The biology department offers a wide range of courses in biology, from the molecular level to that of whole organisms, populations, and ecosystems. The curriculum provides majors with an excellent background for graduate or professional school or for employment in biological science.

Courses are taught in a variety of formats, including lecture, seminar, and lab courses. The introductory class averages seventy students per semester, with seventeen students in each lab section. Core courses generally enroll no more than thirty-six. The average class size at the advanced level is nine. In addition to the coursework available in the program during the academic year, interested students have an opportunity to be employed as lab assistants or to engage in independent research.

Faculty in the department represent a diversity of academic specializations, including ecology, ornithology, genetics, virology, plant physiology, microbiology, neurobiology, developmental and molecular biology, molecular evolution, marine biology, and biomechanics.

The Major Programs

The major in biology consists of eight courses in the department, exclusive of independent study and courses below the 100 level. There are a number of course combinations possible for the major, depending upon the focus of the student's interest in the field. Individual programs all begin with introductory Biology, a lecture and laboratory course that provides an overview of the discipline, and investigations in Biology, a laboratory-based course in experimental design. Three other core courses are required, one from each of three groups.

Group 1 covers cellular and molecular biology in areas such as genetics, developmental biology, and microbiology; Group 2 focuses on physiology and developmental biology at the organismal level; Group 3 concentrates on ecology and evolution.

The major program requires three other biology courses, two of which must be at the 250 level or above. Upper-level courses include virology, advanced development, immunology, ornithology, biomechanics, human genetics, neurobiology, and advanced cell biology.

In addition, required courses outside the department include organic chemistry, statistics and integral calculus, and a course in physics.

There are three interdisciplinary majors available to students who wish to pursue work in this field. The major in biochemistry requires a year course in biochemistry in addition to courses from the biology and chemistry curricula. The biology-environmental studies major requires fulfillment of the biology requirements plus a series of environmental studies courses. The neuroscience major requires courses from both the biology and psychology curricula.

Independent Research

The biology faculty places great emphasis on independent research by students. These projects enable students to work outside the standard curriculum and to become directly involved in hands-on research. Independent study projects are arranged with a sponsoring faculty member, and are usually closely related to his or her ongoing research. A significant number of majors undertake such projects, which often lead to published articles in the scientific literature. Student research is frequently supported by individual research grants to faculty members or to the department.

Departmental honors are awarded on the basis of academic distinction in the independent research project.

The Minor

The minor follows the requirements for the major, but consists of only four courses within the department at the 100 level or above.
Biology

Honors Projects

Recent projects completed by biology majors include

- Testing the Phylogenetic Placement of Demodex folliculorum
- Human Disturbance and the Food Web Structure in the Merrymeeting Bay Watershed, Maine
- Orcokinin Peptides are Ubiquitous in the Stomatagastric Nervous System of Cancer Crabs, but Do Not Alter Its Output
- Foraging, Fog, and Fitness: Effects of Weather on Two Island Bird Species
- The Influence of Orientation and Water Velocity on the Feeding Behavior and Metabolism of Semibalanus balanioides
- Synapse reformation during spinal cord regeneration in the lamprey (Petromyzon marinus)
- Exploring the RNA-binding protein Npl3: Intracellular localization and arginine methylation in Candida albicans
- Juvenile salmonoid use of Whidbey Island’s nearshore habitats in Admiralty Inlet and the Strait of Juan de Fuca
- The Spawning Ecology of Steelhead Trout (Oncorhynchus mykiss)
- Growth and Behavioral Response of Hard-Shell Clam Mercenaria mercenaria in Response to Crab Predation Cues
- Pelagic Food Webs and Nutrient Dynamics of Lake Tanganyika, East Africa

to provide information useful for the sound management and restoration of ecosystems.

Barry A. Logan, associate professor of biology, B.A. (Cornell), Ph.D. (Colorado), teaches courses on plants and the biochemistry of free radicals and antioxidants, and studies the acclimation of photosynthesis and photoprotective mechanisms to environmental stresses such as high light or cold.

Anne E. McBride, assistant professor of biology and biochemistry, B.S. (Yale), M.Phil. (Cambridge), Ph.D. (Colorado-Boulder), teaches microbiology and immunology. Her research focuses on understanding protein movement within cells, through the use of molecular techniques in yeast.

Michael F. Palopoli, associate professor of biology, B.S., M.S. (Michigan), Ph.D. (Chicago), teaches evolution, and his research studies the evolution of protein and DNA sequences, as well as sperm competition in the nematode genus Caenorhabditis.


Nathaniel T. Wheelwright, Anne T. and Robert M. Bass Professor of Natural Sciences, B.S. (Yale), Ph.D. (Washington), teaches ecology and ornithology and conducts research on interrelationships between animals and plants.

Each year, three or four visiting professors fill in for faculty on sabbatical leave and add their own specialties to the department’s offerings. In addition, the following laboratory instructors assist the faculty and supervise lab instruction:

Pamela J. Breyer, director of biology laboratories, B.S., M.S. (Rensselaer Polytechnic).

Lesley J. Brown, B.S. (Miami), M.S. (Maryland).


Kate R. Farnham, B.S., M.S. (Maine).


Nancy H. Olmstead, B.A. (Cornell).

Jaret S. Reblin, B.S. (Baldwin-Wallace).

Elizabeth Richards, B.A. (Maine-August, M.A., Ph.D. (Southern Maine).

Peter E. Schlax Jr., B.A. (Illinois-Urbana-Champaign), Ph.D. (Wisconsin–Madison).

After Bowdoin

More than half of the students who major in biology or biochemistry at Bowdoin go on to graduate work or medical school. Recent popular choices for Bowdoin’s biology majors have included Washington, Yale, Dartmouth, Stanford, Wisconsin, Harvard, and Johns Hopkins. Numerous Bowdoin graduates are on the faculty of other colleges and universities. Students who do not pursue graduate-level work have often chosen careers in biomedical science, environmental science, hospital administration, and high school science education.

For more information, visit: http://www.bowdoin.edu/biology/

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Faculty

Jack Bateman, assistant professor of biology, B.A. (Dahlohusie), Ph.D. (Harvard), teaches genetics. His research focuses on genetics and chromosome pairing.

Patsy S. Dickinson, Josiah Little Professor of Natural Sciences, A.B. (Pomona), M.S., Ph.D. (Washington), teaches comparative physiology and neurobiology. Her research focuses on the control of behavior by neural networks in simple model systems such as those in crustaceans.

Hadley Wilson Horch, assistant professor of biology and neuroscience, B.A. (Swarthmore), Ph.D. (Duke), specializes in molecular neuroscience.


Amy S. Johnson, James R. and Helen Lee Billingsley Professor of Marine Biology, A.B. (California–Los Angeles), Ph.D. (California–Berkeley), teaches marine biology and evolution of marine invertebrates and biomaterials. She researches the interaction of marine organisms with the biological and physical forces of their environment.

Bruce Kohorn, professor of biology and biochemistry, B.A. (Vermont), M.S., Ph.D. (Yale), teaches cell biology, and his research explores the genetics and cell biology of plant membrane receptors and their role in cell walls and plant development. He is chair of the department.

John Lichter, associate professor of biology and environmental studies, B.S. (Northern Illinois), Ph.D. (Minnesota), teaches community ecology. He researches the mechanisms underlying plant community and ecosystem dynamics.

Bowdoin

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