 216	Theory of Differential Equations	

MATH 300	Introduction to Advanced Mathematics (Mason Core) (https://catalog.gmu.edu/mason-core/) [1]	3
MATH 322	Advanced Linear Algebra	3
Total Credits		**26**

[1] Fulfills the writing intensive requirement.

Additional Mathematics

Code	Title	Credits
Select 12 credits in MATH 300-level or higher (https://catalog.gmu.edu/courses/math/) [1,2]		12
Total Credits		**12**

[1] Excluding MATH 400 History of Math (Topic Varies) (Mason Core) (https://catalog.gmu.edu/mason-core/).

[2] Up to 3 credits in MATH 490 Internship and 6 credits in MATH 491 Reading and Undergraduate Research in Mathematics can be applied to this requirement. A total of 12 credits between MATH 490 Internship and MATH 491 Reading and Undergraduate Research in Mathematics can be applied to the degree via this requirement and any elective credits.

Mason Core and Elective Credits

In order to meet a minimum of 120 credits, this degree requires an additional 82 credits which may be applied toward any remaining Mason Core (https://catalog.gmu.edu/mason-core/) requirements (outlined below), Requirements for Bachelor's Degrees (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-3-2), College Requirements for the BA Degree (outlined below), and elective courses[1]. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

[1] A maximum of 12 credits between MATH 490 Internship and MATH 491 Reading and Problems can be applied to this degree.

Mason Core

Some Mason Core (https://catalog.gmu.edu/mason-core/) requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core (https://catalog.gmu.edu/mason-core/) requirements.

All Integration-level requirements must be completed at George Mason and cannot be satisfied through transfer credit. These courses are integral to the university's educational philosophy and ensure that all graduates demonstrate proficiency in writing, critical thinking, and integrative learning consistent with the university's standards. Rare exceptions to this policy may only be granted by the Provost's Office.

Students who have completed the following credentials are eligible for a waiver of the Foundation and Exploration (lower level) requirement categories with the exception of Written Communication, which must be met by transferring in or taking an approved coruse at George Mason University. The Integration category (upper level) is not waived under this policy. See Admissions (https://catalog.gmu.edu/admissions/undergraduate-policies/#transfertext) for more information.

- VCCS Uniform Certificate of General Studies
- VCCS or Richard Bland Associate of Science (A.S.), Associate of Arts (A.A.), Associate of Arts and Sciences (A.A.&S.), or Associate of Fine Arts (A.F.A.)

Code	Title	Credits
Foundation Requirements		
Written Communication (lower-level) (https://catalog.gmu.edu/mason-core/#written)		3
Oral Communication (https://catalog.gmu.edu/mason-core/#oral)		3
Quantitative Reasoning (https://catalog.gmu.edu/mason-core/#quantitative)		3
Information Technology and Computing (https://catalog.gmu.edu/mason-core/#information-technology)		3
Exploration Requirements		
Arts (https://catalog.gmu.edu/mason-core/#arts)		3
Global Contexts (https://catalog.gmu.edu/mason-core/#global-contexts)		3
Global History (https://catalog.gmu.edu/mason-core/#global-history)		3
Literature (https://catalog.gmu.edu/mason-core/#literature)		3
Natural Science (https://catalog.gmu.edu/mason-core/#natural-science)		7
Social and Behavioral Sciences (https://catalog.gmu.edu/mason-core/#social-behavioral-science)		3
Just Societies (optional) (https://catalog.gmu.edu/mason-core/#justsocieties) [1]		
Integration Requirements		
Written Communication (upper-level) (https://catalog.gmu.edu/mason-core/#written-upper)		3
Writing Intensive (https://catalog.gmu.edu/mason-core/#wi) [2]		3
Mason Apex (https://catalog.gmu.edu/mason-core/#apex) [3]		3
Total Credits		**40**

[1] In addition to covering content related to the designated category, Exploration level courses marked with a Just Societies "flag" are specifically designed to help students learn how to interact effectively with others from all walks of life, including those with backgrounds and beliefs that differ from their own. Students who wish to increase their knowledge and skills in this area may choose to enroll in a Just Societies-flagged course. Students interested in this approach to completing their Mason Core Exploration Requirements should work closely with their advisor to identify the appropriate Just Societies-flagged courses.

[2] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[3] Minimum 3 credits required.

College Requirements for the BA Degree

In addition to the program requirements and the Mason Core (https://catalog.gmu.edu/mason-core/) requirements, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill this college-level requirement may also be used simultaneously to satisfy other requirements such as Mason Core (https://catalog.gmu.edu/mason-core/) requirements, other college-level requirements, or requirements for the major. In some cases, the requirements listed below may be superseded by requirements of the degree program and the Mason Core (https://catalog.gmu.edu/mason-core/).

Foundational Breadth

Choose two courses from approved Mason Core: Arts (https://catalog.gmu.edu/mason-core/#arts), Mason Core: Literature (https://catalog.gmu.edu/mason-core/#literature), Mason Core: Global Contexts (https://catalog.gmu.edu/mason-core/#global-contexts), and Mason Core: Social and Behavioral Sciences (https://catalog.gmu.edu/mason-core/#social-behavioral-science) courses in addition to those required by the Mason Core (https://catalog.gmu.edu/mason-core/). The two courses used to fulfill the college-level requirements must each be from different Mason Core categories. Additionally, they must be from different disciplines than the courses used to fulfill the University Mason Core requirements.

Natural Science

Choose one credit in addition to the Mason Core: Natural Science (https://catalog.gmu.edu/mason-core/#natural-science) requirement for a total of 8 credits[1]. This combined college-level and university requirement must be fulfilled by completing two of any approved Mason Core: Natural Science (https://catalog.gmu.edu/mason-core/#natural-science) courses that include a laboratory experience[2].

Code	Title	Credits
Select an additional Mason Core Natural Science course		1

[1] For Geography, BA majors, this extra credit is not required.
[2] BIOL 124 Human Anatomy and Physiology I and BIOL 125 Human Anatomy and Physiology II may not be used to fulfill this requirement.

Foreign Language

Code	Title	Credits
Intermediate-level proficiency in one foreign language is required and may be fulfilled via one of the options below: [1]		
1. Completing a course in a foreign language numbered 202 (or its equivalent), or higher level courses taught in the language.		
2. Achieving a satisfactory score on an approved proficiency test.		
3. Completing an American Sign Language course meeting intermediate-level proficiency:		
EDSE 218	Intermediate American Sign Language (ASL) I	
EDSE 219	American Sign Language (ASL) III	
EDSE 314	Intermediate American Sign Language (ASL) II	
EDSE 315	American Sign Language (ASL) IV	
EDSE 316	American Sign Language (ASL) V	
EDSE 420	Deaf History and Culture	
4. Conferral of a baccalaureate degree. [2]		

[1] Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found with the college's Office of Academic and Student Affairs (http://cosundergrad.gmu.edu/).
[2] This option is only available to students in the Biology, BA with a concentration in Biological Health who have already conferred a baccalaureate degree.

Honors

Honors in the Major

Eligibility

Mathematics majors who have maintained a GPA of at least 3.50 in mathematics courses and a GPA of 3.50 in all courses taken at George Mason University may apply to the departmental honors program upon completion of two MATH courses at the 300+ level (excluding MATH 400 History of Math (Topic Varies) (Mason Core) (https://catalog.gmu.edu/mason-core/)), at least one of which has MATH 300 Introduction to Advanced Mathematics (Mason Core) (https://catalog.gmu.edu/mason-core/) as a prerequisite. Admission to the program will be monitored by the undergraduate committee.

Honors Requirements

To graduate with honors in mathematics, a student is required to maintain a minimum GPA of 3.50 in mathematics courses and successfully complete MATH 405 Honors Thesis in Mathematics I and MATH 406 RS: Honors Thesis in Mathematics II with an average GPA of at least 3.50 in these two courses.

Accelerated Master's

Mathematics, BA or BS/Mathematics, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the combined bachelor's and accelerated master's degree pathway program (accelerated master’s or BAM) and obtain a BA or BS in Mathematics and an MS in Mathematics through the Mathematics, BA or BS/Mathematics, Accelerated MS in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7/) for policies related to this program.

Students in an accelerated master's degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission 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/policies/academic/graduate-policies/) and accelerated master's degree policies (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7-1/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an undergraduate GPA of at least 3.0. Additionally, students are encouraged to have completed a selection of the courses listed below with a grade of B or better:

Undergraduate Courses

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

Students who are accepted into the BAM Pathway will be allowed to register for graduate-level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Undergraduate students already admitted to the BAM Pathway will be admitted to the intended master's program, if they have met the following criteria that will be verified:

- Submission of BAM Transition Form by the deadline stated on the form.
- Sufficient minimum 3.0 cumulative GPA for conferred undergraduate degree (which does not include any earned reserve graduate credits).
- Completion of approved advanced standing courses and any reserve graduate courses that have met the minimum grade requirement (please refer to AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7/)).
- Successful completion of required minimum of 120 credits needed for undergraduate degree conferral (after exclusion of any satisfactory reserve graduate credits earned).
- Successfully meeting George Mason's requirements for undergraduate degree conferral (graduation) and timely submission of the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing Courses

Students must complete at least 3 credits from the following list of graduate-level courses, while in undergraduate status, up to a maximum of 12:

Code	Title	Credits
MATH 621	Algebra I	3
MATH 631	Topology I: Topology of Metric Spaces	3
MATH 664	Linear Algebra with Data Applications	3
MATH 675	Linear Analysis	3
MATH 677	Ordinary Differential Equations	3
MATH 685	Numerical Analysis	3

Reserve Graduate Credits

While in undergraduate student status, students may complete up to 6 credits of graduate-level coursework that will only count toward the graduate degree program. Reserve credits must be selected from the curated list of courses above.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) and AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#ap-1-4-4).