

adviser or department chair for equivalency evaluation prior to beginning their upper-division coursework.

3. CHEM 1A may be taken as a substitute for CHEM 3A, and CHEM 128A and 128B may substitute for CHEM 8. The reverse substitutions are not permissible. Premedical students should take CHEM 1A and 1B and 128A and 128B instead of CHEM 3A and 8.
4. B.S. biology majors selecting options in Molecular, Cellular, and Developmental Biology or in Physiology and Anatomy can complete a Minor in Chemistry with the addition of CHEM 105. Consult the chemistry department chair for details (see *Chemistry Minor*).
5. No General Education Integration course offered by the Department of Biology may be used to satisfy the General Education requirements for biology majors.
6. *CR/NC* grading is not permitted in the biology major.
7. General Education, additional, and elective requirements may be used toward a double major or minor (see *Double Major* or *departmental minor*). Consult the appropriate department chair, program coordinator, or faculty adviser for additional information.

Suggested Sequence of Courses for B.S. in Biology

The following comments on timing and sequence are intended for full-time students who plan to complete the B.S. in four years. Students with extensive extracurricular obligations should make appropriate timing adjustments to avoid overloads. See your adviser for assistance.

A total of 120 units must be completed for all biology B.S. options. In addition to courses required for the major, full-time students should add General Education requirements and electives to bring semester totals to 15-17 units.

During the first two years, resident students should complete some General Education requirements, BIOL 1A and 1B, all lower-division additional requirements for the option they have selected, and any lower-division electives that might be selected within that option. Students are advised to keep some General Education coursework for their junior and senior years. BIOL 101, 102, 103, and statistics should be completed

as early as possible and preferably no later than the end of the third year. The remainder of the third and fourth years should be spent completing requirements for the selected option, for General Education, and for the electives in biology and other fields. BIOL 105 is a senior requirement and must be taken during the fourth year.

Biology Minor

The Minor in Biology may be earned by completing the 22-unit biology core: BIOL 1A, 1B, 101, 102, 103, 104, 105.

Note: The Biology Minor also requires a 2.0 GPA and 6 upper-division units in residence.

Bachelor of Arts in Natural Sciences

Teaching Credential — Biology Option

The B.A. in Natural Sciences serves as a waiver program for the Single Subject Teaching Credential in Science. This degree program is designed for students who wish to become high school science teachers. Students may also complete the credential requirements while obtaining a B.S. in biology. This waiver program is currently under review by the California Commission on Teacher Credentialing and until program approval is secured, the appropriate CSET exams will be required to establish subject matter competency. Please contact Mr. Jaime Arvizu, College of Science and Mathematics counselor, for advising and more information at 278-5173. The B.A. in Natural Sciences with the Biology Option is as follows:

	Units
Core requirements	36
<i>Biology</i>	(12)
BIOL 1A, 1B, 101	
<i>Chemistry</i>	(10)
CHEM 1A, 1B	
<i>Geology</i>	(7)
EES 1 and 168	
<i>Natural Science</i>	(3)
NSCI 106	
<i>Physical Science</i>	(4)
PSCI 21	
Biology Option	39-41
CHEM 8 or 128A	(3)
PHYS 2A, 2B ¹	(8)
MATH 75	(4)
MATH 101	
or PSYCH 42	(4)
BIOL 102, 103,	
104, 105	(10)

BIOL 120 (4)

Select one course:

 BIOL 122, 124,
 125, 130, 131,
 132, 133, 134,
 135, 136, 171,
 172,..... (3-4)

Select one course:

 BIOL 160, 161,
 162 and 162L,
 163 (3-4)

General Education requirements² 51

Electives and remaining

degree requirements^{2,3} 4-6

Total 120

Advising Notes for the Natural Sciences Major

1. Substitutions may be made with the permission of the appropriate department chair. PHYS 4A-B-C with labs 4AL, 4BL is recommended instead of PHYS 2A-B for those students well-prepared for physics.
2. This total assumes that students in this option will maximize the 12 units required for the major that also may be applied to fulfill General Education requirements as follows: CHEM 1A (3 units), BIOL 1A (3 units), EES 168 (3 units), and 3 units if MATH 75 is selected. Consult your major adviser for details.
3. Students should be sure to take sufficient upper-division units in their General Education courses and electives to satisfy the graduation requirements of 40 upper-division units and upper-division writing skills.

Graduate Programs

The Biology Department offers a research-intensive Master of Science in Biology with the opportunity for specialization in several areas of study. Among these areas are ecologically oriented field studies in fresh water, terrestrial, and marine environments; molecular, cellular, and developmental biology of plants, animals, and microbes; physiology of microbes, plants, and animals; entomology; microbiology; parasitology; botany; zoology; systematics; and animal behavior. The program also prepares candidates for teaching biological science disciplines at the secondary and community college education levels. The master's program provides a strong foundation for those seeking advanced education at universities offering the research doctorate (Ph.D.) or other