Academic Departments and Programs

Collier Hall of Science currently supports the following academic departments and programs of study. Additional information can be found at www.moravian.edu.

**Department of Biological Sciences**
Related Programs: Allied Health, Biochemistry, Environmental Science & Neuroscience

The mission of the Department of Biological Sciences is to instill in our students an understanding and appreciation of the common thread that connects modern biological study at all levels, from molecules to ecosystems. We strive to actively engage our students in the process of scientific investigation develop their spirit of inquiry, strengthen their ability to explore in both field and laboratory, hone their analytical skills, and foster their capacity to communicate effectively with professional peers and the public. By helping students become independent thinkers and intellectually vibrant individuals, we hope to enable them to achieve a lifetime of personal and professional success and service to society.

The Department of Biological Sciences works closely with three interdisciplinary programs: biochemistry, environmental studies, and neuroscience. In addition, it provides support to the Nursing program and contributes significantly to the LinC offerings, including the science-laboratory requirements for all Moravian undergraduates.

Facilities include four teaching laboratories, some small research laboratories used for faculty-student projects, an animal facility, greenhouse, common preparation and storage areas, and walk-in cold rooms. The Sciences Resource Center houses networked computers for student use, as well as biology-related books, periodicals, pamphlets, and career information. Equipment includes salt-water aquaria; radioisotope instrumentation; inverted, epifluorescence, and phase contrast microscopes; a LiCOR ecophysiology system and other field equipment including field computers equipped with GIS/GPS capacity; specialized equipment for molecular biological research such as a PCR thermocycler and DNA-sequencing apparatus; gas chromatographs; physiology instrumentation; high-speed centrifuges; electrophoresis and chromatography equipment; a microplate reader; and photo microscopy and digital imaging equipment. Many of the department’s instruments are interfaced with computers for automated data collection and analysis.
Chemistry Department
Related Programs: Biochemistry, Environmental Science, Environmental Studies

The Chemistry Department at Moravian College focuses on providing students with a fundamental understanding of the concepts of chemistry and their applications to advanced problems. The program emphasizes exploration of chemical principles through hands-on experience with chemical instrumentation beginning in the general chemistry course. All students have the opportunity to work with faculty members on original research projects that range from theoretical to physical chemistry to biochemistry.

The Moravian chemistry major provides a firm foundation for medical school as well as for careers in the chemical and pharmaceutical industries. In conjunction with the teacher certification program, chemistry majors can qualify for secondary school certificates in chemistry and general science. The department offers additional advanced chemistry courses, including research experiences, that prepare students for graduate study in chemistry and lead to a Moravian College bachelor's degree that is certified by the American Chemical Society.

The Chemistry Department currently maintains a GC-MS system for routine analysis of chemical samples, a MALDI mass spectrometer for biological samples, a graphite furnace AA for elemental analysis, FTIR and UV-VIS spectrophotometers, a 200 MHz NMR spectrometer, a fluorimeter, a laser Raman spectrometer, electro analytical instrumentation, gas chromatographs, and several HPLC systems. In addition, chemistry students and faculty have access to X-ray diffraction and Mössbauer equipment maintained by the Physics Department and a low temperature laboratory, and electrophoresis and cell culture facilities maintained by the Biology Department.

Environmental Studies Program The Environmental Studies Program at Moravian College, begun in 2005, focuses on the environmental issues that face society today. It seeks to develop a framework in which students can work closely with faculty and one another to analyze problems, test assumptions, and debate issues as they affect our lives as citizens of our community, our nation, and the world. The perspective we seek to develop is strongly interdisciplinary, incorporating the natural sciences, the social sciences, and the humanities. The program offers two majors, a B.S. in Environmental Science and a B.A. in Environmental Policy & Economics. All students in the program, regardless of their area of concentration, share important common experiences, including a unique capstone course in which they work in teams to investigate environmental issues. Many of the students in the program have studied abroad and/or participated in undergraduate research projects.
**Neuroscience Program**
Tracks: Cellular Neurobiology, Behavioral Neuroscience, and Cognitive Neuroscience.

Neuroscience represents a relatively new but rapidly expanding area of study that brings together a variety of disciplines to explore the development, structure, functional activities and behavioral consequences of the nervous system. Some areas addressed through the study of neuroscience include cognition, neurobiology of aging, developmental neurobiology and the effects of neuropharmacology on behavior. New research findings focus on evolving concepts in the treatment of neurodegenerative diseases, neural stem cell research, biochemical basis of thinking and learning and behavior.

**Department of Nursing**
Moravian College and St. Luke’s Hospital and Health Network (SLHN), two respected Lehigh Valley institutions formed a partnership in 1998 to educate nurses in the art and science of nursing. From its inception, the operational authority for the nursing program flows from both Moravian College and SLHN and each jointly administers and provides program resources as outlined in the original and amended contracts. The program continues to be operated jointly by both Moravian College and SLHN, to the mutual benefit and satisfaction of both institutions.

The central office for the nursing department is presenting located in Collier Hall of Science, with offices for the department chairperson and a small faculty office. Undergraduate nursing students enroll in five course units in science, including Anatomy and Physiology I and II, Chemistry, Microbiology, and Pathophysiology. The nursing department also offers programs through the Comenius Center, an R.N.-B.S. Program and an M.S. Program in Nursing. Current Enrollment: 145 traditional, 104 R.N.-B.S., and 32 M.S. students Projected Enrollment: 145 traditional, 125 RN.-B.S., and 50 M.S. students.

**Department of Physics and Earth Science**
Related Programs: Engineering, Geology, General Science, Environmental Studies/Science

The department provides the student with the opportunity to investigate and study those areas of physics and earth science, which are essential for graduate study or for a related career in industry, government, secondary education, law, or medicine. The department offers a program that emphasizes experimental work whenever possible, and has a long history of student undergraduate research. As such, the department maintains a large collection of equipment for use in laboratory courses and in undergraduate research projects. In addition, the department also has a long-standing chapter of the Society of Physics Students, which maintains a strong outreach program with local schools.
The department also administers several cooperative programs available in partnership with other institutions: a dual degree undergraduate engineering program with various engineering departments at Washington University in St. Louis, two dual degree graduate programs with Lehigh University (Department of Mechanics and Mechanical Engineering, and Department of Materials Science and Engineering), and an undergraduate geology program with Lehigh’s Department of Environmental Sciences.

The facilities of the Department of Physics and Earth Science occupy most of the ground floor of the Collier Hall of Science. There are currently three physics and one earth science teaching labs and four student research labs utilized by the department, in addition to several storage areas and auxiliary lab spaces. The space and programmatic aspects of the department include the following key building features and equipment facilities: an observation deck on the roof of the building, which houses a number of telescopes and telescope mounts for curricular and community use; a small weather station located on the roof of the building; space in the sub-basement and mechanical core for several seismometers; a radioisotope lab which houses a radioactive material storage facility (storage dump) that is used for the department’s Mossbauer spectroscopy research program; storage facilities for a substantial geologic sample and map collection, for use in the earth science curriculum; a dedicated lab which houses the department’s X-ray fluorescence and diffraction machine; a dedicated lab which houses a large vibration-limited optics table for the department’s magneto-optic Kerr effect and magnetic materials research; various work areas and stations for electronics and mechanical fabrication; and a periodical study room. The department also maintains a small machine shop, which is used by a number of science departments.

**Health Professional Programs**  
Related Programs: Pre-Medicine, Pre-Dentistry and Pre-Veterinary, Allied Health

**Undergrad Research**  
Faculty-student collaborative research is highly valued by the sciences. Student projects are supported by the Rokke Endowment, the SOAR and Honors programs, and external grants and are conducted throughout the academic year and summer. Space for such research, and the necessary equipment, however, is extremely limited in the current facility.