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  and BIOL 1108  Foundations of Biology and Lab for BIOL 1107 5
Inquiries
BIOL 2299  Inquiries in Biological Sciences 4
Genetics
BIOL 2301  and BIOL 2302  Genetics and Molecular Biology and Lab for BIOL 2301 5
Techniques
BIOL 2309  Biology Project Lab 4
Chemistry
General Chemistry
CHEM 1211  and CHEM 1212  General Chemistry 1 and Lab for CHEM 1211 5
CHEM 1214  and CHEM 1215  General Chemistry 2 and Lab for CHEM 1214 5
Organic Chemistry
CHEM 2311  and CHEM 2312  Organic Chemistry 1 and Lab for CHEM 2311 5
CHEM 2313  and CHEM 2314  Organic Chemistry 2 and Lab for CHEM 2313 5
Biochemistry

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Division</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 3611</td>
<td>Biochemistry</td>
<td>and Lab for BIOL 3611</td>
<td>5</td>
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</table>
| Organismal and Population Biology Elective
Complete one of the following: 4-5
- BIOL 2321  Microbiology and Lab for BIOL 2321
- BIOL 2327  Human Parasitology
- EEBM 2302  Ecology and Lab for EEBM 2302
- EEBM 2400  Introduction to Evolution
- EEBM 2610  Plant Biology and Lab for EEBM 2610
- EEBM 2616  Invertebrate Zoology and Lab for EEBM 2616
- EEBM 2618  Vertebrate Zoology and Lab for EEBM 2618
- EEBM 2700  Marine Biology and Lab for EEBM 2700 |

Mathematics Requirements
Calculus 1
MATH 1341  Calculus 1 for Science and Engineering 4
or MATH 1251  Calculus and Differential Equations for Biology 1
Calculus 2 and Calculus 3
MATH 1342  Calculus 2 for Science and Engineering 4
or MATH 1252  Calculus and Differential Equations for Biology 2
MATH 2321  Calculus 3 for Science and Engineering 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
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<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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</tbody>
</table>

**Biology/Mathematics Integrative Courses**

Complete two of the following: 8-10

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>CS 2500</td>
<td>Fundamentals of Computer Science 1</td>
</tr>
<tr>
<td>and CS 2501</td>
<td>and Lab for CS 2500</td>
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<tr>
<td>CS 2510</td>
<td>Fundamentals of Computer Science 2</td>
</tr>
<tr>
<td>and CS 2511</td>
<td>and Lab for CS 2510</td>
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<tr>
<td>BIOL 3405</td>
<td>Neurobiology</td>
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<tr>
<td>BIOL 5569</td>
<td>Advanced Microbiology</td>
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<tr>
<td>BIOL 5581</td>
<td>Biological Imaging</td>
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<tr>
<td>BIOL 5591</td>
<td>Advanced Genomics</td>
</tr>
<tr>
<td>MATH 4581</td>
<td>Statistics and Stochastic Processes</td>
</tr>
<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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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ENGW 3307</td>
<td>Advanced Writing in the Sciences</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