The BS in cell and molecular biology curriculum lays the groundwork for strong scientific training with basic course work in mathematics, chemistry, and physics, relevant to biology. Students pursue a focused program of study emphasizing processes operating at the cellular and molecular levels of biological systems, including specialty courses in molecular cell biology and advanced genomics. Students choose from a range of advanced electives that delve deeply into molecular aspects of biology.

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).

Note: “TBD” stands for “to be determined.”

Cell and Molecular Biology Major Requirements

Introduction to College
BIOL 1000  Biology at Northeastern  

Introduction to Experiential Learning
EESC 2000  Professional Development for Co-op  

Required Biology

Foundations
BIOL 1107  Foundations of Biology and Lab for BIOL 1107  
and BIOL 1108  

Genetics
BIOL 2301  Genetics and Molecular Biology and Lab for BIOL 2301  
and BIOL 2302  

Techniques
BIOL 2309  Biology Project Lab  

Inquiries
BIOL 2299  Inquiries in Biological Sciences  

Biochemistry
BIOL 3611  Biochemistry and Lab for BIOL 3611  
and BIOL 3612  

Molecular Biology
BIOL 4707  Cell and Molecular Biology  
and BIOL 5591  Advanced Genomics  

Intermediate/Advanced Biology Electives
Complete three of the following:
BIOL 2321  Microbiology and Lab for BIOL 2321  
BIOL 3601  Neural Systems and Behavior  

BIOL 3603  Mammalian Systems Physiology  
BIOL 3605  Developmental Neurobiology  
BIOL 3609  Developmental Biology  
BIOL 5306  Biological Clocks  
BIOL 5307  Biological Electron Microscopy  
BIOL 5499  Plant Biotechnology  
BIOL 5533  Vertebrate Microanatomy  
BIOL 5541  Endocrinology  
BIOL 5543  Stem Cells and Regeneration  
BIOL 5549  Microbial Biotechnology  
BIOL 5569  Advanced Microbiology  
BIOL 5571  Microbial Ecology  
BIOL 5573  Medical Microbiology  
BIOL 5581  Biological Imaging  
BIOL 5583  Immunology  
BIOL 5585  Evolution  
BIOL 5587  Comparative Neurobiology  
BIOL 5593  Cell and Molecular Biology of Aging  
EEMB 5530  Molecular Ecology and Evolution  

Research
One of the three Intermediate/Advanced Electives can be a research course:

BIOL 4991  Research  
BIOL 4994  Internship  
BIOL 4970  Junior/Senior Honors Project 1  
BIOL 4971  Junior/Senior Honors Project 2  

Biology Capstone
BIOL 4701  Biology Capstone  

Supporting Courses

Mathematics
MATH 1251  Calculus and Differential Equations for Biology 1  

Statistics
ENVR 2500  Biostatistics and Lab for ENVR 2500  

Chemistry

General Chemistry
CHEM 1211  General Chemistry 1  
and CHEM 1212  and Lab for CHEM 1211  
CHEM 1214  General Chemistry 2  
and CHEM 1215  and Lab for CHEM 1214  

Organic Chemistry
CHEM 2311  Organic Chemistry 1  
and CHEM 2312  and Lab for CHEM 2311  
CHEM 2313  Organic Chemistry 2  
and CHEM 2314  and Lab for CHEM 2313  

Physics

Physics 1
Complete one of the following lecture/lab pairs. PHYS 1145/PHYS 1146 is recommended:
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>PHYS 1145</td>
<td>Physics for Life Sciences 1</td>
</tr>
<tr>
<td>PHYS 1146</td>
<td>and Lab for PHYS 1145</td>
</tr>
<tr>
<td>PHYS 1151</td>
<td>Physics for Engineering 1</td>
</tr>
<tr>
<td>PHYS 1152</td>
<td>and Lab for PHYS 1151</td>
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<tr>
<td>PHYS 1153</td>
<td>and Interactive Learning Seminar for PHYS 1151</td>
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<tr>
<td>PHYS 1161</td>
<td>Physics 1</td>
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<tr>
<td>PHYS 1162</td>
<td>and Lab for PHYS 1161</td>
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<tr>
<td>PHYS 1147</td>
<td>Physics for Life Sciences 2</td>
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<tr>
<td>PHYS 1148</td>
<td>and Lab for PHYS 1147</td>
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<tr>
<td>PHYS 1155</td>
<td>Physics for Engineering 2</td>
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</tbody>
</table>

**Cell and Molecular Biology Major Credit/GPA Requirement**

Complete 84 semester hours in the major with a cumulative GPA of 2.000.

Due to overlap in course content, double majoring in cell and molecular biology and biology, biochemistry, marine biology or behavioral neuroscience is not permitted.

**Program Requirement**

136 total semester hours required