In the BS, combined biology and mathematics degree program, science courses lay the groundwork for strong basic training in mathematics, chemistry, and physics that are relevant to biology. In biology courses, students broadly explore the organization and processes of life—from molecules and cells through organs and organ systems to populations, ecosystems, and evolution. In mathematics courses, students pursue mathematical reasoning, differential equations, and linear algebra, as well as statistics and probability. The fields of biology and mathematics are integrated in a range of course offerings including bioinformatics, applied statistics, advanced genomics, and biological imaging.

### Program Requirements
Complete all courses listed below unless otherwise indicated. Also complete any corequisite labs, recitations, clinicals, or tools courses where specified and complete any additional courses needed beyond specific college and major requirements to satisfy graduation credit requirements.

### University-Wide Requirements
All undergraduate students are required to complete the University-Wide Requirements (http://catalog.northeastern.edu/undergraduate/university-academics/university-wide-requirements).

### NUpath Requirements
All undergraduate students are required to complete the NUpath Requirements (http://catalog.northeastern.edu/undergraduate/university-academics/nupath).

### Biology Requirements
#### Introduction to College
- **BIOL 1000**  Biology at Northeastern  1
- or **MATH 1000**  Mathematics at Northeastern

#### Biology
**Foundations**
- **BIOL 1107**  Foundations of Biology and Lab for BIOL 1107  5
- **BIOL 1108**

**Inquiries**
- **BIOL 2299**  Inquiries in Biological Sciences  4

**Genetics**
- **BIOL 2301**  Genetics and Molecular Biology and Lab for BIOL 2301  5
- **BIOL 2302**

**Techniques**
- **BIOL 2309**  Biology Project Lab  4

#### Chemistry
**General Chemistry**
- **CHEM 1211**  General Chemistry 1 and Lab for CHEM 1211  5
- **CHEM 1212**  General Chemistry 2 and Lab for CHEM 1214  5

**Organic Chemistry**
- **CHEM 2311**  Organic Chemistry 1 and Lab for CHEM 2311  5
- **CHEM 2312**  Organic Chemistry 2 and Lab for CHEM 2313  5

### Mathematics Requirements
#### Calculus 1
- **MATH 1341**  Calculus 1 for Science and Engineering  4
- or **MATH 1251**  Calculus and Differential Equations for Biology  4

#### Calculus 2 and Calculus 3
- **MATH 1342**  Calculus 2 for Science and Engineering  4
- or **MATH 1252**  Calculus and Differential Equations for Biology  4

#### Physics
- **PHYS 1161**  Physics 1 and Lab for PHYS 1161  5

### Required Mathematics Courses
- **MATH 1365**  Introduction to Mathematical Reasoning  4
- **MATH 2341**  Differential Equations and Linear Algebra for Engineering  4
- **MATH 3081**  Probability and Statistics  4

### Mathematics Electives
Complete three of the following:  12
- **MATH 2331**  Linear Algebra
- **MATH 3001 to MATH 4899**

### Additional Requirements
#### Experiential Learning Introduction
- **EESC 2000**  Professional Development for Co-op  1
- **MATH 3000**  Co-op and Experiential Learning Reflection Seminar  1
- or **MATH 4000**  Co-op and Experiential Learning Reflection Seminar  2

#### Capstone
Complete one of the following:  4
- **BIOL 4701**  Biology Capstone
- **MATH 4020**  Research Capstone
### Biology and Mathematics, BS

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>MATH 4025</td>
<td>Applied Mathematics Capstone</td>
</tr>
<tr>
<td>MATH 5131</td>
<td>Introduction to Mathematical Methods and Modeling</td>
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</table>

#### Biology/Mathematics Integrative Courses

Complete two of the following: 8-10

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>CS 2500</td>
<td>Fundamentals of Computer Science 1 and Lab for CS 2500</td>
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<tr>
<td>CS 2510</td>
<td>Fundamentals of Computer Science 2 and Lab for CS 2510</td>
</tr>
<tr>
<td>BIOL 3405</td>
<td>Neurobiology</td>
</tr>
<tr>
<td>BIOL 5569</td>
<td>Advanced Microbiology</td>
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<tr>
<td>BIOL 5581</td>
<td>Biological Imaging</td>
</tr>
<tr>
<td>BIOL 5591</td>
<td>Advanced Genomics</td>
</tr>
<tr>
<td>MATH 4581</td>
<td>Statistics and Stochastic Processes</td>
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<tr>
<td>MATH 7343</td>
<td>Applied Statistics</td>
</tr>
<tr>
<td>BINF 6308</td>
<td>Bioinformatics Computational Methods 1</td>
</tr>
<tr>
<td>BINF 6309</td>
<td>Bioinformatics Computational Methods 2</td>
</tr>
</tbody>
</table>

#### Writing Requirement

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit</th>
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</thead>
<tbody>
<tr>
<td>ENGW 3307</td>
<td>Advanced Writing in the Sciences</td>
<td>4</td>
</tr>
</tbody>
</table>

### Biology and Mathematics Combined-Major Credit/GPA Requirements

Complete 93 semester hours in the major with a cumulative GPA of 2.000.

#### Program Requirements

143 total semester hours required