Undergraduate Majors

Biology
The biology major is designed for students who do not wish to specialize in their undergraduate work, but be prepared for a broad spectrum of career or educational opportunities.

Biomedical Sciences
The major in biomedical sciences provides preparation for a wide range of health professions or biomedical research.

Cellular/Molecular Biology
The major in cellular/molecular biology provides preparation for careers in biotechnology, cell biology, health professions, or medical research.

Ecology and Evolutionary Biology
The major in ecology and evolutionary biology prepares students for careers in environmental health, resource management, or basic or applied ecological research.

Microbiology
Students completing the major in Microbiology will be prepared for career opportunities in environmental, medical, or industrial microbiology.

The department of Biological Sciences at Marshall University is dedicated to providing you with the knowledge and skills necessary to succeed in your chosen careers.

Expert, knowledgeable instructors help you build a solid foundation in the biological sciences. We focus on developing the critical and analytical thinking skills necessary to overcome any career challenge and tackle the problems of the future.

Department of Biological Sciences
One John Marshall Drive
Science Building 350
Huntington, WV 25755
(304) 696-3148

www.marshall.edu/biology
From cell and molecular biology to ecological and field-oriented offerings, students are able to sample a wide variety of courses while pursuing their degrees. The Department of Biological Sciences has 22 faculty and four staff members, allowing a broad offering of courses across the biological disciplines.

A degree in Biological Sciences can lead to a number of career opportunities:

**Careers**
- Physicians
- Environmental consultants
- College professors
- Optometrists
- Laboratory technicians
- Research scientists
- Pharmaceutical sales

**Employers**
- Consulting firms
- Science museums
- Research laboratories
- Hospitals
- US Army Corps of Engineers
- Department of Natural Resources

Many of our students choose to continue their education with masters degrees, PhDs, and law degrees. A world of opportunity is open to our graduates!

Biological Sciences is an exciting and active area. Current biological issues in the news include cloning, genetic engineering, identification of genes for human diseases, stem cells, environmental concerns, ecological changes, antibiotic resistance, neurobiology, and numerous human health issues.

General science courses required of all Biological Sciences majors include Principles of Biology, Genetics, Cell Biology, Ecology, Microbiology, Introductory and Organic Chemistry, Physics, and Math. An additional 3-5 elective courses within the biological sciences are also required, along with the University’s general requirements in such areas as humanities and the social sciences electives.

Research is an important component of a biologist’s education. In addition to classroom laboratory experiences, there are opportunities for independent studies to pursue specific research questions. Marshall’s capstone requirement also allows students to work directly with a faculty member on a research project or arrange for an internship with a professional within the community.

Introductory lectures generally enroll 90-120 students, with laboratory enrollments of 30 per section. Registration for sophomore and higher level lectures is generally limited to 60 students, with laboratory sections averaging 20 students. Most lecture halls are equipped with computer-based projection systems. Some of the available instrumentation includes an electron microscope, confocal microscope, gas chromatographs, gel documentation, thermal cycler, flow cytometer, computer modeling equipment, centrifuges, cell culture facilities, and high-grade student microscopes. All permanent Biological Sciences faculty hold a Ph.D. in their research specialty within the biological sciences.

**Plan of Study**

**Freshman Year:**
- Principles of Biology I and II 8 hours
- Principles of Chemistry I and II 6 hours
- Principles of Chemistry Lab I and II 4 hours
- Math 140 or 229 (or two of other options) 3-6 hours
- General Requirements 10 hours

**Sophomore Year:**
- Principles of Ecology 4 hours
- Principles of Genetics 4 hours
- Principles of Cell Biology 4 hours
- Principles of Microbiology 4 hours
- Organic Chemistry I and II 6 hours
- Organic Chemistry Lab I 3 hours
- Biology Electives/General Requirements 7 hours

**Junior Year:**
- General Physics I and II 6 hours
- General Physics Lab I and II 2 hours
- Biology electives/General Requirements 24 hours

**Senior Year:**
- Capstone Experience 2 hours
- Biology Electives/General Requirements 31 hours

At least 120 total credit hours are necessary to earn a Bachelor of Science in Biological Sciences; 40 or more of these credits must be from courses numbered 300-499. A minimum of 40 credit hours must be earned from within the Department of Biological Sciences.

**Majors within Biology**

All are appropriate for graduate and professional school preparation

**Biology** – provides broad background; prepares students for a number of careers and/or continued education.

**Biomedical Sciences** – emphasizes topics and techniques for medical/health sciences.

**Cellular and Molecular Biology** – emphasizes molecular biology and techniques for biotechnology, medical fields, and research.

**Ecological and Evolutionary Biology** – highlights the traditional areas of biology with an emphasis on systematics.

**Microbiology** – emphasis on microscopic organisms and their impact on humans through health and ecological concerns.

At least 120 total credit hours are necessary to earn a Bachelor of Science in Biological Sciences; 40 or more of these credits must be from courses numbered 300-499. A minimum of 40 credit hours must be earned from within the Department of Biological Sciences.