



Bachelor of Science in Biological Science

College of Natural Sciences and Mathematics

Why major in a biology-related field?

Biology is the branch of science concerned with the study of life. The discipline is dynamic, diverse, and expanding with the integration of new molecular approaches, information technology and concerns for the environment. Through the study of biology you will learn principles that govern the function of your own body and those of other organisms. You will explore how complex organisms develop from a single cell, and how genes and the environment govern these events. You will learn how plants capture the energy from the sun and, ultimately, sustain almost all life on earth through intricate relationships with other organisms, including humans. In addition, in Southern California, we are fortunate to be close to diverse employment opportunities for biology majors, ranging from biotechnology and biomedical companies to environmental consulting firms.

Why choose Cal State Fullerton?

The Bachelor of Science in Biological Science at Cal State Fullerton provides a well-rounded, solid foundation based on a curriculum that is designed for our students' professional success.

High-quality faculty – Several of our department faculty members have been selected as Outstanding Professor at Cal State Fullerton, and many have received awards from the College of Natural Sciences and Mathematics for outstanding performance in teaching, research, and contributions to student success. Funding from the National Science Foundation, the National Institutes of Health, the Sea Grant Program, and government and private contracts supports collaborative faculty-student research. Faculty have also been awarded national grants to upgrade equipment in teaching laboratories, and the department is a national model for improving methods for teaching science in a comprehensive university.

Opportunities to actively engage in research - Biology faculty are committed to combining research with teaching and maintain active laboratory or field-based research programs in which approximately 70-80 undergraduates per year are involved in student-faculty research projects.

Proximity to desert, mountain, coastal and ocean habitats – Students can take advantage of opportunities to explore and study diverse habitats that are relatively close to Cal State Fullerton.

Emphasis on hands-on laboratory and field experiences – Although many large universities are decreasing the hands-on components of their curriculum due to the expense, our program provides students with extensive hands-on experiences by working in laboratories and in the field.

Preparation for graduate and health professions schools – The biology curriculum is well-suited for students interested in pursuing careers in the health professions and other graduate degrees. Many students have earned degrees in other fields and return to Cal State Fullerton to enroll in courses to meet requirements for entry into health professions schools.

Preparation for teaching careers – Research in the teaching of biology is a focus in the department, and the curriculum offers high-quality preparation for careers in teaching biology.

Special interdisciplinary programs – Our program offers a minor in biotechnology for students majoring in biological science and interested in careers in the growing medical and agricultural biotechnology industries. Students also may combine a B.S. in biological science with a minor in business administration through our biological science/pre-MBA program and then complete an MBA degree at Cal State Fullerton in one additional year.

What's special at Cal State Fullerton?

Outstanding features of Cal State Fullerton's biology program are the opportunities for close interaction with faculty in classes and in research projects. We have excellent facilities and continually upgrade our equipment so that students learn to use state-of-the-art tools employed by life science professionals.

What career opportunities are available?

Our bachelor of science degree program provides an excellent preparation for entry to health professions schools and graduate school in the life sciences; for laboratory and field research, secondary school teaching, and for jobs in conservation and environmental biology with government and private agencies; for careers in sales of research and pharmaceutical products, and in the biotechnology industry. Stop by the Department Office and pick up a booklet describing the many careers that require a degree in biology.

What courses are required?

The new biology core curriculum was implemented in the fall 2002 semester. Students entering as freshmen in fall 2004 must take upper-division biology elective courses in a chosen concentration. The completed concentration will be indicated on transcripts and diplomas of students entering as freshman in fall 2004 or later. Students entering as freshmen between fall 2002 and fall 2004 are encouraged to declare a concentration.

Core courses (20 units taken in sequence)

- Biology 171 Evolution and Biodiversity (5 units)
- Biology 172 Cellular Basis of Life (5 units)

- Biology 273 Genetics and Molecular Biology (5 units)
- Biology 274 Principles of Physiology and Ecology (5 units)

Concentrations (23-26 units*)

After completing the core courses, students are to select one of four concentrations: Biodiversity, Ecology and Conservation Biology; Cell and Developmental Biology; Marine Biology; Molecular Biology and Biotechnology

**(Units depend on how the upper-division writing requirement is met).*

What advisory tracks can I focus in?

Within each concentration, upper-division courses must include lab and/or field work (5 units), two 400-level courses (6 units minimum; selected courses may also meet the upper-division writing requirement), and a capstone course (2 units minimum). Each concentration can meet prerequisites for health professional or single-subject teaching careers depending on the courses selected.

Required courses in each Concentration

Biodiversity, Ecology and Conservation Biology

- Biology 314 Evolutionary Ecology (3 units)

Cell and Developmental Biology

- Biology 302 General Microbiology (4 units)
- Biology 303 Intermediate Cell Biology (3 units)

Marine Biology

- Biology 314 Evolutionary Ecology (3 units)

Molecular Biology and Biotechnology

- Biology 309 Intermediate Molecular Biology (3 units) and one of the following:
 - Biology 302 General Microbiology (4 units)
 - Chemistry 421 Biological Chemistry OR Chemistry 423A General Biochemistry (3 units)

Supporting Course Requirements in related fields (29-30 units)

- Chemistry 120A, B General Chemistry (10 units)
- Chemistry 301A, B Organic Chemistry (6 units)
- Chemistry 302 Organic Chemistry Lab (2 units)
- Physics 211 and 212 Elementary Physics (3 units, 3 units)
- Physics 211L and 212L Elementary Physics Lab (1 unit, 1 unit)
- Math 130A Short Course in Calculus (4 units)
 - OR Math 150A Calculus (4 units)
 - OR Math 337 Intro to Experimental Design and Statistics in the Laboratory Sciences (3 units)

How can students get involved?

There are a number of opportunities for biology majors to pursue academic and career interests outside of classes.

- The **Biology Club** offers biology majors opportunities to support charities, get involved in volunteer activities such as coastal cleanups, and attend

- Join the **Student Health Professions Association** if you are interested in a career in the health professions, including medicine, dentistry and optometry. Contact: Dr. David Drath.
- The **Minority Access to Research Careers (MARC)** program is open to under-represented minority and disadvantaged students who have a high GPA and who are interested in earning a Ph.D. and pursuing a career in biomedical research. Selected students receive a stipend and participate in research year-round. Contact: Dr. Amybeth Cohen.
- The **Minority Scientist Development (MSD)** program is open to all minority students interested in biomedical research. The program provides a stipend for working on a research project and travel funds to attend a scientific meeting. Contact: Dr. Christina Goode.
- If you are interested in a research career, join the **Minority Biomedical Research Support (MBRS) Club**. Contact: Dr. Christina Goode.
- The **Southern California Ecological Research program (SCERP)** is open to biology students interested in pursuing careers in ecological studies. It provides specialized training and support of research activities, and a small stipend. Contact: Dr. Bill Hoese.
- Students can serve as laboratory assistants in laboratory courses, as graders for large classes, and as tutors for other students. Contact: Dr. Robert Koch.

Who advises me?

The department chair or vice-chair advises students who are about to enroll for the first time at Cal State Fullerton. Biology majors meet with a faculty adviser every semester prior to registering for classes. Our faculty members are committed to this regular academic advising program to help students succeed and graduate in the shortest time possible.

How can I learn more?

Visit the Department's website at: <http://biology.fullerton.edu> to get acquainted with our department. We also encourage you to visit us on campus, speak with an adviser, tour our facilities and visit with other biology students. You may also e-mail the Department chair, Dr. Robert A. Koch (rkoch@fullerton.edu) or other faculty members through links on the department's website.

For further information, contact: Department of Biological Science, California State University, Fullerton, P.O. Box 6850, McCarthy Hall 282, Fullerton, CA, 92834-6850. You can also contact us at (714) 278-3614, or by fax at (714) 278-3426.