



# GENEVA COLLEGE

## *Department of Biology*

### MISSION

The biology department of Geneva College serves students interested in biology careers as well as non-biology majors interested in learning more about the natural world. Ultimately, we have a responsibility to God, the Creator, to use our knowledge of the natural world to be better stewards of His entire creation and to teach others to use that knowledge. We serve our students by offering coursework, research opportunities, training programs and career counseling. We also teach, by word and example, a biblical perspective on the natural world, proclaiming the lordship of Christ over what He has made. Our goal is that our students will grow in their understanding of living things—their structures, functions, regulation and interrelatedness. We want them to apply their knowledge, values and skills with excellence toward their specific callings as servant-leaders in God's world.

### BACHELOR OF SCIENCE IN BIOLOGY

Geneva College offers a biology major with three specific concentrations—cell and molecular biology, human biology and environmental biology—plus preparation for careers in biology education, medicine, nursing, cardiovascular technology, dentistry, occupational therapy, physical therapy, medical technology, veterinary medicine, physician assistantship and biomedical research.

### COURSEWORK

The curriculum for a biology major includes an introduction to the three main areas of biology—environmental, cellular and organic—plus opportunities to study in-depth the area of your interest, including courses at the cutting edge of biology, such as neuroscience, virology, molecular biology and advanced genetics (genomics). Supporting courses in chemistry, physics and statistics are also required for a biology major.

### CONCENTRATIONS/PREPARATIONS

#### HUMAN BIOLOGY

Human biology is helpful for students interested in medicine and allied health. The focus in this concentration is on the biology of humans, particularly their physiology, as a basis for understanding disease. It is excellent preparation for medical school or graduate programs in physical therapy or as a physician assistant.

#### CELL AND MOLECULAR BIOLOGY

This concentration is research-focused and is intended for students interested in graduate school or careers in medical research. This concentration should satisfy most students looking for a major in molecular biology, biochemistry or genetics.

### ENVIRONMENTAL BIOLOGY

This concentration is for students with interests in ecology, environmental biology, animal biology, or plant biology. Students take courses in ecology and botany plus two summer courses at the Au Sable Institute of Environmental Studies in Mancelona, MI.

### BIOLOGY EDUCATION

Geneva's biology degree meets Pennsylvania's requirements for certification for teaching. Students interested in teaching biology at the secondary level complete the biology major requirements as well as professional education requirements. Courses for secondary education cover issues such as technology, methods, assessments, exceptionalities in the classroom and more. Geneva's education majors complete the Praxis II content exams at over a 99% rate.

### PRE-MEDICAL STUDY

Geneva's biology program prepares students for entry into allopathic or osteopathic medical schools and into professional schools of dental, veterinary, podiatric and optometric medicine. Additional coursework in chemistry and English enable a biology student to meet entrance requirements for medical school as well as to sit for the MCAT, DAT, VAT, GRE or OAT exams.

Geneva graduates that apply for entrance to medical school have been accepted over 80% of the time, well above the national average. Our MCAT preparation class exposes pre-medical students to an intense two-semester review curriculum and to at least three full-length MCAT practice exams prior to taking the actual MCAT.

### PRE-NURSING

Geneva College has an affiliate relationship with Roberts Wesleyan College in Rochester, New York. This enables a student to earn a BSN degree by combining two years at Geneva with two years at Roberts Wesleyan. This program permits students to participate in Geneva's Reformed approach to liberal arts and sciences for two years. The credits are then transferred to Roberts Wesleyan College and applied toward their four-year BSN degree. All nursing theory and clinical courses are included in the last two years of the program.

### CARDIOVASCULAR TECHNOLOGY

Cardiovascular disease is a major cause of death in the United States. In hospitals throughout the country, cardiovascular technologists are vital members of the cardiac care team. They perform all phases of diagnostic and therapeutic procedures in the cardiac catheterization laboratory. In response to this need, Geneva offers the bachelor of science degree with a major in

biology which is geared toward cardiovascular technology in cooperation with INOVA-Fairfax Hospital of Falls Church, Va. The program, which involves three years of study at Geneva and 12 months at INOVA-Fairfax Hospital, includes preparation for certification in cardiovascular technology. This program in invasive cardiology is accredited by the Commission for the Accreditation of Allied Health Education Programs. Geneva graduates from this program have been extremely successful and are in demand.

#### MASTER'S DEGREE IN CARDIOVASCULAR SCIENCE

Qualified students who have completed a B.S. in biology and a year of cardiovascular technology (CVT) training at INOVA-Fairfax can earn an M.S. degree in cardiovascular science by completing one additional year studying electrophysiology (EP) at INOVA-Fairfax. Graduates with dual certification in CVT and EP should be in even higher demand as cardiologist assistants or in the medical equipment industry.

#### MEDICAL TECHNOLOGY

A three-year sequence of specific courses at Geneva can be combined with twelve months of clinical training at Memorial Medical Center in Johnstown, Pa. to earn a bachelor of science degree in biology from Geneva plus a certificate from the medical center. The student is then eligible to take the certification exam to become a certified medical technologist.

#### PHYSICAL THERAPIST OR PHYSICIAN ASSISTANT

A bachelor of science degree in biology from Geneva, above average grades and lots of patient contact experience is ideal preparation for a Doctor of Physical Therapy (DPT) or Master of Physician Assistant (MPA) graduate program. Recent Geneva graduates have gone on to such graduate programs at West Virginia University, Thomas Jefferson University, Arcadia College and Chatham College, among others.

#### BACHELOR OF SCIENCE IN ENVIRONMENTAL SCIENCE

The environmental science major is an interdisciplinary curriculum that focuses on the functioning of the natural world, environmental problems and solutions, and management of natural resources by providing students with a foundation in the natural sciences as well as an understanding of the factors that influence environmental decision-making. The curriculum consists of courses in biology, environmental science, environmental ethics, chemistry, statistics and public policy, plus four courses at the Au Sable Institute of Environmental Studies\*\* in Mancelona, MI. A degree in environmental science prepares graduates for a wide range of environmental careers in areas such as land and water conservation, air and water quality management, water resources, parks and outdoor recreation, waste management, fisheries and wildlife management, forestry, environmental restoration and remediation, and environmental education.

#### AU SABLE INSTITUTE OF ENVIRONMENTAL STUDIES

Au Sable Institute offers summer courses in ecology, field biology, land resources, water resources and environmental studies. Most of these courses are field-based, providing practical hands-on learning in the outdoors, with an emphasis on Christian environmental stewardship. Courses are offered at sites in Michigan, Washington, Costa Rica and India. See [www.ausable.org](http://www.ausable.org) for more information.

#### INTERNSHIPS

With an internship, students can gain the ultimate credential before graduation—a resumé of professional experience in well-known organizations engaged in life science research and service. Internships are an important part of the biology student's experience at Geneva.

#### FACILITIES

The Science & Engineering Building provides over 60,000 square feet of space for the classrooms, laboratories and offices in the Departments of Biology, Chemistry, Computer Science, Engineering, Mathematics and Physics. The building provides state-of-the-art facilities and equipment for student learning and research in the sciences and engineering.

#### FACULTY

The faculty of the biology department are committed to keeping their curriculum as current and up-to-date as possible. They have strengths in genetics, physiology, infectious diseases, environmental stewardship, molecular biology and biblically-based biomedical ethics. Specific interests of biology department faculty include animal behavior, bioterrorism, vaccine development, genomics, cardiovascular disease, AIDS, stem cells and cancer.

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