

Department of Biology Mission and Learning Goals

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Mission Statement

The mission of the Department of Biology is to provide students at the University of Hawai'i at Hilo with sound and rigorous training in the biological sciences. The program emphasizes hands-on, individualized learning for students and active research by faculty with opportunity for students to participate.

The department offers the Bachelor of Arts and the Bachelor of Science degrees. Biology courses are required for students majoring in other natural sciences and in the applied sciences. The Department of Biology's lower-division courses are part of the university's General Education program

Goals

Curriculum

The Biology curriculum provides students with training in a wide variety of biological disciplines ranging from ecology, evolution, and conservation biology to cell and molecular biology. Instruction includes a variety of classroom, laboratory, and field experiences which emphasizes the unique environment of Hawai'i. Students are given individual attention and provided with the opportunity to work on individual research projects directed by the faculty.

The Bachelor of Arts degree in Biology includes separate tracks in Cell and Molecular Biology and in Ecology, Evolution, and Conservation Biology. Following a unified set of lower division biology courses including an introductory cell and molecular biology bridging course, the tracks diverge for specialty upper division courses. The Bachelor of Science degree in Biology emphasizes cell and molecular biology with requirements for additional study in mathematics, chemistry, and genetics.

The two degree programs and two track options within the BA degree prepare students for the technical job market or for further study in graduate schools of biological sciences, as well as professional schools in medicine, dentistry, veterinary medicine, and other health-related programs. The program also provides the scientific background for teaching biology at the intermediate and high school levels.

Learning Goals

Students will acquire mastery of the major topical areas of biology including:

Cell Biology: biochemistry and cell organelle processes, macromolecules, enzyme activity and regulation, and cell-cell communication

Molecular Biology and Genetics: molecular genetics, including DNA replication and mutation, gene structure, regulation of gene expression, bacteriophages and viruses, and genetic engineering

Organismal Biology: diversity of organisms, including phylogenetic relationships, classification, morphology, life histories, and general biology of all life forms; adaptations of organisms to habitats; and origin of life.

Population Biology, Evolution, and Ecology: natural selection and population genetics, patterns of evolution, physical environmental influences, population ecology, community ecology, ecosystems, and human Impacts

Students will acquire analytical skills for applying scientific methodology to problems, hypothesis testing, and an understanding of the limitation of science as a way of knowing. They will develop proficiency with quantitative concepts and familiarity with units of measure, statistical analyses, and graphical and tabular presentation of data.

Objectives

All biology majors will complete a capstone seminar course. They will research a topical issue in the biological sciences, organize the material, and make a critical oral presentation with illustrations. This presentation will be reviewed by faculty and by student peers and evaluated for the quality of scientific preparation, quality of delivery, and quality of audiovisual aids.

Students will also complete one or more senior level laboratory courses that qualify for Writing Intensive credit. In these courses, they will write a series of laboratory reports demonstrating their ability to perform experiments and to organize, analyze, and interpret the quantitative results of experimental work.