

# 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 Medical College Admission Test (MCAT), and (3) complete the specified course work will:

1. satisfy the requirements for the B.S. in Biology and
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)

BIOL 2010	Principles of Biology I	5
BIOL 2020	Principles of Biology II	5
CHEM 2100	General Chemistry I	4

CHEM 2100L	General Chemistry I Laboratory	1
CHEM 2200	General Chemistry II	4
CHEM 2200L	General Chemistry II Laboratory	1

### 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
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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
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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 3420	Comparative Biology of the Vertebrates
BIOL 3410	Biology of Invertebrates
BIOL 3430	Mammalogy

BIOL 3440 Herpetology

BIOL 3450 Ornithology

BIOL 3460 Entomology

BIOL 3630 Comparative Animal Physiology I

BIOL 3640 Comparative Animal Physiology II

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

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Total Units

72-76