# Major Required Core (62-63 units)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO1210</td>
<td>Foundations of Biology: Energy, Matter, and Information (3) (B2)</td>
</tr>
<tr>
<td>BIO1210L</td>
<td>Foundations of Biology: Energy, Matter, and Information Laboratory (1) (B3)</td>
</tr>
<tr>
<td>BIO1220</td>
<td>Foundations of Biology: Evolution, Ecology, and Biodiversity Laboratory (1) (B3)</td>
</tr>
<tr>
<td>BIO2110L</td>
<td>Biostatistics Laboratory (1)</td>
</tr>
<tr>
<td>BIO2400</td>
<td>Genetics (3)</td>
</tr>
<tr>
<td>BIO290</td>
<td>Cell and Molecular Biology (3)</td>
</tr>
<tr>
<td>BIO2410</td>
<td>Principles of Evolution (3)</td>
</tr>
<tr>
<td>BIO250</td>
<td>Principles of Ecology (3)</td>
</tr>
<tr>
<td>BIO3000</td>
<td>Genetics and Human Issues (3) (B5) or</td>
</tr>
<tr>
<td>BIO3010</td>
<td>Human Sexuality (3) (B5) or</td>
</tr>
<tr>
<td>BIO3030</td>
<td>Sexually Transmitted Diseases and Safer Sex (3) (B5) or</td>
</tr>
<tr>
<td>BIO3040</td>
<td>Environment and Society (3) (B5) or</td>
</tr>
<tr>
<td>BIO3070</td>
<td>Biology of Human Pregnancy (3) (B5) or</td>
</tr>
<tr>
<td>BIO3090</td>
<td>Biology of the Brain (3) (B5) or</td>
</tr>
<tr>
<td>BIO3120</td>
<td>Biodiversity Conservation (3) (B5) or</td>
</tr>
<tr>
<td>BIO3130</td>
<td>Marine Biology (3) (B5) or</td>
</tr>
<tr>
<td>CHM1210</td>
<td>General Chemistry I (3) (B1)</td>
</tr>
<tr>
<td>CHM1210L</td>
<td>General Chemistry Laboratory I (1) (B3)</td>
</tr>
<tr>
<td>CHM1220</td>
<td>General Chemistry II (3) (B1)</td>
</tr>
<tr>
<td>CHM1220L</td>
<td>General Chemistry Laboratory II (1) (B3)</td>
</tr>
<tr>
<td>CHM2010</td>
<td>Elements of Organic Chemistry (3) and</td>
</tr>
<tr>
<td>CHM2010L</td>
<td>Elements of Organic Chemistry Laboratory I (1)</td>
</tr>
<tr>
<td>CHM3140</td>
<td>Organic Chemistry I (4) and</td>
</tr>
<tr>
<td>CHM3140L</td>
<td>Organic Chemistry Laboratory I (1)</td>
</tr>
<tr>
<td>CHM3210</td>
<td>Elements of Biochemistry (3) or</td>
</tr>
<tr>
<td>CHM3270</td>
<td>Biochemistry I (3)</td>
</tr>
<tr>
<td>ENGL1101</td>
<td>Stretch Composition II (3) (A2) or</td>
</tr>
<tr>
<td>ENGL1103</td>
<td>First Year Composition (3) (A2)</td>
</tr>
<tr>
<td>ENG2105</td>
<td>Written Reasoning (3) (A3)</td>
</tr>
<tr>
<td>NTR2030</td>
<td>Health, Nutrition and the Integrated Being (3) (E)</td>
</tr>
<tr>
<td>OR</td>
<td>PSY2201</td>
</tr>
<tr>
<td>OR</td>
<td>SCI1010</td>
</tr>
<tr>
<td>OR</td>
<td>SCI101A</td>
</tr>
<tr>
<td>OR</td>
<td>SCI102A</td>
</tr>
<tr>
<td>MAT2110</td>
<td>Calculus for Life Sciences (3) (B4)</td>
</tr>
<tr>
<td>PHY1210</td>
<td>Physics of Motion, Fluids, and Heat (3) (B1)</td>
</tr>
<tr>
<td>PHY1211L</td>
<td>Physics of Motion, Fluids, and Heat Laboratory (1) (B3)</td>
</tr>
<tr>
<td>PHY1223</td>
<td>Physics of Electromagnetism, Circuits, and Light (3)</td>
</tr>
<tr>
<td>PHY1223L</td>
<td>Electromagnetism, Circuits, and Light Laboratory (1)</td>
</tr>
<tr>
<td>STA1300</td>
<td>Biostatistics (3) (B4)</td>
</tr>
</tbody>
</table>

# Major Electives (30-31 units)

Any combination of courses from the SIX emphases of electives would satisfy this requirement. In consultation with an advisor, select and follow an emphasis that best fits your career goals. In addition, up to 2 units of BIO 4410 and/or BIO 4610 and one unit of BIO 4620 may count toward core electives.

Courses not listed may be acceptable following consultation with advisor.

*Emphases with asterisks are recommended for pre-professional students in medicine, dentistry, and pharmacy. In addition, one year of organic chemistry with laboratories is required. One year of biochemistry with laboratories are also required for pharmacy and highly recommended for medicine and dentistry programs. For most updated and specific professional degree and school requirements, consult individual professional schools or the Pre-Professional advisor.*

*Courses with double asterisks are required for the admission to the Clinical Laboratory Scientist (CLS) programs. In addition, CHM 2210 / 2210L is required for CLS and can be taken as an elective.*

# Biological Sciences Electives (3-4 units)

Approved electives include any 2000, 3000, or 4000-level courses in the Biological Sciences Department not specifically designated for non-majors. Only 1-unit of BIO 2000 or BIO 4000 allowed. Also included are any Chemistry or Math courses. See advisor for approval of courses offered by other departments.

# General Education Requirements (48 Units)

Students should consult the Academic Programs website [https://www.cpp.edu/~academic-programs/general-education-course-listings.shtml](https://www.cpp.edu/~academic-programs/general-education-course-listings.shtml) for current information regarding this requirement. Unless specific courses are required, please refer to the list of approved courses under General Education Requirements, Areas A through E.

## Area A. English Language Communication and Critical Thinking (9 units)

1. Oral Communication
2. Written Communication
3. Critical Thinking

## Area B. Scientific Inquiry and Quantitative Reasoning (12 units)

1. Physical Sciences
2. Life Sciences
3. Laboratory Activity
4. Mathematics/Quantitative Reasoning
5. Science and Technology Synthesis

## Area C. Arts and Humanities (12 units)

1. Visual and Performing Arts
2. Literature and Language Other than English
3. Arts and Humanities Synthesis

## Area D. Social Sciences (12 units)

1. U.S. History and American Ideals
2. U.S. Constitution and California Government
4. Social Science Synthesis

## Area E. Lifelong Learning and Self-Development (3 units)

### Interdisciplinary General Education (21 Units)

An alternate pattern for partial fulfilment of GE Areas A, C, and D available for students is the Interdisciplinary General Education (IGE) program. Students should see their advisor for specific GE coursework required by their major. Please refer to the University Catalog General Education Program section for additional information.

### How IGE fulfills General Education Requirements:

<table>
<thead>
<tr>
<th>IGE</th>
<th>GE Area</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IGE 2100</td>
<td>A</td>
<td>Social Sciences: Principles, Methodologies, Value Systems, and Ethics</td>
</tr>
<tr>
<td>IGE 2200</td>
<td>A</td>
<td>Engaged Citizenship: Politics</td>
</tr>
<tr>
<td>IGE 2300</td>
<td>C1</td>
<td>Life Sciences</td>
</tr>
<tr>
<td>IGE 2400</td>
<td>C2a</td>
<td>Visual and Performing Arts</td>
</tr>
<tr>
<td>IGE 3100</td>
<td>C3</td>
<td>Social Sciences: Principles, Methodologies, Value Systems, and Ethics</td>
</tr>
<tr>
<td>IGE 3101</td>
<td>D1</td>
<td>Physical Sciences</td>
</tr>
<tr>
<td>IGE 3102</td>
<td>D2</td>
<td>Visual and Performing Arts</td>
</tr>
<tr>
<td>IGE 3103</td>
<td>D3</td>
<td>Literature and Language Other than English</td>
</tr>
</tbody>
</table>

### American Institutions (8 Units)

Courses that satisfy this requirement may also satisfy GE Area D1 and D2.

### American Cultural Perspectives Requirement (3 Units)

Refer to the University Catalog General Education Program section for a list of courses that satisfy this requirement. Course may also satisfy major, minor, GE, or unrestricted elective requirements.

### Graduation Writing Test

All persons who receive undergraduate degrees from Cal Poly Pomona must pass the Graduation Writing Test (GWT). The test must be taken by the semester following completion of 60 units for undergraduates.

---

**2018-2019 University Catalog**

**Degree Curriculum Sheet**

**Name:** Biology, B.S.

<table>
<thead>
<tr>
<th>Min. Units Required:</th>
<th>120 units</th>
</tr>
</thead>
</table>

---

**CAL POLY POMONA**

07/03/18 v1.0
BIO4800 - Entomology (2)
BIO4800L - Entomology Laboratory (2)
BIO4810 - Histology (2)
BIO4810L - Histology Laboratory (2)
BIO4820 - Biology of Fishes Laboratory (2)
BIO4840 - Herpetology (2)
BIO4840L - Herpetology Laboratory (2)

Area C (Ecology/Environmental)

BIO3130 - Marine Biology (3)
BIO3250L - Ecology Laboratory (1)
BIO33020 - California Flora (1)
BIO33050L - California Flora Laboratory (1)
BIO4080 - Water Pollution Biology (3)
BIO4140 - Biology of Species Invasions (2)
BIO4180 - Marine Ecology (3)
BIO4180L - Marine Ecology Laboratory (1)
BIO4490 - Marine Botany (2)
BIO4490L - Marine Botany Laboratory (2)
BIO4520 - Evolution of Plants (3)
BIO4520L - Evolution of Plants Laboratory (1)
BIO4550 - Field Biology (1-3)
BIO4550L - Field Biology Laboratory (1-3)
BIO4570 - Plants and the Environment (2)
BIO4570L - Plants and the Environment Laboratory (2)
BIO4580 - Ecology and Conservation of Hawaiian Ecosystems (3)
BIO4590S - Ethnobotany - Service Learning (1)
BIO4590AS - Ethnobotany Service Learning Activity (2)
BIO4680 - Microbial Ecology (2)
BIO4680L - Microbial Ecology Laboratory (1)
BIO4690 - Plant-microbe Interactions (2)
BIO4690L - Plant-microbe Interactions Laboratory (1)
BIO4910S - Interpretation of Science Service Learning (1)
BIO4910AS - Interpretation of Science Service Learning Activity (2)

Emphasis 2 - Botany

Recommended Electives
BIO2050 - Form and Function in Plants (3)
BIO2050L - Form and Function in Plants Laboratory (1)
BIO3250L - Ecology Laboratory (1)
BIO4480 - Plant Physiology (3)
BIO4490L - Plant Physiology Laboratory (1)
PLT2310 - Basic Soil Science (2)
PLT2310L - Basic Soil Science Laboratory (1)

Other Electives
BIO2060 - Basic Microbiology (3)
BIO2060L - Basic Microbiology Laboratory (1)
BIO3000 - California Flora (1)
BIO3500L - California Flora Laboratory (1)
BIO4490 - Marine Botany (2)
BIO4490L - Marine Botany Laboratory (2)
BIO4520 - Evolution of Plants (3)
BIO4530 - Plant Anatomy (2)
BIO4530L - Plant Anatomy Laboratory (2)
BIO4540 - Plant Genetics (3)
BIO4560 - Plant Development and Differentiation (3)
BIO4570 - Plants and the Environment (2)
BIO4570L - Plants and the Environment Laboratory (2)
BIO4800 - Entomology (2)
BIO4800L - Entomology Laboratory (2)

Emphasis 3 - Genetics and Molecular Cell Biology

BIO2060 - Basic Microbiology (3)
BIO2060L - Basic Microbiology Laboratory (1)
BIO4040 - Advanced Genetics (3)
BIO4300 - Concepts of Molecular Biology (3)
BIO4320 - Molecular Biology Techniques (3)
BIO4320L - Molecular Biology Techniques Laboratory (1)
BIO4390 - Cancer Cell Biology (3)

BIO4450 - Physiology I: Cells (3) and
BIO4450L - Physiology I: Cells Laboratory (1)
OR
BIO4480 - Plant Physiology (3) and
BIO4480L - Plant Physiology Laboratory (1)
OR
BIO4660 - Microbial Physiology (3) and
BIO4660L - Microbial Physiology Laboratory (1)
BIO4540 - Plant Genetics (3)

*Emphasis 4 - Microbiology

**Required course for the admission to the Clinical Laboratory Scientist (CLS) programs. In addition, CHM 2210 / 2210L is required and can be taken as an elective.

Recommended Electives
BIO2060 - Basic Microbiology (3)
BIO2060L - Basic Microbiology Laboratory (1)
** BIO4620L - Medical Microbiology Laboratory (1)
** BIO4650L - Medical Microbiology Laboratory (1)
BIO4660 - Microbial Physiology (3)
BIO4660L - Microbial Physiology Laboratory (1)
BIO4680 - Microbial Ecology (2)
BIO4680L - Microbial Ecology Laboratory (1)

Other Electives
BIO3000 - California Flora (1)
BIO4020 - Developmental Biology (3)
BIO4020L - Developmental Biology Laboratory (1)
BIO4100 - Biophysics (3)
BIO4140 - Biology of Species Invasions (2)
BIO4180 - Marine Ecology (3)
BIO4180L - Marine Ecology Laboratory (1)
BIO4190L - Neurosciences I: Cell and Molecular Processes (3)
BIO4490 - Marine Botany (2)
BIO4490L - Marine Botany Laboratory (2)
BIO4800 - Entomology (2)
BIO4800L - Entomology Laboratory (2)
BIO4810 - Histology (2)
BIO4840 - Herpetology (2)
BIO4840L - Herpetology Laboratory (2)

Unrestricted Electives

Select a sufficient number of courses so that the total from "Major Required Core", "Major Recommended Electives", "GE, and "Unrestricted Electives" is at least 120 units.