BIOLOGY 7-12, B.S.

This program has a separate admission process. Please consult the admission requirements for this program on the College of Education page for more information.

Overall GPA of 2.7 Required
120 Overall Credits Required

LIBERAL EDUCATION PROGRAM AND WRITING REQUIREMENTS

Liberal Education Program

Students must complete a comprehensive three-tiered Liberal Education Program (LEP). View all requirements of the tiers on the Liberal Education Program.

While the choice of courses that fulfill the requirements is generally left up to students, courses in the major and/or cognate may also satisfy LEP requirements. These shared courses are recommended below to fulfill both areas, although the course credits are only counted once towards the 120 credits required for graduation.

Tier 1 - Quantitative Reasoning (select one):
MAT 122 – Precalculus
MAT 150 – Calculus I

Tier 2 – American Experience (select one):
HIS 110 – United States History I
HIS 111 – United States History II

Tier 2 – Mind and Body:
SHE 203 – School Health (‘C’ or better)

Tier 2 – Natural World I: Physical Realm:
CHE 120 – General Chemistry I

Tier 2 – Natural World II: Life and Environment:
BIO 103 – Biology II (‘C’ or better)

Tier 2 - Social Structure, Conflict, and Consensus
EDU 200 - Teachers, Schools, and Society (‘C’ or better)

Writing Requirements (“W-Courses”)

Three W-courses are required. These may not be taken until after a student has passed ENG 112 — Writing Arguments. W-courses may count toward LEP, major, or cognate requirements, as well as free electives. Course sections that meet this requirement are designated by section numbers ending in “W”.

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Transfer students who enter with 60 to 89 credits are required to pass two W-courses, while transfer students who enter with 90 credits or more must pass one W-course.

## MAJOR REQUIREMENTS

62 Credits Required

**Biology Requirements**

35 Credits Required

Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 102</td>
<td>Biology I (‘C’ or better)</td>
</tr>
<tr>
<td>BIO 103</td>
<td>Biology II (‘C’ or better)</td>
</tr>
<tr>
<td>BIO 220</td>
<td>Genetics (‘C’ or better)</td>
</tr>
<tr>
<td>BIO 470</td>
<td>Methods of Biology (‘C’ or better)</td>
</tr>
</tbody>
</table>

GPA of 2.3 in the following Content Areas

### ANATOMY/PHYSIOLOGY

One Entry Level (4 credits):

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 230</td>
<td>Plant Anatomy and Morphology</td>
</tr>
<tr>
<td>BIO 231</td>
<td>Comparative Vertebrate Anatomy</td>
</tr>
<tr>
<td>BIO 235</td>
<td>Histology</td>
</tr>
<tr>
<td>BIO 250</td>
<td>Plant Diversity</td>
</tr>
</tbody>
</table>

One Upper Level (4 credits):

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 301</td>
<td>Physiology</td>
</tr>
<tr>
<td>BIO 401</td>
<td>Comparative Physiology</td>
</tr>
<tr>
<td>BIO 420</td>
<td>Plant Physiology</td>
</tr>
<tr>
<td>BIO 454</td>
<td>Brain: Anatomy and Transmission</td>
</tr>
</tbody>
</table>

### BIODIVERSITY/ECOLOGY/ORGANISMAL BIOLOGY

One Entry Level (3-4 credits):

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 202</td>
<td>Ecology</td>
</tr>
<tr>
<td>BIO 210</td>
<td>Environmental Biology and Conservation</td>
</tr>
<tr>
<td>BIO 215</td>
<td>Animal Behavior</td>
</tr>
<tr>
<td>BIO 228</td>
<td>Vertebrate Zoology</td>
</tr>
<tr>
<td>BIO 229</td>
<td>Invertebrate Zoology</td>
</tr>
</tbody>
</table>

One Upper Level (3-4 credits):

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 327</td>
<td>Field Natural History</td>
</tr>
<tr>
<td>BIO 334</td>
<td>Microbial Ecology</td>
</tr>
<tr>
<td>BIO 337</td>
<td>Medically Important Arthropods</td>
</tr>
<tr>
<td>BIO 399</td>
<td>Mammalian Biology</td>
</tr>
<tr>
<td>BIO 427</td>
<td>Entomology</td>
</tr>
<tr>
<td>BIO 429</td>
<td>Limnology</td>
</tr>
<tr>
<td>BIO 430</td>
<td>Marine Ecology</td>
</tr>
</tbody>
</table>
BIO 432 – Mycology
BIO 438 – Aquatic Entomology
BIO 440 – Parasitic Infections
BIO 460 – Paleontology

CELL/MOLECULAR

One Entry Level (3-4 credits):
BIO 205 – Forensic Biology
BIO 233 – Introductory Microbiology
BIO 236 - Cell Biology
BIO 240 – Human Heredity
BIO 296 - Genomics I

One Upper Level (4 credits):
BIO 325 - Immunology and Infection
BIO 335 – Pathogenic Microbiology
BIO 360 – Plant Growth and Development
BIO 386 - Genomics II
BIO 393 - Bioinformatics
BIO 435 – Developmental Biology
BIO 436 – Molecular Biology
BIO 451 – Tissue Culture
BIO 466 – Advanced Molecular and Cell Biology
BIO 467 – Laboratory Course in Biotechnology

Education Requirements
27 Credits Required

Requirements:

EDU 316 - Child Development and Psychology for Educators (‘C’ or better)
EDU 413 – Secondary Education (‘C’ or better)
EDU 471 – Supporting English Learners for School Success (‘C’ or better)
RDG 470 – Literacy in the Content Areas (‘C’ or better)
SCE 490 – Science (Secondary School) (‘C’ or better)
SCE 494 – Student Teaching (Science)
SCE 496 – Student Teaching Seminar (Science)
SED 482 – Teaching Exceptional Students in the Secondary Education Classroom (‘C’ or better)

Non-Course Requirements:
Module 1: Behavioral Difficulties (Social and Emotional Development)
Module 2: Dyslexia

COGNATE REQUIREMENTS

29 Credits Required

Requirements:

CHE 120 – General Chemistry I
CHE 121 – General Chemistry II
EDU 200 – Teachers, Schools and Societies (‘C’ or better)
HIS 110 or HIS 111 – United States History I or II
MAT 122 or MAT 150 – Precalculus or Calculus I
SHE 203 – School Health (‘C’ or better)

Select one from:

• PHY 200 – General Physics I
  • and PHY 201 – General Physics II
• PHY 230 – Physics for Scientists and Engineers I
  • and PHY 231 – Physics for Scientists and Engineers II

FREE ELECTIVES

Students must take remaining credits to reach Overall Credits Required (listed above).