

College of Natural Sciences, Forestry & Agriculture

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 (*including chemistry or physics*)
- 2 History/Social Studies
- Academic electives (*to equal at least 17 total credits*)

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

Major Requirements

- 48 credits Biochemistry, Microbiology & Molecular Biology
- 3 credits College Composition
- 18 credits Humanities & Social Sciences
- 42 credits Sciences & Mathematics
- 9 credits Electives

120 Minimum total credit hours required for graduation

Program Description

Microbiology is a broad, multidisciplinary field using techniques of genetics, chemistry, biochemistry, physiology, ecology, pathology and immunology to study the biology of microorganisms from gene expression at the molecular level to the composition of microbial populations. Discoveries involving microorganisms have important and far reaching implications for biotechnology, molecular biology, medicine, public health and the environment. Microorganisms are the models used for basic research in genetics and molecular biology. AIDS and other important diseases present new challenges for microbiologists in the public health field. Advances in recombinant DNA technology, immunology and the ability to manipulate the biology of microbial cells have revolutionized science and thrust Microbiology into the center of the rapidly growing field of biotechnology.

Students have gained valuable experience by participating in internships such as: Intern, Baxter Healthcare Corporation; Intern, National Institutes of Health, Public Health Services, U.S. Department of Health and Human Services; Intern, Jackson Laboratories; Lab Intern, Center for Health Services.

The Microbiology facilities for teaching and research are located in Hitchner Hall. This modern facility houses labs and specialized equipment for teaching and research in bacteriology, virology, immunology and molecular biology. Close proximity to research labs within the department enables students to participate in independent study and undergraduate research projects using the state-of-the-art equipment.

Career Opportunities

Career opportunities for Microbiology are exceptionally numerous and varied. Microbiology is at the core of the rapidly expanding fields of biotechnology and molecular biology, as well as many allied health professions. Microbiologists are employed in government and hospital clinical labs; public and private medical and university research labs; the pharmaceutical, chemical, and food industries; environmental labs; and in a variety of existing and emerging genetic engineering and biotechnology industries. The undergraduate degree program also provides excellent preparation for medical school, dental school or advanced studies in a variety of important fields of science in addition to Microbiology, such as molecular and cellular biology, biochemistry, public health and environmental studies.

Graduates of the program have entered employment in such capacities as: Pilot Plant Technician I, Biogen Research Corporation; Food Inspector, Board of Health; Medical Records Analyst, Nashua Memorial Hospital; Lab Technician, Agritech Systems, Inc.; Sales Representative, Parke-Davis; Medical Technician, Brigham & Women's Hospital; Process Engineer, Georgia Pacific; Assistant Scientist, T. Cell Sciences; Senior Technician, Millipore Corporation; Research Assistant, Jackson Laboratories; Shift Supervisor, Genetics Institute, Inc.; Laboratory Director, Aroostook Testing and Consulting.

General Education Requirements*

- ENG 101 College Composition
- 18 credits Human Values & Social Context area (*a single course may satisfy more than 1 sub-category, but a total of 18 credits must be completed*)
 - Western Cultural Tradition
 - Social Context & Institutions
 - Cultural Diversity & International Perspectives

General Education Requirements* (continued)

	Population & the Environment
	Artistic & Creative Expression
2 courses	Designated Writing Intensive (<i>1 must be within the major</i>)
2 courses	Biological or Physical Sciences (<i>must include at least 1 laboratory course</i>)
1 course	Ethics (<i>emphasis on discussion of ethical issues in 1 course or series of courses</i>)
6 credits	Mathematics (<i>including statistics & some computer science, only 3 credits in computer science can count toward this requirement</i>)
1 capstone	An approved experience in which the student integrates the components of his or her undergraduate training to perform at a professional level. The capstone experience is usually completed during the senior year in consultation with the student's academic advisor.

**All UMaine students must complete these general education requirements, which are counted in the total credit hours required for graduation and may be contained in the Major Requirements previously listed.*

Specialized Information

The Department of Biochemistry, Microbiology and Molecular Biology offers a minor in Microbiology. The minor is open to all undergraduate, degree-seeking University of Maine students and requires the completion of 18 credit hours in Biochemistry, Microbiology and Molecular Biology courses.

Graduate Study

The Department of Biochemistry, Microbiology and Molecular Biology offers a Master of Science and a Doctor of Philosophy degree in Microbiology. The department also offers the Master of Professional Studies degree in Microbiology.

Academic Programs 2008-2009

Please refer to the web site (<http://factsheets.umaine.edu/>) for the most updated version of the fact sheets.

This fact sheet is intended for informational purposes only and is subject to change.