

Program Change Request

Date Submitted: 10/31/25 3:44 pm

Viewing: **SC-BS-MATH : Mathematics, BS**

Last approved: 04/28/25 11:49 am

Last edit: 03/02/26 10:13 am

Changes proposed by: jbazaz

**Catalog Pages
Using this Program**
[Mathematics, BS](#)

No Longer
Anticipated closure
Rationale for

Are you completing this form on someone else's behalf?

Yes

Requestor:

In Workflow

1. **MATH Chair**
2. **SC Curriculum Committee**
3. SC Assistant Dean
4. Assoc Provost- Undergraduate
5. Registrar-Programs

Approval Path

1. 12/10/25 6:03 pm
Maria Emelianenko (memelian):
Approved for MATH Chair
2. 01/23/26 10:57 am
Gregory Craft (gcraft): Approved for SC Curriculum Committee
3. 02/16/26 8:47 am
Jennifer Bazaz Gettys (jbazaz):
Approved for SC Assistant Dean
4. 02/19/26 2:11 pm
Jasmine Copeland (jcopela4): Rollback to SC Assistant Dean for Assoc Provost- Undergraduate
5. 02/24/26 11:26 am
Jennifer Bazaz Gettys (jbazaz):
Approved for SC Assistant Dean

6. 02/27/26 2:04 pm
Jasmine Copeland
(jcopela4): Rollback
to SC Assistant Dean
for Assoc Provost-
Undergraduate
7. 03/04/26 4:49 pm
Jennifer Bazaz
Gettys (jbazaz):
Approved for SC
Assistant Dean
8. 03/06/26 11:49 am
Jasmine Copeland
(jcopela4): Rollback
to SC Curriculum
Committee for
Assoc Provost-
Undergraduate

History

1. Nov 21, 2017 by
clmig-jwehrheim
2. Nov 21, 2017 by
clmig-jwehrheim
3. Jan 17, 2018 by
rzachari
4. Feb 7, 2018 by
rzachari
5. Mar 1, 2018 by
Jennifer Bazaz
Gettys (jbazaz)
6. Feb 8, 2019 by
Jennifer Bazaz
Gettys (jbazaz)
7. Mar 27, 2019 by
Tory Sarro (vsarro)
8. Jan 16, 2020 by
Jennifer Bazaz
Gettys (jbazaz)

- 9. Mar 24, 2020 by Jennifer Bazaz Gettys (jbazaz)
- 10. Feb 2, 2021 by jriemen
- 11. Mar 9, 2022 by Jennifer Bazaz Gettys (jbazaz)
- 12. May 2, 2022 by Jennifer Bazaz Gettys (jbazaz)
- 13. May 4, 2023 by Jennifer Bazaz Gettys (jbazaz)
- 14. Jun 1, 2023 by Tory Sarro (vsarro)
- 15. Jan 5, 2024 by Jennifer Bazaz Gettys (jbazaz)
- 16. Mar 21, 2024 by Tory Sarro (vsarro)
- 17. Apr 28, 2025 by Jennifer Bazaz Gettys (jbazaz)

| Name | Extension | Email |
|---------------|-----------|------------------|
| Sarah Khankan | 5302 | skhankan@GMU.EDU |

Effective Catalog: 2026-2027

Program Level: Undergraduate

Program Type: Bachelor's

Degree Type: Bachelor of Science

Title: Mathematics, BS

1. What was the process used to create this badge?
2. What evidence was used to create this badge?
3. Have you ensured there is no overlap with other badges?
4. Has CBE confirmed the badge content?
5. Has the instructor(s) for the course reviewed the badge?
6. Does this badge provide a clear learning objective?
7. Is this badge co-sponsored?
8. What is the expiration date for this badge?



Banner Title: Mathematics, BS

Is this a retitling of Existing Program

Registrar/OAPI Use Only – SCHEV Status Approved

Registrar’s Office Use Only – Program Start Term

Registrar/OAPI Use Only – SCHEV Letter

Registrar/OAPI Use Only – SACSCOC Status

Concentration(s):

| | Associated Concentrations | Registrar's Office Use Only: Concentration Code |
|---|----------------------------------|--------------------------------------------------------|
| 1 | Individualized Concentration | IND |
| 2 | Pure Mathematics | PURM |
| 3 | Actuarial Mathematics | ACTM |
| 4 | Applied Mathematics | AMT |
| 5 | Data Science | DSCI |
| 6 | Mathematical Statistics | MTHS |

Registrar/IRR Use Only –

Concentration CIP Code

College/School: College of Science

Department / Academic Unit: Mathematical Sciences

Jointly Owned Program? No

Is there an embedded degree as part of a program?

~~Justification~~
~~Justification~~
Justification

What: Adding a new concentration.

Why: To integrate mathematical modeling, data analysis, and computational techniques with biological concepts. Addresses the need for quantitative skills in biology, preparing students for careers in bioinformatics, systems biology, etc.

The proposed Math-Biology concentration is designed to meet the growing demand for professionals who possess strong quantitative and analytical skills in the biological sciences. As fields such as bioinformatics, systems biology, and quantitative genetics continue to expand, there is a clear market need for graduates who can bridge the gap between mathematical modeling and biological application. Similar programs are already in place at several U.S. universities, including the University of Utah, University of Arizona, University of Nebraska–Lincoln, University of North Carolina at Chapel Hill, University of California Davis, Harvey Mudd College, University of Michigan, University of Colorado Boulder, University of Illinois Urbana-Champaign, and the University of Washington. These examples demonstrate a national trend toward integrating mathematics and biology to prepare students for research and professional careers in data-driven life sciences. Establishing this concentration would provide our department with a distinctive interdisciplinary program that aligns with this movement while offering a level of integration not commonly available at peer institutions. The concentration will also leverage our department’s existing strengths and faculty expertise, drawing on a diverse group of instructors from both mathematics and biology. This collaborative foundation ensures that students will gain both the theoretical depth and applied perspective necessary to pursue graduate study or careers in research, biotechnology, healthcare, and data science.

What: Allowing "or" CS courses.

Why: Difficulty finding enough seats for our students in CS 112.

What: Updating the curriculum to account for BIOL course lecture and lab decoupling.

Why: To ensure students are still required to complete the course's lecture and lab components

in light of the course being decoupled into two courses.

What: Requiring minimum GPAs to transfer into the program.

Why: To set students up for success before transferring into the program.

Total Credits Required: Total credits: minimum 120

Registrar's Office Use Only - Program Code:
SC-BS-MATH

Registrar/IRR Use Only – Program CIP Code

Admission Requirements:

Admissions

University-wide admissions policies can be found in the [Undergraduate Admissions Policies](#) section of this catalog. To apply for this program, please complete the [George Mason University Admissions Application](#).

Transferring into the Mathematics, BS¹

Students transferring into the Mathematics, BS 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.

Program-Specific Policies:

Policies

Students must fulfill all [Requirements for Bachelor's Degrees](#), including the [Mason Core](#).

[MATH 300](#) Introduction to Advanced Mathematics([Mason Core](#)) meets the writing intensive requirement for this major.

For policies governing all undergraduate programs, see [AP.5 Undergraduate Policies](#).

Graduating seniors are required to have an exit interview.

Language Proficiency Recommendation

The department recommends proficiency in French, German, or Russian.

Course Recommendations and Policies

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

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 |

Degree Requirements: Students should refer to the [Admissions & Policies](#) tab for specific policies related to this program.

In addition to the Mathematics Core, Science, and Computational Skills requirements, students must select one concentration and complete the requirements therein.

Mathematics Core

| | | |
|-----------------------------|---------------------------------------------------------------------------------|----|
| MATH 113 | Analytic Geometry and Calculus I(Mason Core) | 4 |
| MATH 114 | Analytic Geometry and Calculus II | 4 |
| MATH 125 | Discrete Mathematics I(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) ¹ | 3 |
| MATH 322 | Advanced Linear Algebra | 3 |
| Total Credits | | 26 |

¹
Fulfills the writing intensive requirement.

Science

| | |
|--------------------------------------------------------------------------------|-----|
| Select a one-year sequence of a laboratory science from the following courses: | 8-9 |
|--------------------------------------------------------------------------------|-----|

Biology Sequence:

Select two from the following:

| | |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>BIOL 102</u> | Introductory Biology I-Survey of Biodiversity and Ecology(<u>Mason Core</u>) ¹ |
| <u>BIOL 103</u> & <u>BIOL 105</u> | Introductory Biology II-Survey of Cell and Molecular Biology(<u>Mason Core</u>) and Introductory Biology II Laboratory(<u>Mason Core</u>) ¹ |
| <u>BIOL 213</u> & <u>BIOL 215</u> | Cell Structure and Function and Cell Structure and Function Laboratory |

Chemistry Sequence:

| | |
|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <u>CHEM 211</u> & <u>CHEM 213</u> | General Chemistry I(<u>Mason Core</u>) and General Chemistry Laboratory I(<u>Mason Core</u>) |
| <u>CHEM 212</u> & <u>CHEM 214</u> | General Chemistry II(<u>Mason Core</u>) and General Chemistry Laboratory II(<u>Mason Core</u>) |

Geology Sequence:

| | |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <u>GEOL 101</u> & <u>GEOL 103</u> | Physical Geology(<u>Mason Core</u>) and Physical Geology Lab(<u>Mason Core</u>) |
| <u>GEOL 102</u> & <u>GEOL 104</u> | Historical Geology(<u>Mason Core</u>) and Historical Geology Laboratory(<u>Mason Core</u>) |

Physics Sequence:

| | |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <u>PHYS 160</u> & <u>PHYS 161</u> | University Physics I(<u>Mason Core</u>) and University Physics I Laboratory(<u>Mason Core</u>) |
| <u>PHYS 260</u> & <u>PHYS 261</u> | University Physics II(<u>Mason Core</u>) and University Physics II Laboratory(<u>Mason Core</u>) |

Total Credits

8-9

¹Students in the Mathematics for the Biological Sciences Concentration should select this course.**Computational Skills**

| | | |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-----|
| <u>CS 112</u> | Introduction to Computer Programming(<u>Mason Core</u>) | 4-6 |
| or <u>CS 108</u> & <u>CS 109</u> | Intro to Computer Programming, Part A(<u>Mason Core</u>) and Intro to Computer Programming, Part B | |

Total Credits

4-6

Individualized Concentration (IND)

Students who are looking for a flexible concentration option are able to customize their degree with the Individualized Concentration. The Individualized Concentration allows students to take coursework in a variety of fields. Students should work closely with a mathematics advisor and have their individual degree plan approved no later than their junior year.

Required Courses

| | | |
|--------------------------|---------------------|---|
| MATH 315 | Advanced Calculus I | 3 |
|--------------------------|---------------------|---|

| | | |
|----------------------------------------|--|---|
| Select two courses from the following: | | 6 |
|----------------------------------------|--|---|

| | |
|--------------------------|----------------------|
| MATH 316 | Advanced Calculus II |
|--------------------------|----------------------|

| | |
|--------------------------|------------------|
| MATH 321 | Abstract Algebra |
|--------------------------|------------------|

| | |
|--------------------------|---------------------|
| MATH 421 | Abstract Algebra II |
|--------------------------|---------------------|

| | |
|--------------------------|----------|
| MATH 431 | Topology |
|--------------------------|----------|

| | |
|--------------------------|-----------------------|
| MATH 432 | Differential Geometry |
|--------------------------|-----------------------|

| | |
|--------------------------|--------------------|
| MATH 433 | Algebraic Geometry |
|--------------------------|--------------------|

| | |
|--------------------------|---------------------------------------|
| MATH 464 | Linear Algebra with Data Applications |
|--------------------------|---------------------------------------|

| | |
|--------------------------|-----------------------------|
| MATH 465 | Mathematics of Data Science |
|--------------------------|-----------------------------|

Electives

| | |
|-------------------------------------------------------------------------------------------------------------|----|
| Select 12 additional upper-level MATH-prefixed credits (not previously taken). ¹ | 12 |
|-------------------------------------------------------------------------------------------------------------|----|

Additional Science

| | |
|---------------------------------------|-----|
| Select one option from the following: | 4-9 |
|---------------------------------------|-----|

Option One

A second sequence from the choices under "Science" above

Option Two²

Select 6 credits from more advanced courses in biology, chemistry, geology, or physics

Option Three

The 4-credit option of [PHYS 262](#) and [PHYS 263](#)

Option Four

Select two courses from the following:

| | |
|-------------------------|---------------------------|
| CDS 230 | Modeling and Simulation I |
|-------------------------|---------------------------|

| | |
|-------------------------|-----------------------------------------------|
| CDS 301 | Scientific Information and Data Visualization |
|-------------------------|-----------------------------------------------|

| | | |
|------------------------|-----------------------------|-------|
| CS 211 | Object-Oriented Programming | |
| CS 310 | Data Structures | |
| CS 330 | Formal Methods and Models | |
| CS 483 | Analysis of Algorithms | |
| Total Credits | | 25-30 |

¹
Excluding [MATH 400](#) History of Math (Topic Varies)([Mason Core](#)).

²
Only refers to courses acceptable for credit toward a natural science major. Consider courses (previously taken) from the following: ([BIOL 213](#) Cell Structure and Function and [BIOL 215](#) Cell Structure and Function Laboratory), BIOL 300-499, CHEM 300-499, GEOL 300-499, PHYS 300-499.

Mathematics for the Biological Sciences Concentration (MBO)

This unique concentration's aims to integrate mathematical modeling, data analysis, and computational techniques with biological concepts.

The concentration's primary goals are to: Develop skills in modeling biological processes; to enhance quantitative reasoning and data interpretation; to foster cross-disciplinary collaboration; and to prepare mathematics students for advanced studies and/or careers in biology-related fields.

Required Courses

| | | |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------|
| BIOL 213 & BIOL 215 | Cell Structure and Function and Cell Structure and Function Laboratory | 4 |
| BINF 401 | Bioinformatics and Computational Biology I | 3 |
| MATH 307 | Mathematical Modeling | 3 |
| MATH 413 | Modern Applied Mathematics I | 3 |

Elective Courses

| | | |
|------------------------------------------------|-------------------------------------------------------|--------------------|
| <u>Select four courses from the following:</u> | | 12 |
| MATH 314 | Advanced Differential Equations | |
| MATH 315 | Advanced Calculus I | |
| MATH 351 | Probability | |
| MATH 352 | Statistics | |
| MATH 446 | Numerical Analysis I | |
| MATH 464 | Linear Algebra with Data Applications | |
| <u>Select one course from the following:</u> | | 4 |

| | | |
|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| <u>BIOL 300</u> | <u>BioDiversity</u> | |
| <u>BIOL 308</u> & <u>BIOL 338</u> | <u>Foundations of Ecology and Evolution(Mason Core)</u> and <u>Foundations of Ecology and Evolution Laboratory(Mason Core)</u> | |
| <u>BIOL 311</u> & <u>BIOL 313</u> | <u>General Genetics</u> and <u>Course BIOL 313 Not Found</u> | |
| <u>Select two courses from the following:</u> | | <u>6</u> |
| <u>BINF 354</u> | <u>Foundations in Mathematical Biology(Mason Core)</u> | |
| <u>BINF 402</u> | <u>Bioinformatics and Computational Biology II</u> | |
| <u>CDS 301</u> | <u>Scientific Information and Data Visualization</u> | |
| <u>CDS 302</u> | <u>Scientific Data and Databases(Mason Core)</u> | |
| <u>STAT 460</u> | <u>Introduction to Biostatistics</u> | |
| Total Credits | | 35 |

Concentration in Pure Mathematics (PURM)

Pure mathematics is the study of ideas and structures that underlie all of mathematics. This concentration provides exciting opportunities for students interested in advanced coursework in the fields traditionally referred to as "pure mathematics". The concentration prepares students for a wide variety of careers involving mathematical thinking or graduate studies in pure mathematics.

Breadth Requirements

| | | |
|---------------------------------------|---------------------------------|---|
| <u>MATH 315</u> | Advanced Calculus I | 3 |
| <u>MATH 321</u> | Abstract Algebra | 3 |
| <u>MATH 411</u> | Functions of a Complex Variable | 3 |
| Select one course from the following: | | 3 |
| <u>MATH 312</u> | Geometry | |
| <u>MATH 431</u> | Topology | |

Depth Requirements

| | | |
|---------------------------------------------------------------|-------------------------|---|
| Select two courses (not previously taken) from the following: | | 6 |
| <u>MATH 312</u> | Geometry | |
| <u>MATH 316</u> | Advanced Calculus II | |
| <u>MATH 325</u> | Discrete Mathematics II | |

| | |
|--------------------------|--------------------------------|
| MATH 421 | Abstract Algebra II |
| MATH 431 | Topology (if not chosen above) |
| MATH 432 | Differential Geometry |
| MATH 433 | Algebraic Geometry |

Additional Mathematics

[Select 3 credits of upper level MATH-prefixed credits \(not previously taken\).](#)¹ 3

Additional Science

Select one option from the following: 4-9

Option One

A second sequence from the choices under "Science" above

Option Two²

Select 6 credits from more advanced courses in biology, chemistry, geology, or physics

Option Three

The 4-credit option of [PHYS 262](#) and [PHYS 263](#)

Option Four

Select two courses from the following:

| | |
|-------------------------|-----------------------------------------------|
| CDS 230 | Modeling and Simulation I |
| CDS 301 | Scientific Information and Data Visualization |
| CS 211 | Object-Oriented Programming |
| CS 310 | Data Structures |
| CS 330 | Formal Methods and Models |
| CS 483 | Analysis of Algorithms |

Total Credits 25-30

¹ Excluding [MATH 400](#) History of Math (Topic Varies)([Mason Core](#)).

² Only refers to courses acceptable for credit toward a natural science major. Consider courses (not previously taken) from the following: ([BIOL 213](#) Cell Structure and Function and [BIOL 215](#) Cell Structure and Function Laboratory), BIOL 300-499, CHEM 300-499, GEOL 300-499, PHYS 300-499.

Concentration in Actuarial Mathematics (ACTM)

This concentration provides exciting opportunities for students interested in studying actuarial mathematics. Expertise in this field leads directly into a career as a practicing actuary with an insurance company, consulting firm, or in government employment.

| Actuarial Mathematics Courses | | |
|----------------------------------------|----------------------------------------------------------------------------|----|
| <u>MATH 351</u> | Probability | 3 |
| <u>MATH 352</u> | Statistics | 3 |
| <u>MATH 551</u> | Regression and Time Series | 3 |
| <u>MATH 554</u> | Financial Mathematics | 3 |
| <u>MATH 555</u> | Actuarial Modeling I | 3 |
| <u>MATH 557</u> | Financial Derivatives | 3 |
| <u>ACCT 203</u> | Survey of Accounting | 3 |
| <u>ECON 103</u> | Contemporary Microeconomic Principles(<u>Mason Core</u>) | 3 |
| <u>ECON 306</u> | Intermediate Microeconomics ¹ | 3 |
| or <u>ECON 310</u> | Money and Banking | |
| or <u>FNAN 321</u> | Financial Institutions | |
| <u>STAT 362</u> | Introduction to Computer Statistical Packages | 3 |
| Select two courses from the following: | | 6 |
| <u>MATH 441</u> | Deterministic Optimization | |
| <u>MATH 442</u> | Stochastic Models | |
| <u>MATH 446</u> | Numerical Analysis I | |
| <u>MATH 453</u> | Advanced Mathematical Statistics | |
| Total Credits | | 36 |

¹

For mathematics majors, the Department of Economics has agreed to waive the [ECON 104](#) prerequisite.

Concentration in Applied Mathematics (AMT)

This concentration provides exciting opportunities for students interested in taking additional classes in applied mathematics. The concentration prepares students to deal with real-world applications in science and engineering, or to pursue graduate studies in applied mathematics.

| Applied Mathematics Courses | | |
|------------------------------------|----------------------------------|---|
| <u>MATH 313</u> | Introduction to Applied Analysis | 3 |

| | | |
|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-------|
| MATH 315 | Advanced Calculus I | 3 |
| MATH 351 | Probability | 3 |
| MATH 413 | Modern Applied Mathematics I | 3 |
| MATH 446 | Numerical Analysis I | 3 |
| Select 3 credits of MATH courses numbered above 300 (not previously taken). ¹ | | 3 |
| Select two courses from the following: | | 6 |
| MATH 314 | Advanced Differential Equations | |
| MATH 414 | Modern Applied Mathematics II | |
| MATH 478 | Introduction to Partial Differential Equations with Numerical Methods | |
| Additional Science Courses | | |
| Select additional science credits from one of the following options: | | 4-9 |
| Option One | | |
| A second sequence from the choices under "Science" above | | |
| Option Two ² | | |
| Select 6 credits from more advanced courses in biology, chemistry, geology, or physics | | |
| Option Three | | |
| The 4-credit option of PHYS 262 and PHYS 263 | | |
| Option Four | | |
| Select two courses from the following: | | |
| CDS 230 | Modeling and Simulation I | |
| CDS 301 | Scientific Information and Data Visualization | |
| CS 211 | Object-Oriented Programming | |
| CS 310 | Data Structures | |
| CS 330 | Formal Methods and Models | |
| CS 483 | Analysis of Algorithms | |
| Total Credits | | 28-33 |

¹ Excluding [MATH 400](#) History of Math (Topic Varies)([Mason Core](#)).

²

Only refers to courses acceptable for credit toward a natural science major. Consider courses (not previously taken) from the following: ([BIOL 213](#) Cell Structure and Function and [BIOL 215](#) Cell Structure and Function Laboratory), BIOL 300-499, CHEM 300-499, GEOL 300-499, PHYS 300-499.

Concentration in Data Science (DSCI)

The data science concentration prepares math majors for careers in industry and academia with a focus on the rapidly developing area of mathematics of data science. Students in this program will develop analytical and computational skills that will provide a deeper understanding of machine learning and data science concepts. By mastering the theoretical foundation underlying practical algorithms and uncovering inherent connections with several branches of modern mathematics, students will hone their creativity and independent thinking skills necessary to lead the data science revolution.

Data Science Courses

| | | |
|--------------------------|---------------------------------------|---|
| MATH 315 | Advanced Calculus I | 3 |
| MATH 351 | Probability | 3 |
| MATH 446 | Numerical Analysis I | 3 |
| MATH 464 | Linear Algebra with Data Applications | 3 |

Select two from the following: 6-7

| | | |
|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|--|
| MATH 447 | Numerical Analysis II | |
| MATH 462 & MATH 463 | Mathematics of Machine Learning and Industrial Applications I and Mathematics of Machine Learning and Industrial Applications II | |
| MATH 465 | Mathematics of Data Science | |

Select one course from the following: 3

| | | |
|--------------------------|-----------------------------------------|--|
| MATH 352 | Statistics | |
| STAT 350 | Introductory Statistics II | |
| STAT 360 | Introduction to Statistical Practice II | |
| STAT 356 | Statistical Theory | |

Select one course from the following: 3

| | | |
|-------------------------|-------------------------------------------------------------|--|
| CDS 301 | Scientific Information and Data Visualization | |
| CDS 302 | Scientific Data and Databases(Mason Core) | |
| CS 310 | Data Structures | |

Additional Science Courses

Select additional science credits from one of the following options: 3-4

Option One

Select one course from the following:

| | |
|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| BIOL 213 & BIOL 215 | Cell Structure and Function and Cell Structure and Function Laboratory |
| CHEM 211 & CHEM 213 | General Chemistry I(Mason Core), and General Chemistry Laboratory I(Mason Core). |
| GEOL 101 & GEOL 103 | Physical Geology(Mason Core), and Physical Geology Lab(Mason Core). |
| PHYS 160 & PHYS 161 | University Physics I(Mason Core), and University Physics I Laboratory(Mason Core). |

Option Two

Select 3 credits from more advanced courses in biology, chemistry, geology, or physics ¹

Option Three

The 4-credit option of [PHYS 262](#) and [PHYS 263](#)

Total Credits

27-29

¹

Only refers to courses acceptable for credit toward a natural science major. Consider courses (not previously taken) from the following: ([BIOL 213](#) Cell Structure and Function and [BIOL 215](#) Cell Structure and Function Laboratory), BIOL 300-499, CHEM 300-499, GEOL 300-499, PHYS 300-499.

Concentration in Mathematical Statistics (MTHS)

This concentration provides exciting opportunities for students interested in taking additional classes on statistics and data analysis. The concentration prepares data analysts able to deal with real world applications in science and engineering.

Mathematical Statistics Courses

| | | |
|--------------------------|-----------------------------------------------|---|
| MATH 315 | Advanced Calculus I | 3 |
| MATH 351 | Probability | 3 |
| MATH 352 | Statistics | 3 |
| MATH 453 | Advanced Mathematical Statistics | 3 |
| MATH 551 | Regression and Time Series | 3 |
| STAT 362 | Introduction to Computer Statistical Packages | 3 |

Select one from the following:

3

[STAT 260](#) Introduction to Statistical Practice I

[STAT 350](#) Introductory Statistics II

[STAT 360](#) Introduction to Statistical Practice II

Select two from the following:

6

[STAT 455](#) Experimental Design

[STAT 460](#) Introduction to Biostatistics

[STAT 462](#) Applied Multivariate Statistics

[STAT 463](#) Introduction to Exploratory Data Analysis

[STAT 465](#) Nonparametric Statistics and Categorical Data Analysis

[STAT 472](#) Introduction to Statistical Learning

[STAT 474](#) Introduction to Survey Sampling

Additional Science Courses

Select additional science credits from one of the following options:

3-4

Option One

Select one from the following:

[BIOL 213](#) Cell Structure and Function
& [BIOL 215](#) and Cell Structure and Function Laboratory

[CHEM 211](#) General Chemistry I([Mason Core](#))
& [CHEM 213](#) and General Chemistry Laboratory I([Mason Core](#))

[GEOL 101](#) Physical Geology([Mason Core](#))
& [GEOL 103](#) and Physical Geology Lab([Mason Core](#))

[PHYS 160](#) University Physics I([Mason Core](#))
& [PHYS 161](#) and University Physics I Laboratory([Mason Core](#))

Option Two ¹

Select 3 credits from more advanced courses in biology, chemistry, geology, or physics

Option Three

Select the 4-credit option of [PHYS 262](#) and [PHYS 263](#)

Option Four

Select one course from the following:

| | | |
|-------------------------|-----------------------------------------------|-------|
| CDS 230 | Modeling and Simulation I | |
| CDS 301 | Scientific Information and Data Visualization | |
| CS 211 | Object-Oriented Programming | |
| CS 310 | Data Structures | |
| CS 330 | Formal Methods and Models | |
| CS 483 | Analysis of Algorithms | |
| Total Credits | | 30-31 |

1

Only refers to courses acceptable for credit toward a natural science major. Consider courses (not previously taken) from the following: ([BIOL 213](#) Cell Structure and Function and [BIOL 215](#) Cell Structure and Function Laboratory), BIOL 300-499, CHEM 300-499, GEOL 300-499, PHYS 300-499.

Retroactive Requirements Updates:

[For CY 25-26, 24-25, 23-24, 22-23, allow the combination of BIOL 213 & BIOL 215 \(4cr\) to fill BIOL 213 \(4cr\) in the Biology Sequence and Additional Science Courses \(MTHS & DSCI concentrations\) requirements.](#)

Plan of Study:

Honors Information:

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](#))), at least one of which has [MATH 300](#) Introduction to Advanced Mathematics([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 Description/Dual Degree Description:

INTO-Mason Requirements:

College Requirements & Policies:

Department / Academic Unit Requirements & Policies:

Program Outcomes

Additional Program Information

This information is required by the Office of Accreditation and Program Integrity.

Courses offered via distance (if applicable):

Indicate whether

What is the primary delivery format for the program? Face-to-Face Only

Does any portion of this program occur off-campus? No

Are you working with a vendor / other collaborators to offer your program? No

Related Departments

Could this program prepare students for any type of professional licensure, in Virginia or elsewhere? No

Are you adding or removing a licensure component? No

Additional SCHEV & SACSCOC Information

Is the content of the new program

Which existing approved

Is this new program considered to

Which existing approved

Is this new program considered to

Which existing approved

Is this a re-opening of a program

Date of Program Closure

What are the methods of delivery

Does this program include a

Is this change a simple retitling of an existing program, with no other changes, to any existing program content, curriculum requirements, etc?

No

Does this change represent a repackaging of content in an existing approved degree/certificate program at the same instructional level (i.e., baccalaureate, master's, or doctoral)?

No

Which existing approved

Percentage of total credits containing new course content. ("New course content" is defined by SACSCOC as content that is not currently included in an existing approved degree/certificate program at the same instructional level. Do not exclude gen ed credits in calculations for undergraduate programs.)

0%-24%

Does this change include the addition of a distance education or face-to-face method of delivery for this program?

No

What is the new method of

Does this change include the addition of a course/credit-based competency-based education delivery option?

No

Will any additional equipment/facilities be needed?

No

Description of institutional

Will any additional faculty be required?

No

Description of institutional

Will any additional financial resources be needed?

No

Description of institutional

Additional library/learning resources needed?

No

Description of institutional

Have you reached out to the Libraries to determine whether there are adequate resources to support your program? If not, please email Meg Meiman, Associate University Librarian for Learning, Research, and Engagement at mmeiman2@gmu.edu.

OAPI Use Only – Determination of SACSCOC Impact

Comments or Notes

Green Leaf Program Designation

Is this a Green Leaf program? No

Green Leaf Sustainability-focused academic progra Relationship to List sustainability- Sustainability-related academic List sustainability-

Does this program cover material which crosses into another department?

No

Impacted

Additional Attachments

- UGC-COS-Program Mod BS Math.pdf UGC-COS-Program-Mod-bsmath_001.pdf BS_in_math_modification_ProgramApprovalForm_COSCC-2_ACTUARIAL.pdf

SCHEV Proposal

Executive Summary

Reviewer Comments

- Jasmine Copeland (jcopela4) (02/19/26 2:11 pm): Rollback: Rolling back to insert retro wording discussed in UGC Jasmine Copeland (jcopela4) (02/27/26 2:04 pm): Rollback: Rolling back per Jen's request Jasmine Copeland (jcopela4) (03/06/26 11:49 am): Rollback: Rolling back per Jen's request

Additional Comments

Is this course required of all students in this degree program?

%wi_required.eshtml%

Attached

Key: 587