

# BIOLOGY

The Department of Biology offers one degree and 11 options leading to the baccalaureate degree in biology. The requirements are very similar for all programs during the first two years, so any change in career emphasis need not involve any major loss of time or credits. The department also offers minors in biology and molecular biology/biotechnology.

The program leading to the Bachelor of Science degree provides the student with an opportunity to elect a substantial number of courses in a specific area of biology. This program provides a strong background for admission to graduate or professional school and prepares the student for employment in the field of biology upon graduation.

Options available within the B.S. Biology program include animal behavior, environmental biology, marine biology, molecular biology/biotechnology, medical technology, nuclear medicine technology, plant sciences, premedical professions, pre-optometry, pre-athletic training, pre-podiatry and respiratory therapy.

The **animal behavior** option provides training in both the biological mechanisms and the evolutionary functions of behavior. Students completing this option are prepared for a career in applied animal behavior or for graduate study.

The **environmental biology** option permits students to concentrate in ecology and enables them to gain expertise that will make them competitive in industry, governmental agencies and graduate school.

The **marine biology** option encourages students to choose electives in the marine biology area. Many marine science courses are offered at our field station at Wallops Island, Virginia, since they usually involve significant field work. For more information on the field station, see "Chincoteague Bay Field Station at the Marine Science Consortium" in the Special Academic Opportunities (<https://catalog.millersville.edu/undergraduate/special-academic-opportunities/>) section.

The **molecular biology/biotechnology** option allows students to concentrate in genetics, cell and molecular biology. The courses required for this option complement each other, training students in a variety of laboratory and methods and enabling students to gain the theoretical understanding and technical expertise currently needed to be competitive in industry and graduate school.

Students in the **plant sciences** option concentrate on the study of plants while obtaining a broad background in biology. This option effectively prepares those interested in professions in general botany, environmental studies, molecular/biotech, and horticulture as well as advanced graduate study in a variety of plant-related fields.

The **pre-medical professions** option allows the students to focus on courses in anatomy, physiology, cell biology and genetics. It includes one track for students planning on continuing their education in medical, dental or physician assistant school and another for students preparing for veterinary school. The program provides a strong background in courses that prepare the students for taking the appropriate entrance exams and encourages them to take advanced courses that will help them succeed in those professional programs.

After completing three years of undergraduate study, students in the **medical technology (clinical/medical laboratory science)** program are eligible to apply to an accredited hospital-based medical technology program for one year of clinical laboratory experience, after which they

will be awarded the Bachelor of Science degree and will be eligible to sit for the national certification examination. Currently, Millersville has full affiliations with three hospital-based programs (PA College of Health Sciences, York Hospital, Reading Hospital) and a renewable affiliation with Penn State Hershey).

After completing three years of undergraduate study, students in the **nuclear medicine technology** program are eligible to apply for admission to either the Pennsylvania College of Health Sciences of Nuclear Medicine Technology program (12-month clinical phase) or the Johns Hopkins School of Imaging program (18-month clinical phase), after which they will be awarded the Bachelor of Science degree and will be eligible to sit for the national certification examination.

An agreement between Millersville University and Salus University (formerly the Pennsylvania College of Optometry) in Philadelphia allows students in the **optometry** option to complete three years of undergraduate study at Millersville and then transfer to Philadelphia for the first year of study in the doctoral program. Students who complete the year with good grades receive a B.S. in biology from Millersville University, and after three additional years earn the Doctor of Optometry degree.

A cooperative option exists between Millersville University and the Temple University School of Podiatric Medicine. This 3/4 **prepodiatry** program allows students to transfer to the professional school after satisfactorily completing 99 semester hours at Millersville University. After successful completion of the basic science courses at the Temple University School of Podiatric Medicine, students are awarded a B.S. in biology from Millersville University. Three recommended Millersville students a year have reserved spaces for admission to the podiatric college, where graduation after four years earns a D.P.M. degree.

Millersville University has an Early Acceptance Program (EAP) agreement with the Lake Erie College of Osteopathic Medicine (LECOM) for programs in osteopathic medicine, dentistry and pharmacy. The current agreement is a "4+4 year program" and is designed for incoming first year students and second-year students. Students who are interested in the EAP must be accepted by LECOM, either as an incoming first year student, or before completing their sophomore year, and complete their degree at Millersville University. (EAP students will need to take the MCAT and complete an online application before they can enroll at LECOM.) Accepted students must do well during each academic semester at Millersville but will have a guaranteed seat in the classroom at LECOM.

Millersville University is the sponsoring institution for the **respiratory therapy** program. After successfully completing three years of study at the University, students enter the 16-month clinical phase at Millersville University and UPMC Lititz. Admission into the clinical phase is competitive and not guaranteed. At the end of the clinical phase, they are awarded the Bachelor of Science degree and a certificate in respiratory therapy, and will be eligible to sit for the national credentialing examination.

The education curriculum leads to the Bachelor of Science in Education, with secondary education certification in biology.

Individualized programs in genetic counseling are organized with a program advisor.

## Bachelor of Science in Allied Health Technology

The Department of Biology offers one degree and five options leading to the baccalaureate degree in allied health technology. The requirements

are initially very similar for each of the options so that any change in career emphasis need not involve any major loss of time or credits.

A dual-degree program in **athletic training** is available for well-prepared students. During three years of study at Millersville, students complete the requirements for admission to an affiliated graduate program. Upon completion of one year of graduate study, credits transfer back to Millersville to satisfy the requirements for the B.S. degree in allied health technology, pre-athletic training. Students then earn a M.S. in athletic training from the affiliated university after a second year of graduate study.

A four-year program prepares students for graduate or professional studies to become specialists in **sports medicine**, such as athletic trainers, physical therapists, physicians and physician assistants. The curriculum includes courses in nutrition, sports psychology, and the prevention and care of injuries.

After completing three years of undergraduate study, students in the allied health technology/**medical technology** program are eligible to apply to an accredited hospital-based medical technology program for one year of clinical laboratory experience, after which they will be awarded the Bachelor of Science degree and will be eligible to sit for the national certification examination. Currently, Millersville University has full affiliations with three hospital-based programs (PA College of Health Sciences, York Hospital, Reading Hospital) and a renewable affiliation with Penn State Hershey.

After completing three years of undergraduate study, students in the allied health technology/**nuclear medicine technology** program are eligible to apply for admission to either the Pennsylvania College of Health Sciences (12-month clinical phase) program or the Johns Hopkins School of Imaging (18-month clinical phase) program, after which they will be awarded the Bachelor of Science degree and will be eligible to sit for the national certification examination.

Millersville University is the sponsoring institution for the **respiratory therapy** program. After successfully completing two years of study at the University, students enter the approximately two-year clinical phase at UPMC Lititz. Admission into the clinical phase is competitive and not guaranteed. At the end of the clinical phase, students are awarded the Bachelor of Science degree and a certificate in respiratory therapy, and will be eligible to sit for the national credentialing examination. This degree option differs from the other B.S. allied health technology and B.S. degree programs offered by the biology department in its format and is termed a "2+2 year program" that begins the clinical year in the summer following the sophomore year, not the end of the junior year, as is the case for the other degree options.