Mathematics B.S.

Click here to view the Suggested Plan of Study (p. 2)

General Education Foundations

Please use this link to view a list of courses that meet each GEF requirement. (http://registrar.wvu.edu/gef)

NOTE: Some major requirements will fulfill specific GEF requirements. Please see the curriculum requirements listed below for details on which GEFs you will need to select.

General Education Foundations

F1 - Composition & Rhetoric
ENGL 101
Introduction to Composition and Rhetoric
& ENGL 102
and Composition, Rhetoric, and Research
or ENGL 103
Accelerated Academic Writing

F2A/F2B - Science & Technology
4-6

F3 - Math & Quantitative Skills
3-4

F4 - Society & Connections
3

F5 - Human Inquiry & the Past
3

F6 - The Arts & Creativity
3

F7 - Global Studies & Diversity
3

F8 - Focus (may be satisfied by completion of a minor, double major, or dual degree)
9

Total Hours
31-37

Please note that not all of the GEF courses are offered at all campuses. Students should consult with their advisor or academic department regarding the GEF course offerings available at their campus.

Degree Requirements

Students must complete WVU General Education Foundations requirements, College B.S. requirements, major requirements, and electives to total a minimum of 120 hours. For complete details on these requirements, visit the B.S. Degrees tab on the Eberly College of Arts and Sciences (http://catalog.wvu.edu/undergraduate/eberlycollegeofartsandsciences/#bachelorofsciencetext).

Departmental Requirements for the B.S. in Mathematics

• Capstone Requirement: The university requires the successful completion of a Capstone course. Mathematics majors must complete MATH 495.

• Writing and Communication Skills Requirement: Mathematics Bachelor of Arts students fulfill the Writing and Communication Skills requirement by completing ENGL 101 and ENGL 102 (or ENGL 103), and two additional SpeakWrite Certified Courses™: MATH 495, and one additional course from the following: COMM 202, ENGL 304, ENGL 305, HIST 203, HIST 204, HIST 207, HIST 221, HIST 241, HIST 242, HIST 250, HIST 264, HIST 259, PHIL 301, PHIL 302, PHIL 306, PHIL 310, PSYC 202, RELG 219, RELG 223, RELG 230, RELG 231.

• Calculation of the GPA in the Major: A minimum GPA of 2.00 across all classes applied to the major is required. If a class is repeated, all attempts will be included in the calculation of the GPA unless the course is eligible for a D/F repeat.

• Benchmarks Expectations: For details, go to the Mathematics admissions tab (http://catalog.wvu.edu/undergraduate/eberlycollegeofartsandsciences/mathematics/#admissionstext).

Curriculum Requirements

University Requirements

<table>
<thead>
<tr>
<th>MATH 191</th>
<th>First-Year Seminar</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEF Requirements (will vary with overlap)</td>
<td></td>
</tr>
</tbody>
</table>

ECAS B.S. Requirements:

| Global Studies & Diversity Requirement |

Mathematics Requirements

Select one of the following:
Mathematics B.S.

MATH 153 & MATH 154 Calculus 1a with Precalculus and Calculus 1b with Precalculus
MATH 155 Calculus 1

Science Requirement
Please see the Eberly College of Arts and Sciences’ Bachelor of Science (B.S.) tab.

Departmental Requirements

Foundation Courses 21
MATH 156 Calculus 2
MATH 222 Numerical and Symbolic Methods in Mathematics and Statistics
or MATH 420 Numerical Analysis 1
MATH 251 Multivariable Calculus
MATH 261 Elementary Differential Equations
MATH 283 Introduction to the Concepts of Mathematics
MATH 343 Introduction to Linear Algebra
or MATH 441 Applied Linear Algebra

Statistics Requirement 3
STAT 215 Introduction to Probability and Statistics
or STAT 461 Theory of Probability

Upper-Division Math 6
MATH 451 Introduction to Real Analysis 1
Select one:
MATH 341 Introduction to Algebraic Structures
MATH 381 Introduction to Analysis and Topology
MATH 456 Complex Variables

Mathematics Electives * 6
Select one option:
2 Mathematics courses at the 300-level or above
or:
1 Math course at the 300-level or above, and 1 appropriate course in another department, with departmental approval

Capstone Experience: 4
MATH 495 Independent Study

General Electives 41
Number of electives may vary depending.

Total Hours 120

* Except MATH 490 and MATH 493.

Suggested Plan of Study

First Year

Fall
MATH 191 1
GEF 2 (B.S. First Area 1) 4
GEF 4 3
GEF 5 3
MATH 155 (GEF 3) 4

Spring
1 ENGL 101 (GEF 1) 3
GEF 6 3
3 B.S. First Area 2 (GEF 8) 4
3 MATH 156 (GEF 8; B.S. Second Area 1) 4
General Elective 1

15 15

Second Year

Fall
B.S. Third Area 1 (GEF 8) 4
ECAS Global Studies & Diversity Requirement (GEF 7) 3
MATH 251 4
General Elective 3

Spring
ENGL 102 (GEF 1) 3
3 B.S. Third Area 2 4
MATH 261 4
MATH 283 3

3 4 4 3
### Bachelor of Arts or Bachelor of Science in Mathematics: Actuarial Science Area of Emphasis

A mathematics degree with an emphasis in Actuarial Science provides the student with preparation necessary for becoming an actuary and passing the first two actuary exams. Coursework includes the study of compound interest models, valuation of financial instruments, forecasting and population trend analysis.

**Actuarial Science Emphasis Requirements:**

- **Mathematics B.A. requirement:** Students intending to graduate with a B.A. in Mathematics with an Actuarial Science emphasis posted to the transcript must meet the requirements of the mathematics major B.A. degree, including a minimum of 20 hours of upper division courses.

- **Mathematics B.S. requirement:** Students intending to graduate with a B.S. in Mathematics with an Actuarial Science emphasis posted to the transcript must meet the requirements of the mathematics major B.S. degree, including a minimum of 20 hours of upper division courses.

- **Capstone Requirement:** Students completing an Actuarial Science Area of Emphasis will focus their capstone on pricing models, premium analysis, and other aspects of financial mathematics.

**CURRICULUM REQUIREMENTS**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Hours</th>
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<td>MATH 363</td>
<td>Mathematical Foundations of Actuarial Science</td>
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</tr>
<tr>
<td>MATH 364</td>
<td>Mathematics of Compound Interest</td>
<td>3</td>
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<tr>
<td>MATH 441</td>
<td>Applied Linear Algebra</td>
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<tr>
<td>STAT 461</td>
<td>Theory of Probability</td>
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Total Hours: 12

**Suggested Plan of Study for the Bachelor of Arts in Mathematics with an Area of Emphasis in Actuarial Science**

**First Year**

<table>
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<td>MATH 191</td>
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<td>ENGL 101 (GEF 1)</td>
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<td>GEF 2</td>
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**Suggested Plan of Study for the Bachelor of Science in Mathematics with an Area of Emphasis in Actuarial Science**

### First Year
**Fall**
- MATH 191
- GEF 2 (B.S. First Area 1)
- GEF 4
- GEF 5
- MATH 155 (GEF 3)

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<tr>
<th>Hours</th>
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<td>3 B.S. First Area 2 (GEF 8)</td>
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Total: 15

### Second Year
**Fall**
- B.S. Third Area 1 (GEF 8)
- ECAS International Requirement (GEF 7)
- MATH 251
- General Elective
- General Elective

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<tr>
<th>Hours</th>
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<tr>
<td>3 ENGL 102 (GEF 1)</td>
<td>4 MATH 261</td>
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<td>4 MATH 283</td>
<td>3 STAT 461</td>
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Total: 15

### Third Year
**Fall**
- B.S. Third Area 2

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<tr>
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Total: 15

Total credit hours: 120
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Fourth Year

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<td>3 MATH 495</td>
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Total credit hours: 120