

Biology

Biology is a rapidly expanding field of science that offers varied challenges and opportunities to college students. CSUB's Department of Biology has developed a curriculum that keeps pace with the changes occurring in Biology, while meeting the needs of a diverse student population.

The curriculum allows for study in specific areas of emphasis such as environmental studies, pre-professional preparation (e.g. pre-medical, pre-veterinary, pre-dental) teacher preparation, animal biology, and plant biology. Biology majors are required to integrate chemistry, mathematics, computer science, and other related areas with their course work in Biology. The philosophy underlying the curriculum is that biologic principles and concepts are learned best through extensive experience in experimentation. A low student-to-faculty ratio allows for considerable interaction between students and their instructors. Students have access to a wide variety of equipment and an environmental study area for use in their laboratory investigations. The ability to work in small groups or individually provides opportunities for development not found in larger institutions. CSUB offers a Bachelor of Science degree in Biology. An Environmental Studies concentration and a Pre-Professional Biology track are available.

Training and Career Outlook

Biology offers a great diversity of career opportunities including research, government, education, industry, and medically-related professions. Graduates have the background and skills to enter many areas directly upon graduation or to continue on to advanced studies in other speciality areas. The need for well-trained biologists continues to increase, and our graduates are prepared to accept the challenge.

Scholarships

- Arts and Sciences Merit Award Scholarship
- Cancer Federation Research Scholarship
- Fairie A. Decker Memorial Endowment Scholarship
- Theodore David Decker Memorial Endowment Scholarship
- Dr. Paul Dhariwal Memorial Endowment Scholarship
- Jeanette Haskin Endowment for Women in Science
- John Reed Memorial Scholarship

CSUB Alumni Careers

Kennon Heard, M.D.
Scott Gonzalez, M.D.
John Shields, Ph.D.
Drake Stenger, Ph.D.

The quality of education and individual attention I received as a biology major at CSUB provided me with a solid foundation for my studies in optometry school at UC Berkeley. In fact, it became clear that my undergraduate education was superior to that of many of my Berkeley classmates who had attended UC schools as undergraduates. I learned essential skills that I use daily as a private practitioner and research scientist."

Penelope Suter, O.D



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Biology / Requirements for the Major

Sample program for students who want to graduate with a degree in Biology

Requirements for the Major

1. A minimum of 55 units in Biology*:
 - a. Three courses selected from BIOL 210, 211, 212, and 255/257 (both).
 - b. BIOL 301 and 490.
 - c. Two courses selected from BIOL 304, 305, and 306.
 - d. One five-unit 400-level course with a lab. Courses that may not satisfy this requirement include BIOL 416, 417, 418, 419, 480, 496, and 497. BIOL 477 may count with advisor's approval.
 - e. At least 15 units of additional upper division course work in Biology. Up to 10 units of upper division work from outside the department may be substituted with advisor's approval.

*Minimum GPA of 2.0 required for Biology courses.

2. A minimum of 25 units in Cognates*:
 - a. SCI 294
 - b. CHEM 211 or equivalent
 - c. MATH 191 or equivalent
 - d. At least 10 units in appropriate cognate areas subject to the approval of the advisor.

*Minimum grade point average of 2.0 required for Cognates.

Environmental Studies Concentration

The Environmental Studies concentration integrates classroom studies and practical problem solving with major emphasis on responsible decision making on environmental issues. Emphasis is placed on developing a deliberate and systematic study of environmental problems as they relate to humans. This coordinated approach enhances job entry into environmental planning, protection, and regulation.

1. A minimum of 55 units in Biology
 - a. BIOL 210, 211, and 212
 - b. BIOL 301 and 490
 - c. BIOL 306 and 304 or 305
 - d. BIOL 321, 322, 404, and 406
2. A minimum of 45 units in Cognates:
 - a. SCI 294
 - b. CHEM 211 or equivalent
 - c. MATH 191 or equivalent
 - d. GEOL 201 and 205
 - e. ECON 201 and 370 or 371
 - f. Two courses from INST 369, ERM 411, ERM 412, ECON 370, ECON 371, BEHS 321, GEOL 308, and GEOL 309.

Pre-Professional Biology Track

This track provides basic course requirements to prepare students for entrance into post-baccalaureate study in medicine, optometry, dentistry, veterinary medicine, and pharmacology.

1. A minimum of 55 units in Biology:
 - a. BIOL 210, 212, 255/257 (both)
 - b. BIOL 301, 304, 305, and 490
 - c. Four courses from the following (one must be 400 level): BIOL 312, 342, 351 or 451, 355, 414, 430, 433, 453.
2. A minimum of 25 units in Cognates:
 - a. SCI 294
 - b. CHEM 211, 212, 213, 331, 332, and 333 or 340
 - c. MATH 191, 192, 201, and 202
 - d. PHYS: non-calculus based 201, 202, 203 or calculus-based 221, 222, 223.

Science Teacher Preparation Program: Natural Sciences Degree with a Concentration in Biology

The Commission on Teacher Credentialing has authorized CSUB to offer a single subject matter preparation program in Natural Sciences leading to a Bachelor

of Arts degree. This course work satisfies the course requirements for a Secondary Teaching Credential in Science. The program consists of three components: I. Primary Concentration (major), II. Secondary Concentration (minor), and III. Breadth (cognates). Program completion leads to a B.A. degree in the Natural Sciences with a major in the area of primary concentration and a minor in the secondary concentration. Following is the course work recommended for a primary concentration in Biology. Additional information may be obtained from the Biology Department office (661-664-3089).

Note: Except for Senior Seminar (490) all courses must be completed with their respective laboratory components.

- I. Primary Concentration in Biology: BIOL 210, 211, 212, 304, 305, 306, 490, plus one additional 300 or 400 level Biology course acceptable for the major.
- II. Secondary Concentration and III. Breadth: Choose one of the following:
 - a. Chemistry: CHEM 211, 212, 213, plus two upper division Chemistry courses acceptable for the major; GEOL 201 and 205; PHYS 110, 201 or 221, 202 or 222, and 203 or 223.
 - b. Geology: GEOL 201, 205, 303, 307, and 320; CHEM 211 and 212; PHYS 110, 201 or 221, 202 or 222, and 203 or 223.
 - c. Physics: PHYS 110, 221, 222, 223, 307, and 324; CHEM 211 and 212; GEOL 201 and 205.