BIOLOGY MAJOR (B.S.)

120 credits of coursework is required for the baccalaureate degree with a minimum 2.0 overall GPA, and a minimum 2.0 major GPA.

Program Requirements

Students must complete General Education requirements (http://catalog.montclair.edu/undergraduate-graduate-degree-requirements/general-ed-ba-bs/) and World Languages and Cultures Requirements (http://catalog.montclair.edu/undergraduate-graduate-degree-requirements/world-languages-cultures-requirement/).

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 112</td>
<td>Principles of Biology I</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 113</td>
<td>Principles of Biology II</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 213</td>
<td>Introduction to Ecology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 230</td>
<td>Cell and Molecular Biology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 380</td>
<td>Genetics</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 417</td>
<td>Evolutionary Biology</td>
<td>3</td>
</tr>
</tbody>
</table>

Biology Major Electives

Complete four requirements (see list below) 17-20

Collateral Chemistry Courses

CHEM 120 General Chemistry I 4
CHEM 121 General Chemistry II 4
CHEM 230 Organic Chemistry I 3
CHEM 231 Organic Chemistry II 3
CHEM 232 Experimental Organic Chemistry I 2

Collateral Physics Courses

Select one of the following sequences: 8
PHYS 191 University Physics I
& PHYS 192 and University Physics II
PHYS 193 College Physics I
& PHYS 194 and College Physics II

Collateral Mathematics Courses

Select one of the following sequences: 8
STAT 110 Statistics for the Biological Sciences
& AMAT 120 and Applied Calculus A
MATH 122 Calculus I
& MATH 221 and Calculus II

Total Credits 72-75

Biology Major Electives

Complete the four requirements, including at least one 4-credit course (One course cannot be used in 2 areas)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 350</td>
<td>Microbiology</td>
<td></td>
</tr>
<tr>
<td>BIOL 410</td>
<td>Toxicology</td>
<td></td>
</tr>
<tr>
<td>BIOL 415</td>
<td>Population Genetics</td>
<td></td>
</tr>
<tr>
<td>BIOL 433</td>
<td>Developmental Biology</td>
<td></td>
</tr>
<tr>
<td>BIOL 434</td>
<td>Molecular Biology</td>
<td></td>
</tr>
<tr>
<td>BIOL 435</td>
<td>Experimental Molecular Biology</td>
<td></td>
</tr>
<tr>
<td>BIOL 444</td>
<td>Cell Physiology</td>
<td></td>
</tr>
<tr>
<td>BIOL 445</td>
<td>Immunology</td>
<td></td>
</tr>
<tr>
<td>BIOL 446</td>
<td>Endocrinology</td>
<td></td>
</tr>
<tr>
<td>BIOL 457</td>
<td>Virology</td>
<td></td>
</tr>
<tr>
<td>BIOL 458</td>
<td>Microbial Genetics</td>
<td></td>
</tr>
<tr>
<td>BIOL 468</td>
<td>Neurobiology</td>
<td></td>
</tr>
<tr>
<td>BIOL 475</td>
<td>Medical Genetics</td>
<td></td>
</tr>
<tr>
<td>BIOL 476</td>
<td>Biology of Cancer</td>
<td></td>
</tr>
<tr>
<td>BIOL 482</td>
<td>Research Community I: Molecular Biology</td>
<td></td>
</tr>
<tr>
<td>BIOL 483</td>
<td>Research Community II: Molecular Biology</td>
<td></td>
</tr>
<tr>
<td>BIOL 487</td>
<td>Statistical Genomics</td>
<td></td>
</tr>
<tr>
<td>BIOL 488</td>
<td>Special Topics in Cell and Molecular Biology</td>
<td></td>
</tr>
<tr>
<td>BIOL 493</td>
<td>Molecular Ecology</td>
<td></td>
</tr>
<tr>
<td>BIOL 497</td>
<td>Genomics</td>
<td></td>
</tr>
</tbody>
</table>

Ecology

Select one of the following:
AQUA 351 Aquatic Biological Processes
BIMS 220 Introduction to Marine Biology
BIOL 300 Environmental Biology and Related Controversial Issues
BIOL 330 Introduction to Animal Behavior
BIOL 370 Principles of Ecology
BIOL 415 Population Genetics
BIOL 420 Economic Botany
BIOL 426 New Jersey Flora
BIOL 429 Herpetology
BIOL 430 Ornithology
BIOL 431 Entomology
BIOL 436 Phylogenetic Zoology
BIOL 451 Comparative Animal Physiology
BIOL 460 Biological Oceanography
BIOL 461 Aquatic Ecology
BIOL 484 Research Community I: Ecology
BIOL 485 Research Community II: Ecology
BIOL 493 Molecular Ecology

Organismal

Select one of the following:
BIOL 410 Toxicology
BIOL 425 Elementary Plant Physiology
BIOL 432 Medical Entomology
BIOL 433 Developmental Biology
BIOL 439 Biology of Animal Parasites
BIOL 440 Gross Mammalian Anatomy
BIOL 441 Comparative Anatomy of Vertebrates
BIOL 442 Human Physiology
BIOL 443 Vertebrate Embryology
BIOL 445 Immunology
BIOL 446 Endocrinology
BIOL 447 Fundamentals of Pharmacology
BIOL 450 Medical Microbiology
BIOL 451 Comparative Animal Physiology
### Biology Major (B.S.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 457</td>
<td>Virology</td>
</tr>
<tr>
<td>BIOL 468</td>
<td>Neurobiology</td>
</tr>
<tr>
<td>BIOL 476</td>
<td>Biology of Cancer</td>
</tr>
<tr>
<td>BIOL 480</td>
<td>Research Community I: Organism Biology</td>
</tr>
<tr>
<td>BIOL 481</td>
<td>Research Community II: Organism Biology</td>
</tr>
<tr>
<td>BIOL 489</td>
<td>Special Topics in Organismal Biology</td>
</tr>
</tbody>
</table>

**Additional Elective**

Select two of the following:

- **BIMS 220** Introduction to Marine Biology
- **BIOL 300** Environmental Biology and Related Controversial Issues
- **BIOL 330** Introduction to Animal Behavior
- **BIOL 350** Microbiology
- **BIOL 360** Introduction to Bio-Imaging
- **BIOL 370** Principles of Ecology
- **BIOL 404** Plant and Animal Histological Techniques
- **BIOL 405** Cell Culture
- **BIOL 406** Scanning Electron Microscopy
- **BIOL 409** Externship in Biological Research (Co-operative Education)
- **BIOL 410** Toxicology
- **BIOL 411** Introduction to Transmission Electron Microscopy
- **BIOL 415** Population Genetics
- **BIOL 418** Biology Independent Research
- **BIOL 420** Economic Botany
- **BIOL 425** Elementary Plant Physiology
- **BIOL 426** New Jersey Flora
- **BIOL 429** Herpetology
- **BIOL 430** Ornithology
- **BIOL 431** Entomology
- **BIOL 432** Medical Entomology
- **BIOL 433** Developmental Biology
- **BIOL 434** Molecular Biology
- **BIOL 435** Experimental Molecular Biology
- **BIOL 436** Phylogenetic Zoology
- **BIOL 439** Biology of Animal Parasites
- **BIOL 440** Gross Mammalian Anatomy
- **BIOL 441** Comparative Anatomy of Vertebrates
- **BIOL 442** Human Physiology
- **BIOL 443** Vertebrate Embryology
- **BIOL 444** Cell Physiology
- **BIOL 445** Immunology
- **BIOL 446** Endocrinology
- **BIOL 447** Fundamentals of Pharmacology
- **BIOL 450** Medical Microbiology
- **BIOL 451** Comparative Animal Physiology
- **BIOL 457** Virology
- **BIOL 458** Microbial Genetics
- **BIOL 460** Biological Oceanography
- **BIOL 461** Aquatic Ecology
- **BIOL 468** Neurobiology
- **BIOL 475** Medical Genetics
- **BIOL 476** Biology of Cancer
- **BIOL 480** Research Community I: Organism Biology
- **BIOL 481** Research Community II: Organism Biology
- **BIOL 482** Research Community I: Molecular Biology
- **BIOL 483** Research Community II: Molecular Biology
- **BIOL 484** Research Community I: Ecology
- **BIOL 485** Research Community II: Ecology
- **BIOL 486** Special Topics in Biology
- **BIOL 487** Statistical Genomics
- **BIOL 488** Special Topics in Cell and Molecular Biology
- **BIOL 489** Special Topics in Organismal Biology
- **BIOL 490** Senior Seminar in Biology
- **BIOL 491** Research in Biology Literature
- **BIOL 492** Senior Colloquium
- **BIOL 493** Molecular Ecology
- **BIOL 497** Genomics
- **CHEM 370** Biochemistry I