



# BIOLOGY

Presented By:

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## Overview of Degree with Learning Outcomes

- Bachelor of Science in Biology
- Bachelor of Science in Biology with an Emphasis in Cell and Molecular Biology
- Bachelor of Science in Biology with an Emphasis in Medical Imaging
- Bachelor of Arts in Biology with an Emphasis in General Biology
- Bachelor of Arts in Biology with an Emphasis in Pre-Professional Studies
- Bachelor of Arts in Biology with an Emphasis in Subject Matter Preparation in Teaching Biology
- Master of Science in Biotechnology and Bioinformatics
- Minor in Biology
- Certificate in Biotechnology
- Honors in Biology



Biology is the study of life, its origins, diversity and intricacies. It emphasizes the relationship between structure and function in living systems and the processes, by which organisms grow, reproduce and interact with each other and their environment. The discipline is dynamic and rapidly advancing, particularly in the areas of biotechnology and information technology. The Biology Program provides its undergraduate and graduate students with a strong theoretical foundation in biology, combined with extensive hands-on laboratory experiences using state-of-the-art technology. Students take a series of core courses augmented by electives selected from areas of special interest.

### STUDENTS GRADUATING FROM THE BIOLOGY PROGRAM WILL BE ABLE TO:

- Explain the basic structures and fundamental processes of life at molecular, cellular and organismal levels;
- Identify the evolutionary processes that lead to adaptation and biological diversity;
- describe the relationship between life forms and their environment and ecosystems;
- Collect, organize, analyze, interpret and present quantitative and qualitative data and incorporate them into the broader context of biological knowledge;
- Effectively apply current technology and scientific methodologies for problem solving;
- Find, select and evaluate various types of scientific information including primary research articles, mass media sources and worldwide web information; and
- Communicate effectively in written and oral forms.



## Careers

The Bachelor of Science in Biology and the Bachelor of Science in Biology with an Emphasis in Cell and Molecular Biology are designed for students who wish to enter medical, dental or other health professional or graduate schools, or to seek careers in business, industry or government.

The Bachelor of Science in Biology with an Emphasis in Cell and Molecular Biology offers students an opportunity to study the exciting developments in genetics, molecular biology, cloning, biotechnology and bioinformatics. Such programs lead to careers in biotechnology, pharmaceuticals, research and development, intellectual property and patent law.

The Bachelor of Science in Biology with an Emphasis in Medical Imaging prepares students for graduate or professional study in the medical sciences (medical imaging, medical physics, health physics, dosimetry, nuclear medicine, radiotherapy, oncology, biomedical engineering),

or for entry into professional positions in the clinical environment and in medical imaging research and development.

The Bachelor of Arts degree is designed to obtain a general background in both the concepts and the technical skills of modern biology. Students completing the Bachelor of Arts major will find that their strong general background will allow them flexibility in both completing minor fields of study and career choices.

The degree prepares graduates for careers in medical and other health professions, science education, industry or government.



## ACCOMPLISHMENTS

- Recruited the two cohorts of 65 graduate students and successfully launched and implementing the professional MS in Biotechnology and Bioinformatics program
- Contributed to the Library's Bioimages data base with images of native CSUCI plants and developed a website of native CSUCI plants for teaching and research
- Organized three Poe Symposia on stem cell technology, nutrition and obesity, infectious diseases such as avian flu and biofuels as alternative energy. These events were well attended with people from campus and the community and they were extremely well-received and phenomenal success
- Obtained a CSU Extended Education Commission grant of \$60,000 to support the development of a combined MS Biotechnology/MBA program

## ASSESSMENT ACTIVITIES

The Biology program assessed the degree to which students can describe life forms and their relationships to environment and ecosystems. This overarching goal was broken down into ten sub-goals that were amenable to direct assessment by embedded assessment methods that placed 47 questions on the midterm and final exams in appropriate courses. Across all questions, students answered 75% of the questions correctly. From this Biology concluded that the learning goals were met at an acceptable level. The program has planned to assess learning outcomes further in a pre-post fashion as well.

- Dedicated faculty and staff
- Motivated students
- Multiple academic programs to allow different career pathways
- Emphasizing hands-on learning with multiple opportunities for students to learn much needed skills
- High student success rate in student internships, scholarships, honors, graduation, admission to professional and graduate schools, and obtaining jobs in biotechnology industry
- Successful Professional Masters Program