

BIOLOGY

Department of Biology

School of Natural Sciences, Mathematics, and Engineering

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The Department of Biology offers the Bachelor of Science in Biology with or without a concentration in Biotechnology, the Bachelor of Arts in Human Biological Sciences, and the Master of Science in Biology. Throughout its curriculum the Department emphasizes evolution and the relationship between organisms and the environment. Classes include extensive field and laboratory investigations allowing students to observe and measure biological systems. Students are encouraged to select elective courses best suited to their interests. See Biology Tracks below. A detailed description of student learning goals and objectives can be found at <http://www.csub.edu/biology/>.

Requirements for the Bachelor of Science Degree in Biology

Total Units Required to Graduate	120 units
Major Requirements	66 units
Core Curriculum	49
Cognates	17
Minor Requirement	0 units
General Education Requirements	39 units
First-Year Seminar	2
LD Area A Foundational Skills	9*
LD Area B Natural Sciences	0*
LD Area C Arts and Humanities	6
LD Area D Social and Behavioral Sciences	6
American Institutions	6
SELF	0**
Junior Year Diversity Requirement	3
UD Thematic Areas C and D	6
Capstone	1
GWAR (Exam) or Class	0**
Additional Units	15 units

*A modification to the standard GE program has been approved that allows the possibility of satisfying some GE requirements through the major. BIOL 2010, 2110 or 2120 satisfies B2, MATH 1050 or higher satisfies A4, and the combination of CHEM 1000 and 1001 satisfies B1.
 **The SELF requirement is met by completing a LD Area B, C, or D course with a SELF component. The GWAR may be satisfied by exam.

Note: One (1) semester unit of credit normally represents one hour of in-class work and 2-3 hours of outside study per week.

Requirements for the Major in Biology

The Bachelor of Science in Biology curriculum includes a wide range of courses that allow for diverse student interests. Students seeking a Bachelor of Science degree with a major in Biology must complete the following:

- Biology courses***
 - BIOL 2010, 2110, and 2120
NOTE: A grade of C- or better in BIOL 2010 is required to advance into upper division Biology courses.
 - BIOL 3010, 3020, 3110, 3120, 4100 and 4910
 - At least 20 units of additional upper division elective coursework in Biology. At least three courses must be four units with lab and at least one must be a laboratory course at the 4000-level. Four units selected from the following may be substituted for an elective: CHEM 3400, 3401, 4400, 4401, or other by advisor's approval.

*A minimum GPA for these 49 units is 2.0

- Cognates+**
 - CHEM 1000, 1001, 1100, 2300
 - MATH 1050 or equivalent
 - PHYS 2110

+ A minimum GPA for these 17 units is 2.0

Requirements for the Bachelor of Science Degree in Biology with a Concentration in Biotechnology

Total Units Required to Graduate	120 units
Major Requirements	73 units
Core Curriculum	45
Cognates	28
Minor Requirement	0 units
General Education Requirements	39 units
First-Year Seminar	2
LD Area A Foundational Skills	9*
LD Area B Natural Sciences	0*
LD Area C Arts and Humanities	6
LD Area D Social and Behavioral Sciences	6
American Institutions	6
SELF	0**
Junior Year Diversity Requirement	3
UD Thematic Areas C and D	6
Capstone	1
GWAR (Exam) or Class	0**
Additional Units	8 units

*A modification to the standard GE program has been approved that allows the possibility of satisfying some GE requirements through the major. BIOL 2010, 2110 or 2120 satisfies B2, MATH 2010 or 2510 satisfies A4, and the combination of CHEM 1000 and 1001 satisfies B1.
 **The SELF requirement is met by completing a LD Area B, C, or D course with a SELF component. The GWAR may be satisfied by exam.

Requirements for the Major in Biology with a Concentration in Biotechnology

The Bachelor of Science in Biology with a concentration in Biotechnology curriculum includes a specific set of courses designed to provide students with a foundation in Biotechnology related fields. Students seeking a Bachelor of Science degree with a major in Biology and a concentration in Biotechnology must complete the following:

1. **Biology courses***
 - a. Core requirements: BIOL 2010, 2110, 2120, 3010, 3020, 3110, 3120, 4100 and 4910
NOTE: A grade of C- or better in BIOL 2010 is required to advance into upper division Biology courses.
 - b. Concentration specific: BIOL 3410, 4440, 4450, one additional 4000 level course with lab. (suggested courses: 4350, 4200, 4460)

*A minimum GPA for these 45 units is 2.0

2. **Cognates+**
 - a. CHEM 1000, 1001, 1100, 2300, 2400, 3300, 3301
 - b. PHYS 2110, 2120
 - c. MATH 2010

+ A minimum GPA for these 28 units is 2.0

Requirements for the Bachelor of Arts Degree in Human Biological Sciences

Total Units Required to Graduate	120 units
Major Requirements	65 units
Core Curriculum	49
Cognates	17
Minor Requirement	0 units
General Education Requirements	39 units
First-Year Seminar	2
LD Area A Foundational Skills	9*
LD Area B Natural Sciences	0*
LD Area C Arts and Humanities	6
LD Area D Social and Behavioral Sciences	6
American Institutions	6
SELF	0**
Junior Year Diversity Requirement	3
UD Thematic Areas C and D	6
Capstone	1
GWAR (Exam) or Class	0**
Additional Units	8 units

*A modification to the standard GE program has been approved that allows the possibility of satisfying some GE requirements through the major. BIOL 2010 satisfies B2, MATH 1050 satisfies A4, and the combination of CHEM 1000 and 1001 satisfies B1. **The SELF requirement is met by completing a LD Area B, C, or D course with a SELF component. The GWAR may be satisfied by exam.

Requirements for the Major in Human Biological Sciences

The Bachelor of Arts Degree in Human Biological Sciences curriculum includes a specific set of courses designed to provide students with a foundation in Biology in Human/Health related fields. This degree is not intended for pre-medical or pre-professional students. Students seeking a Bachelor of Arts degree with a major in Human Biological Sciences must complete the following:

1. **Biology courses***

Core Requirements:

 - a. Lower division: BIOL 2010, 2210, 2220, 2230, and 2240
NOTE: A grade of C- or better in BIOL 2010 is required to advance into upper division Biology courses.
 - b. Upper division: BIOL 3010, 3020, 3210, 3220, 4200, 4920

Electives:

 - c. BIOL 3430, 3530 or 3540
 - d. 7 units of additional upper division Biology courses

*A minimum GPA for these 49 units is 2.0

2. **Cognates+**
 - a. NURS 2190
 - b. CHEM 1000, 1001, and 2300
 - c. MATH 1050 or equivalent and 1209

+A minimum GPA for these 16-17 units is 2.0

Biology Tracks

Students obtaining the BS in Biology are encouraged to take course sequences (tracks) with specific emphases such as Ecology/Field Biology, Physiology, Zoology, Pre-professional Biology, Clinical Laboratory Sciences, and Physical Therapy. These unofficial tracks are not listed on the diploma or transcript. For example, a track in Pre-Professional Biology would include two years of chemistry, one year of physics, math through calculus, and selected electives in Biology. Specific courses recommended for these tracks can be obtained from an advisor or the Biology Department office.

Requirements for the Minor in Biology

A minor in Biology consists of 16 units, 8 of which must be upper division. Only courses applicable to the major will be accepted for the minor. Requests for approval are to be submitted to the Department Chair. A minimum grade point average of 2.0 is required for the units applied towards the Minor.

Science Teacher Preparation Program Leading to a Degree in Natural Sciences, Primary Concentration in Biology

CSUB has developed a degree program, the Bachelor of Arts in Natural Sciences, to prepare prospective science teachers for subject matter certification in California via the California Subject Matter Examinations for Teachers (CSET) in Science. See the catalog section under Natural Sciences for information about this degree program. Additional information may be obtained from the Biology Department office (661- 654-3089).