



University of California, Santa Barbara
Program Learning Outcomes

B.A. in Biology – College of Creative Studies

Students graduating with a B.A. in Biology should be able to:

1. Use the fundamental tools and knowledge of mathematics and the physical sciences needed for studying and understanding biological phenomena.
2. Explain fundamental concepts concerning the properties, structures and functions of biological molecules, metabolic pathways and bioenergetics.
3. Describe the structure and function of cells as the fundamental units of life and as the building blocks of multicellular organisms.
4. Explain the processes underlying development, cellular differentiation, and reproduction in complex eukaryotes.
5. Explain the principles of inheritance from molecular mechanisms to population level consequences.
6. Describe the principles and mechanisms of evolution at the molecular, micro and macro levels, and the role of evolution as the central unifying concept in biology.
7. Recognize the scope of biological diversity and the phylogenetic relationships among major groups of organisms.
8. Discuss the interactions between organisms and their environments, and the consequences of these interactions in natural populations, communities, and ecosystems.
9. Apply the processes and methods of scientific inquiry to develop a compelling research proposal by integrating the following steps:
 - a) search, retrieve, and interpret relevant scientific information from published sources;
 - b) identify an important and tractable scientific problem;
 - c) develop a hypothesis to address the problem; and
 - d) propose tests of the hypothesis involving observations, experiments or data analysis.
10. Effectively communicate the scientific motivation, ideas and results of a research project or proposal to both a general and a scientific audience through both oral presentation and publication in the peer reviewed literature.