Bachelor of Science in Biology

The Bachelor's of Science in Biology is designed to give students a broad foundation in the biological sciences while affording them the freedom to specialize in a subfield of their choice. The core requirements emphasize the relationship between structure and function in living systems and the concept that biological processes can be studied at the cellular/molecular, organismal, population, and ecosystem levels. Upper division electives allow students the option to tailor their curriculum towards particular subjects in biology. The degree prepares students for a variety of careers in the biological sciences and related fields, such as: biology- or science-related positions in academia, government, non-government organizations (NGOs), or industry; entry to graduate programs in biological research; or entry to pre-professional programs including medicine, dentistry, or veterinary medicine.

Students majoring in Biology may repeat an upper-division Biology course no more than once. Failing any two upper-division Biology courses disqualifies the student from continuation as a Biology major.

The Department also offers an articulation and Early Admission Program that provides admission to the Doctor of Osteopathic Medicine Program at Western University of Health Sciences. It is available on a competitive basis to a limited number of CSUSB Biology students. The program is open to CSUSB Biology majors only, who may apply for admission to the program after completing BIOL 2010, 2020, CHEM 2100, 2100L, 2200, 2200L, and MATH 2210 at CSUSB with a grade point average of at least 3.3 in those courses. Applicants will be screened and interviewed by a joint committee from CSUSB and Western University of Health Sciences, and up to four students will be admitted annually.

Candidates accepted to the program who (1) maintain a minimum grade point average of 3.3 in the required courses and complete specified upper division coursework for the major, (2) achieve a score of 500 or higher on the Medical College Admission Test (MCAT), and (3) complete the specified course work will:

1. satisfy the requirements for the B.S. in Biology
2. have a position reserved for them in the Doctor of Osteopathic Medicine Program at Western University of Health Sciences for the year following completion of the B.S. degree. Additional information regarding application and admission to the program is available in the Biology Department Office and on the Biology Department website.

Requirements (72-76 units)

Total units required for graduation: 120

Students majoring in Biology may repeat an upper-division Biology course no more than once. Failing any two upper-division Biology courses disqualifies the student from continuation as a Biology major.

Requirements for the B.S. in Biology

(Program Code: BIOL)

Lower-division requirements (42-46)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>BIOL 2010</td>
<td>Principles of Biology I</td>
<td>5</td>
</tr>
<tr>
<td>BIOL 2020</td>
<td>Principles of Biology II</td>
<td>5</td>
</tr>
<tr>
<td>CHEM 2100</td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 2200</td>
<td>General Chemistry II</td>
<td>4</td>
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<tr>
<td>CHEM 2200L</td>
<td>General Chemistry II Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 2200L</td>
<td>General Chemistry II Laboratory</td>
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Organic chemistry

One of the sets of chemistry courses listed below (choose Group A, Group B, Group C, or Group D):

Group A:
- CHEM 2400 Organic Chemistry I Lecture
- CHEM 2400L Organic Chemistry I Laboratory
- CHEM 2500 Organic Chemistry II
- CHEM 2500L Organic Chemistry II Laboratory

Group B:
- CHEM 2300 Organic Chemistry for Life Sciences
- CHEM 2400L Organic Chemistry I Laboratory
- CHEM 4100 Biochemistry I
- CHEM 4100L Biochemistry I Laboratory

Group C:
- CHEM 2300 Organic Chemistry for Life Sciences
- CHEM 2400L Organic Chemistry I Laboratory
- CHEM 3200 Quantitative Analysis

Group D:
- CHEM 3400 Principles of Organic Chemistry I
- CHEM 3500 Principles of Organic Chemistry II

Note: The requirement in organic chemistry may be met by the completion of one year of transferable organic chemistry course work from another institution of higher education.

MATH 2210 Calculus I  4

A series of physics courses: chose Group A or B below:  10-13

Group A:
- PHYS 2000 Introduction to Physics I
- PHYS 2000L Introduction to Physics I Lab
- PHYS 2010 Introduction to Physics II
- PHYS 2010L Introduction to Physics II Lab

Group B:
- PHYS 2500 General Physics I
- PHYS 2500L General Physics I Lab
- PHYS 2510 General Physics II
- PHYS 2510L General Physics II Lab
- PHYS 2700 Modern Physics

Upper-division requirements (30)

BIOL 5000 Biology Seminar  1

A minimum of 29 units of upper-division course work in biology (excluding courses numbered BIOL 3000-3099), with at least one course from each of Groups A, B, C, and D below:

Group A (Cell/Molecular):
- BIOL 3100 Cell Biology
- BIOL 3120 Molecular Biology
- BIOL 3200 Microbiology
- BIOL 3300 Genetics

Group B (Zoology):
- BIOL 3400 Comparative Embryology
- BIOL 3410 Biology of Invertebrates
- BIOL 3420 Comparative Biology of the Vertebrates
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>BIOL 3480</td>
<td>Vertebrate Paleontology</td>
</tr>
<tr>
<td>BIOL 3430</td>
<td>Mammalogy</td>
</tr>
<tr>
<td>BIOL 3440</td>
<td>Herpetology</td>
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<tr>
<td>BIOL 3450</td>
<td>Ornithology</td>
</tr>
<tr>
<td>BIOL 3460</td>
<td>Entomology</td>
</tr>
<tr>
<td>BIOL 3630</td>
<td>Comparative Animal Physiology I</td>
</tr>
<tr>
<td>BIOL 3640</td>
<td>Comparative Animal Physiology II</td>
</tr>
</tbody>
</table>

**Group C (Botany):**
- BIOL 3520  Local Flora
- BIOL 3540  Plant Biology and Diversity
- BIOL 4510  Plant Physiology
- BIOL 4580  Medical and Economic Botany

**Group D (Population and Ecosystem Biology):**
- BIOL 3700  Evolution
- BIOL 3800  Ecology
- BIOL 3820  Microbial Ecology
- BIOL 3880  Invasion Biology
- BIOL 3900  Conservation Biology
- BIOL 3950  Marine Biology

**Total Units**  72-76