

## Biology

Bachelor of Arts Degree

Bachelor of Science Degree

### Contact

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### Admission Requirements

*(In years as established by the college)*

A high school diploma with the following specific courses:

- 4 English
- 2 Algebra I & II
- 1 Geometry
- 2 Lab Science (biology and chemistry or physics)
- 2 History/Social Studies
- Academic electives (to equal at least 17 credits)

*To ensure current mathematical skills, students should take a mathematics course during their senior year of high school.*

### Did You Know?

The biology program offers a wide choice of courses and undergraduate research opportunities; excellent preparation for medicine, dentistry and other health professions; great opportunities for ecological field work; and a neuroscience minor.

## College of Natural Sciences, Forestry, and Agriculture

### Program Description

The Bachelor of Arts and Bachelor of Science degrees in biology provide students with a broad background in the biological sciences. Courses are selected from several departments within the college: Biology and Ecology; Molecular and Biomedical Sciences; Plant, Soil and Environmental Sciences; Wildlife Ecology; and Marine Sciences.

The program is solidly grounded in the basic sciences (general biology, chemistry, math and physics) and allows a wide range of choice in upper-level biology courses, permitting students to tailor their degrees to their interests in biology with the help of faculty advisors. A wide range of upper-level courses is available, including 37 taught by biology faculty and an additional 22 taught by faculty in related disciplines (biochemistry, microbiology, molecular biology, plant science, marine science and wildlife ecology).

Students can choose a Bachelor of Science degree that includes an in-depth background in chemistry, math and physics or a Bachelor of Arts degree with a more limited background in chemistry, math and physics but more courses in the humanities and a special emphasis on an international perspective. Students can choose to complete the basic program in biology, or they can choose to add a concentration in pre-medical studies or ecology. Both concentrations provide guidance as to the best courses to select to prepare for the chosen area of interest.

### Specialized Information

UMaine offers students many opportunities to participate in faculty laboratory and field research. Students can do independent research for course credit, a capstone (senior project) or an honors thesis, as well as for paid work. Undergraduate students have participated in research in such areas as ecology of birds, plant communities along the Penobscot River, mechanisms of color vision, development of muscle in embryos, cell biology of kidney disease, fire ant ecology, heartbeat in fruit flies, fungi that infect frogs, evolution of guppies in Trinidad, fish in the Penobscot River and age determination in seaweeds. These are great opportunities for class field trips and student research close to campus. The University Forest and other natural areas within easy driving distance offer a wide variety of interesting ecosystems with abundant wildlife and a wide range of plants, including forests, fields, bogs, alpine communities, seashores, rivers and lakes.

Special opportunities in the health professions include affiliations with graduate programs that allow students to complete three years at UMaine and then complete the professional program in four years. Students earn a Bachelor of Science in biology from UMaine and a doctorate from the partner college. They also can choose to complete a neuroscience minor, which provides excellent preparation for graduate study in neuroscience.

### Associated Honor Societies and Student Organizations

Students are encouraged to join the Biology Club. They also can participate in such travel-study courses as Field Studies in Ecology, which has gone to South Africa, Panama and Peru. The Schoodic Experience takes first-year students to Acadia National Park.

Special recognition for students includes membership in the local chapter of the national biology honor society, Beta Beta Beta; book awards for top academic performance in each class; and awards to the top students in animal, insect and plant sciences.

## Representative Courses

BIO 200 Biology of Organisms  
BIO 205 Field Natural History of Maine  
BIO 307 Introduction to Neuroscience  
BIO 310 Plant Biology  
BIO 319 General Ecology  
BIO 326 Introductory Entomology  
BIO 329 Vertebrate Biology  
BIO 335 Comparative Anatomy  
BIO 336 Developmental Biology  
BIO 342 Plants in Our World  
BIO 350 Concepts and Applications of Genetics  
BIO 353 Invertebrate Zoology  
BIO 354 Biology of Behavior  
BIO 377 Medical Physiology  
BIO 430 Ecology and Systematics of Aquatic Insects  
BIO 432 Biology of the Fungi  
BIO 433 Mammalogy  
BIO 434 Avian Biology and Ecology

BIO 438 Morphogenesis and Differentiation  
BIO 441 Electron Microscopes — Theory and Use  
BIO 447 Experimental Aquatic Ecology  
BIO 448 Insect Pest Ecology and Management  
BIO 450 Histology  
BIO 452 Plant Physiology  
BIO 454 Invertebrate Functional Morphology  
BIO 455 Biological Invasions  
BIO 461 Insect Biology, Taxonomy and Systematics  
BIO 462 Principles of Genetics  
BIO 463 River Ecology  
BIO 464 Taxonomy of Vascular Plants  
BIO 465 Evolution  
BIO 468 Limnology  
BIO 474 Neurobiology  
BIO 476 Paleocology  
BIO 479 Endocrinology  
BIO 480 Cell Biology

## Career and Graduate Opportunities

Research technician assisting with laboratory and field research; product developer or quality controller in biotechnology and pharmaceutical companies, university or government laboratories, or public health facilities; officer in government agencies related to agriculture, the environment and public health; science teacher or professor; environmental consultant; sales representative for laboratory equipment, science books, biotechnology or pharmaceutical companies; writer or editor for science publications, magazines or newspapers. Graduate programs in the health professions, including medicine, dentistry, optometry, podiatry, physician assistant, pharmacy and veterinary medicine. Graduate programs in botany, ecology, genetics, plant pathology and zoology at levels including the molecular, cellular, physiological and whole organism.

## UMaine Graduate Programs

Master of Science in Botany and Plant Pathology  
Master of Science in Ecology and Environmental Science  
Master of Science in Entomology  
Master of Science in Zoology

Doctor of Philosophy in Biological Sciences  
Doctor of Philosophy in Ecology and Environmental Science  
Doctor of Philosophy in Plant Science  
Doctor of Philosophy in Zoology

## About UMaine

The University of Maine, founded in Orono in 1865, is the state's premier public university. It is among the most comprehensive higher education institutions in the Northeast and attracts students from across the U.S. and more than 60 countries. It currently enrolls 12,000 total undergraduate and graduate students who can directly participate in groundbreaking research working with world-class scholars. Students are offered 88 bachelor's degree programs, 64 master's degree programs, 25 doctoral programs and one of the oldest and most prestigious honors programs in the U.S. The university promotes environmental stewardship on its campus, with substantial efforts aimed at conserving energy, recycling and adhering to green building standards in new construction. For more information about UMaine, go online ([umaine.edu](http://umaine.edu)). Equal opportunity information also is available online ([umaine.edu/eo](http://umaine.edu/eo)).

## How do I apply?

Visit [go.umaine.edu](http://go.umaine.edu) for an application, as well as information about academics and life at UMaine.



## Academic Programs 2011–12

The latest versions of the UMaine fact sheets are online ([factsheets.umaine.edu](http://factsheets.umaine.edu)). This fact sheet is intended for informational purposes only and is subject to change.

