Biology, Bachelor of Science: Environmental Biosciences Emphasis

General Requirements

- Students majoring in biology must receive a grade of C or better (2.000) in all core biology courses.
- Students graduating with a BS in biology must have at least a cumulative GPA of 2.000 in the major area. A cumulative GPA of 2.600 in the major area is required for admission to the teacher education program.
- Transfer students are required to earn a minimum of 15 semester credit hours in approved Biology upper division courses from CSU-Pueblo, including BIOL 493 Seminar (1 c.h.), for graduation with a BS degree in Biology.
- A maximum of 6 semester credit hours of approved upper division CHEM courses may be applied towards approved upper division biology electives.
- A maximum of 6 semester credit hours of approved upper division WANR courses may be applied towards approved upper division biology electives.
- Graduates are encouraged to complete a minor outside the biology department.

Core Requirements for the Biology Major

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BIOL 171</td>
<td>First Year Seminar</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 181</td>
<td>College Biology I/Organismal Bio</td>
<td>4</td>
</tr>
<tr>
<td>&amp; 181L</td>
<td>and College Biology I/Organismal Bio Lab</td>
<td></td>
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<tr>
<td>BIOL 182</td>
<td>College Biology II/Cellular Biology</td>
<td>4</td>
</tr>
<tr>
<td>&amp; 182L</td>
<td>and College Biology II/Cellular Bio Lab</td>
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Select one of the following:

- BIOL 201 Botany & 201L and Botany Laboratory
- BIOL 202 Zoology & 202L and Zoology Laboratory

BIOL 301 General Microbiology
& 301L and General Microbiology Lab

BIOL 350 Mendelian and Population Genetics

BIOL 351 Molecular Biology and Genetics

BIOL 352 Evolutionary Biology and Ecology

Select one of the following:

- BIOL 412 Cellular Biology & 412L and Cellular Biology Lab
- BIOL 413 Plant Physiology & 413L and Plant Physiology Lab
- BIOL 414 Vertebrate Physiology & 414L and Vertebrate Physiology Lab

BIOL 493 Seminar

Total Credits 30

Environmental Biosciences Emphasis

This emphasis includes Pre-Ecology and Pre-Forestry/wildlife.

Basic Biology Emphasis above with these required electives:

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<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
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<tr>
<td>BIOL 201</td>
<td>Botany</td>
<td>4</td>
</tr>
<tr>
<td>&amp; 201L</td>
<td>and Botany Laboratory</td>
<td></td>
</tr>
<tr>
<td>BIOL 202</td>
<td>Zoology</td>
<td>4</td>
</tr>
<tr>
<td>&amp; 202L</td>
<td>and Zoology Laboratory</td>
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Adviser Approved Upper Division Biology Electives

Select at least two Ecology/Environmental courses from the following:

- BIOL 443 Limnology & 443L and Limnology Lab
- BIOL 453 Ecology & 453L and Ecology Field Studies
- BIOL 454 Behavioral Ecology
- BIOL 461 Applied Geospatial Technology (GIS/GPS)
- BIOL 462 Environmental Policy & Management
- BIOL 465 Environmental Toxicology
- BIOL 486 Field Botany

Select at least one Taxonomy course from the following:

- BIOL 479 Ichthyology & 479L and Ichthyology Laboratory
- BIOL 481 Entomology & 481L and Entomology Lab
- BIOL 482 Herpetology & 482L and Herpetology Lab
- BIOL 483 Mammalogy & 483L and Mammalogy Lab
- BIOL 484 Ornithology & 484L and Ornithology Lab
- BIOL 485 Plant Taxonomy & 485L and Plant Taxonomy Lab

Required Support Courses

- CHEM 121 General Chemistry I
& 121L and General Chemistry Lab I
- CHEM 122 General Chemistry II
& 122L and General Chemistry Lab II
- CHEM 301 Organic Chemistry I
& 301L and Organic Chemistry Lab I
- CHEM 302 Organic Chemistry II
& 302L and Organic Chemistry Lab II
- MATH 156 Introduction to Statistics
- MATH 221 Applied Calc: An Intuitive Approach

Select one of the following sequences:

- PHYS 201 Principles of Physics I
& 201L and Principles of Physics Lab I
- PHYS 202 Principles Of Physics II
& 202L and Principles Of Physics Lab II

Sequence B:
Biology, Bachelor of Science: Environmental Biosciences Emphasis

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PHYS 221 &amp; 221L</td>
<td>General Physics I and General Physics I Lab</td>
<td>5</td>
</tr>
<tr>
<td>PHYS 222 &amp; 222L</td>
<td>General Physics II and General Physics II Lab</td>
<td>5</td>
</tr>
<tr>
<td>COMR 103</td>
<td>Speaking and Listening (H)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Institutional and General Education**

Select 21 credits  

**General Electives**

Select 14-16 credits

Minimum credits to graduate 120

Consult with academic adviser for other requirements, which vary with emphasis.

**General Education**

The general education requirement for graduation includes a total of 35 semester credits in two categories: Skills Component and Knowledge Component. Please see the General Education Requirement section under Academic Policies for more information.

**Expected Student Outcomes**

- Students will develop a broad-based knowledge of concepts and terminology in molecular, cellular, organismal, and ecological biology.
- Students will develop applied scientific skills though field and laboratory experience and data analysis.
- Students will develop skills in reading and interpreting the scientific literature and in presenting a synthesis of it accurately in oral and written form.
- Students will demonstrate critical thinking and problem solving skills using experimental design and the scientific method.

**Outcomes Assessment Activities**

Assessment of students’ improvement in intellectual skills, knowledge and capacities from entrance to graduation will be accomplished through the use of several tools. Exams and course assignments will be used as one measure of the student’s proficiency in writing skills, acquisition of knowledge, communication, problem solving and laboratory skills. All majors will take a Senior Seminar that requires scientific literature interpretation along with oral and written presentations evaluated by peers and department faculty. Seniors will also take the Biology Major Field Test, which measures Colorado State University-Pueblo students’ content knowledge and analytical skills against national norms.