# Mathematics, B.A.

## Major in Mathematics, BA

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td><strong>Credits Required for Major</strong></td>
<td></td>
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<tr>
<td></td>
<td>Minimum Residency 50% of Major Courses</td>
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<td>Minimum GPA 2.0 for Major</td>
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### REQUIRED MATHEMATICS COURSES

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>MATH 161</td>
<td>Calculus 1</td>
<td>4-5</td>
</tr>
<tr>
<td>MATH 163H</td>
<td>Honors Calculus 1</td>
<td></td>
</tr>
<tr>
<td>MATH 211</td>
<td>Calculus 2</td>
<td>4</td>
</tr>
<tr>
<td>MATH 310</td>
<td>Intro to Mathematical Proof</td>
<td>3</td>
</tr>
<tr>
<td>MATH 311</td>
<td>Calculus 3</td>
<td>4</td>
</tr>
<tr>
<td>MATH 322</td>
<td>Linear Algebra 1</td>
<td>4</td>
</tr>
<tr>
<td>MATH 345</td>
<td>Abstract Algebra 1</td>
<td>3</td>
</tr>
<tr>
<td>MATH 464</td>
<td>Real Analysis 1</td>
<td>3</td>
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### REQUIRED COURSES IF NO OPTION DECLARED

- Mathematic Stats I or Differential Equations - Choose 1 of the following: 3
  - MATH 335 Mathematical Statistics 1
  - MATH 365 Ordinary Differential Equation

### Additional Required Mathematics Course - Choose 1 of the following: 3

- MATH 422 Linear Algebra 2
- MATH 435 Mathematical Statistics 2
- MATH 445 Abstract Algebra 2
- MATH 467 Partial Differential Equations

### Elective Mathematics Courses - Choose 12 hours from: 12

- MATH 335 Mathematical Statistics 1
- MATH 354 Classical and Transformational Geometry
- MATH 365 Ordinary Differential Equation
- MATH 370 Operations Research
- MATH 372 Financial Mathematics I
- MATH 375 Numerical Analysis
- MATH 393 Number Theory
- MATH 395 Introduction Combinatorics
- MATH 422 Linear Algebra 2
- MATH 435 Mathematical Statistics 2
- MATH 445 Abstract Algebra 2
- MATH 457 Elementary Differential Geometry
- MATH 465 Real Analysis 2
- MATH 467 Partial Differential Equations
- MATH 471 Mathematical Modeling

### REQUIRED COURSES

- Intro. to Computing I 4
  - CSCI 161 Introduction to Programming 1

### ADDITIONAL REQUIRED RELATED COURSES

- undefined - Choose 1 of the following options 1-2:
  - Option 1. A. College of Science and Technology Courses - Choose 2 classes totaling at least 6 hours from:
    - Any BIOL course(s)
    - Any CHEM course(s)
    - Any CSCI course(s)
    - Any ESCI course(s)
    - PHIL 312 Mathematical Logic
    - Any PHYS course(s)
  - Note: This requirement may not be satisfied with BIOL 100, BIOL 108H, BIOL 204, BIOL 205, BIOL 207, BIOL 208, BIOL 247, BIOL 257, any CHEM 101-104 course(s), CHEM 110, CHEM 188, CHEM 235, CSCI 101, CSCI 111, CSCI 121, ESCI 101, ESCI 102, ESCI 104, ESCI 105, ESCI 107, ESCI 110, PHYS 103, PHYS 117, PHYS 131, PHYS 132, PHYS 198, or PHYS 205.
  - Option 2. B. Three courses from a SINGLE department
    - If you select Option B. Three courses from a SINGLE department, your advisor must email a list of courses to degreeaudit@millersville.edu for them to fulfill this requirement.

### FOREIGN LANGUAGE COMPETENCY

Language competency through the elementary level (102 or higher) is required. FORL 101 is needed only if necessary to progress to 102.