BS BIOLOGICAL SCIENCES

Program Learning Objectives
1. Students will demonstrate a writing style appropriate for communicating scientific results to a diverse audience.
2. Students will integrate math, physical sciences and technology to answer biological questions using the scientific method.
3. Students will demonstrate proficiency of lab and field techniques in their area of specialization.
4. Students will master and retain fundamental concepts in biology (atom to ecosystem).
5. Students will demonstrate the skill to assess and analyze data with objectivity.
6. Students will demonstrate proficiency in searching, reading and evaluating the scientific literature.

Degree Requirements and Curriculum
In addition to the program requirements listed on this page, students must also satisfy requirements outlined in more detail in the Minimum Requirements for Graduation section of this catalog, including:

- 60 units of upper division courses
- Graduation Writing Requirement (GWR)
- 2.0 GPA
- U.S. Cultural Pluralism (USCP)

Note: No major, support or concentration courses may be selected as credit/no credit.

MAJOR COURSES

BIO 160 Diversity and History of Life 4
BIO 161 Introduction to Cell and Molecular Biology (B2&B4) 1 4
BIO 162 Introduction to Organismal Form and Function 4
BIO 263 Introductory Ecology and Evolution 4
BIO 351 Principles of Genetics 5
BIO 413 Evolutionary Medicine 4
or BIO 414 Evolution
BIO 461 Senior Project - Research Proposal 2
or BIO 462 Senior Project Research Experience

Ecology 3
Select from the following:
BIO 327 Wildlife Ecology
BIO 363 Principles of Conservation Biology
BIO 442 Behavioral Ecology
BOT 326 Plant Ecology
MCRO 436 Microbial Ecology
MSCI 300 Marine Ecology

Physiology 2,3
Select from the following:
BIO 361 Principles of Animal Physiology
BIO 434 Environmental Physiology
BIO 435 Plant Physiology

Concentration or General Curriculum in Biology 3

(See list of Concentrations and General Curriculum in Biology below)

SUPPORT COURSES

CHEM 127 General Chemistry for Agriculture and Life Science I (B3&B4) 1 4
CHEM 128 General Chemistry for Agriculture and Life Science II 4
CHEM 129 General Chemistry for Agriculture and Life Science III 4
CHEM 216 Organic Chemistry I 4 5
or CHEM 312 Survey of Organic Chemistry
MATH 161 Calculus for the Life Sciences I (B1) 1 4
MATH 162 Calculus for the Life Sciences II (B1) 1 4
PHYS 121 College Physics I 4
PHYS 122 College Physics II 4
PHYS 123 College Physics III 4
STAT 218 Applied Statistics for the Life Sciences 4

GENERAL EDUCATION (GE)
(See GE program requirements below.) 56

FREE ELECTIVES
Free Electives 5

Total units 180

1 Required in Major/Support; also satisfies GE.
2 Students planning to take Anatomy and Physiology courses should take BIO 361 to fulfill this requirement.
3 Courses taken to meet a major or support requirement cannot be double-counted in the concentration or general curriculum.
4 Students in the Molecular and Cellular Biology concentration should take CHEM 216 to fulfill this requirement.

General Curriculum in Biology or Concentrations (Select one)

- General Curriculum in Biology (http://catalog.calpoly.edu/collegesandprograms/collegeofsciencemathematics/biologicalsciences/bsbiologicalsciences/generalcurriculuminbiologyconcentration)
- Anatomy and Physiology (http://catalog.calpoly.edu/collegesandprograms/collegeofsciencemathematics/biologicalsciences/bsbiologicalsciences/anatomyandphysiologyconcentration)
- Molecular and Cellular Biology (http://catalog.calpoly.edu/collegesandprograms/collegeofsciencemathematics/biologicalsciences/bsbiologicalsciences/molecularandcellularbiologyconcentration)
## General Education (GE) Requirements

- 72 units required, 16 of which are specified in Major and/or Support.
- See the complete GE course listing (http://catalog.calpoly.edu/generalrequirementsbachelorsdegree/#generaleducationtext).
- Minimum of 12 units required at the 300 level.

### Area A  
**Communication**

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<tbody>
<tr>
<td><strong>A1</strong></td>
<td>Expository Writing</td>
<td>4</td>
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<tr>
<td><strong>A2</strong></td>
<td>Oral Communication</td>
<td>4</td>
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<tr>
<td><strong>A3</strong></td>
<td>Reasoning, Argumentation and Writing</td>
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### Area B  
**Math, Science, and Quantitative Reasoning**

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<tr>
<td><strong>B1</strong></td>
<td>Mathematics/Statistics (8 units in Support)</td>
<td>0</td>
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<tr>
<td><strong>B2</strong></td>
<td>Life Science (4 units in Major)</td>
<td>0</td>
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<tr>
<td><strong>B3</strong></td>
<td>Physical Science (4 units in Support)</td>
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<tr>
<td><strong>B4</strong></td>
<td>One lab taken with either a B2 or B3 course (in Major)</td>
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<tr>
<td><strong>B7</strong></td>
<td>Upper-division elective</td>
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### Area C  
**Arts and Humanities**

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<tr>
<td><strong>C1</strong></td>
<td>Literature</td>
<td>4</td>
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<tr>
<td><strong>C2</strong></td>
<td>Philosophy</td>
<td>4</td>
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<tr>
<td><strong>C3</strong></td>
<td>Fine/Performing Arts</td>
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<tr>
<td><strong>C4</strong></td>
<td>Upper-division elective</td>
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<tr>
<td><strong>Area C elective</strong></td>
<td>(Choose one course from C1-C5)</td>
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### Area D  
**Society and the Individual**

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<tr>
<td><strong>D1</strong></td>
<td>The American Experience (Title 5, Section 40404 requirement)</td>
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<tr>
<td><strong>D2</strong></td>
<td>Political Economy</td>
<td>4</td>
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<tr>
<td><strong>D3</strong></td>
<td>Comparative Social Institutions</td>
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<tr>
<td><strong>D5</strong></td>
<td>Upper-division elective</td>
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### Area E  
**Lifelong Learning and Self-Development**

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<tr>
<td><strong>E</strong></td>
<td>Lower-division elective</td>
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**Total units**: 56

1 Required in Major/Support; also satisfies GE.