



# GENEVA COLLEGE

## *Department of Biology*

### **MISSION**

The biology department of Geneva College serves students interested in biology careers as well as nonbiology majors interested in learning more about the natural world. We also provide educational foundations for future teachers, physicians, researchers, physical therapists, naturalists, etc. and for scientifically-literate citizens. 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 also desire that they come to value the natural world as God's creation, which He rules by His providence and over which He has mandated us to be caretakers. We aim to help our students gain skill in experimental design and interpretation, in communication, in using scientific literature and in relating biblical principles of ethics to medical and environmental problems. Finally, 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 will require taking three specific biology courses at Geneva and six credits of summer courses at the AuSable Institute of Environmental Studies, in Mancelona, Mich. This set of classes will give the student a good background in the major areas of ecology and environmental biology.

#### **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, optometric and chiropractic 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.

Recent Geneva graduates have been accepted into medical schools such as the University of Pittsburgh, Ohio University, Thomas Jefferson University, Southern Illinois University and Temple University.

## 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.

## ENVIRONMENTAL SCIENCE

Geneva is affiliated with the AuSable Institute of Environmental Studies at Mancelona, Mich. AuSable is designed to support and serve evangelical Christian colleges by offering summer courses and programs in ecology, field biology, land resources, water resources and environmental studies.

## 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.

## 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. Recent internships have included:

- Assisting a medical missionary in Haiti
- Doing research at the National Cancer Institute
- Studying microbiology at the Northeastern Ohio University College of Medicine
- Investigating the use of umbilical cord adult stem cells for treating blood diseases at Duke University
- Studying the genetics of fitness in the biology department 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.

**DARYL F. SAS** (1988), Professor of Biology and Chair, Department of Biology; B.A., Dordt College; Mankato State University; Ph.D., University of Minnesota

**DAVID A. ESSIG** (1999) Associate Professor of Biology and Program Coordinator, Program in Cardiovascular Technology; B.S., Bowling Green State University; M.S., Ball State University; Ph.D., University of Michigan

**MARJORY C. TOBIAS** (2004), Assistant Professor of Biology; B.S., Geneva College; M.S., Auburn University

**DAVID D. WILLSON** (1988) Adjunct Associate Professor of Scientific Studies; B.S., Geneva College; master's equivalent, PA Department of Education

**BRIAN C. YOWLER** (2005), Assistant Professor of Biology; B.S., Indiana University of Pennsylvania; Ph.D., The Pennsylvania State University College of Medicine



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*Deep learning. Growing faith. Real life.*