

California State University Channel Islands

Program Update For Minor Program Updates Only

Program updates must be submitted by October 15, 2013 and finalized by the end of the fall semester for the next catalog production.

Date (Change if modified and update the file name with the new date): 8.26.13

Program Area: **Biology Hierarchy**

Semester/Year first affected: FALL 2014

Instructions: Please use this Program Update form for minor changes to existing programs. Highlight all changes in YELLOW. Appropriate updates for this form include faculty or address changes, additions of approved electives, minor editing for clarity, and other minor updates. Any change to program requirements, units, outcomes, emphases or options, or other programmatic concerns require the standard two column Program Modification form, available at the Curriculum website.

CURRENTLY APPROVED PROGRAM WITH CHANGES TRACKED

Paste the latest approved version of your entire program in the below the line and before the Summary of Changes before you begin (If you are unsure about which version is the most recent, contact Kathy Musashi). If the form does not preset to the tracked changes mode, turn on tracked changes using Word Tools before making the necessary edits. Please set the view to ORIGINAL SHOWING MARKUP.

SUMMARY OF CHANGES (Mark applicable change box below)

- Adding elective courses
- Updating faculty or addresses
- Minor editing for clarity
- Other, Please briefly explain

Biology Biology

Program Description for Undergraduate Major

Program Description for Undergraduate Majors

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 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.

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Careers

The Bachelor of Science in Biology provides breadth and depth in biology and supporting sciences and is designed for students who wish to enter health professional (e.g., medical, dental, veterinary, pharmacy) programs, graduate schools in all aspects of biology, or seek careers in business, industry or government. By following course roadmaps that align with their interests and career goals, students can choose electives that prepare them for careers in biotechnology, natural resources, conservation, education or for entry into certification programs in health-related fields (including medical imaging, clinical laboratory science, and public health microbiology).

The Bachelor of Arts degree provides a general background in both the concepts and the technical skills of modern biology and is designed for students seeking a more flexible degree program. Within the Bachelor of Arts program, students can choose to follow an elective course roadmap required for entering a single subject credential program in science for teaching at the high school and middle school levels. Additional courses in geology, astronomy, and chemistry are recommended to meet the breadth requirements for credential programs.

The Biology Minor provides non-majors with a background in biology necessary for many graduate and professional programs. Equipped with a minor in biology, students with majors in other disciplines will have a greater understanding and knowledge of the latest advances in many areas of biology and will therefore be more versatile in their career paths. The requirement for a Minor in Biology is 21 units.

Program Learning Outcomes

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 environments 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 world-wide web information; and

- Communicate effectively in written and oral forms.

Faculty

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Contact Information

<http://biology.csuci.edu>

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For graduation roadmaps for the B.S. B.A. and M.S. programs in Biology, please visit: <http://biology.csuci.edu>.

Program Description for Graduate Programs

The Master of Science in Biotechnology & Bioinformatics is a professional degree program designed to meet the needs of biotechnology industry and related public and private agencies and organizations. The program combines rigorous scientific training in interdisciplinary areas in biotechnology, bioinformatics, biomedical engineering and stem cell technology with course work and experience in business management and regulatory affairs. The program includes a set of core courses with three emphases to choose from: biotechnology, biomedical engineering and stem cell technology and laboratory management, and several elective courses.

Biotechnology is centered in the laboratory and employs sophisticated molecular biology techniques for applications in human and animal health, agriculture, environment, and specialty biochemical manufacturing. In this century, the major driving force for biotechnology will be the strategic use of the data derived from large-scale genome sequencing projects. Biomedical engineering is an interdisciplinary field, fusing molecular and cellular life sciences with contents in engineering analysis, design, and synthesis approaches, business management, bioethics, law and regulation, and globalization of biotechnology. It introduces the principles and applications of bioinformatics, biomechanics, biorobotics, biomaterials, nanotechnology, genetics, cellular, tissue and organ engineering, biomedical instrumentation and devices, biosensors, and medical imaging in biological systems. Stem cell technology and laboratory management introduces the current knowledge and highly specialized technical skills in the stem cell field and trains technical and managerial personnel in stem cell research and development. Our approach also includes team projects drawn from biotechnology industries to focus on real-world problems and applications of biological sciences, internships and to inculcate interpersonal as well as problem-solving skills using multiple perspectives.

Graduates from this program will develop analytical, managerial and interpersonal skills along with sophisticated expertise in biotechnology, bioinformatics, biomedical engineering or stem cell technology. They will be ready to make immediate contributions to scientific research and development, management in biotechnological, biomedical, biomedical engineering, and pharmaceutical industries, biotechnology law and regulations, governmental or environmental agencies, research institutes, consulting firms, research and clinical laboratories, private and public health organizations, or education.

Admission Requirements

1. Applicants must have a BS/BA degree in Biology, Computer Science, Chemistry, Biochemistry, or Mathematics. Alternatively, applicants with a BA/BS degree in any field and equivalent work experiences in one of the above fields may be granted conditional admission, and they must fulfill all conditional requirements before they can be fully classified.
2. Applicants seeking admission to the professional MS in Biotechnology and Bioinformatics program must be officially accepted into the CI

academic program.

3. Applicants must declare themselves as graduate students in the professional MS degree program in Biotechnology and Bioinformatics.
4. Applicants for the Stem Cell Technology and Laboratory Management Emphasis must commit to the stem cell technology internship requirement.
5. Applicants will be evaluated by the Program Admissions Committee which will consider the applicants in the context of the total applicant pool using our general admission standards, including all academic work, GPA, test scores, relevant work experience and other factors that may have a bearing on the individual's potential for success. The following materials are required for our evaluation and admission process:
 - Applicants must submit their transcript(s) from their undergraduate institution(s), Graduate Record Examinations (GRE) General Test scores or the Medical College Admission Test (MCAT) scores.
 - Applicants who have received their undergraduate degrees from a university where English is not the language of instruction, or have studied fewer than two years at a university where instruction is in English, must submit their Test of English as a Foreign Language (TOEFL) scores for evaluation.
 - Applicants must submit a one page "Statement of Purpose" and two letters of recommendations from people able to judge the applicant's academic capacity.

<u>Amy Denton</u>	<u>10/13/13</u>
Proposer of Program Modification	Date

APPROVAL SHEET

Program: BIOL

If your course has a General Education Component or involves Center affiliation, the Center will also sign off during the approval process.

Multiple Chair fields are available for cross-listed courses.

The CI program review process includes a report from the respective department/program on its progress toward accessibility requirement compliance. By signing below, I acknowledge the importance of incorporating accessibility in course design.

Program Chair		
	Signature	Date

Curriculum Chair		
	Signature	Date

AVP		
	Signature	Date