

Biological Sciences

Department Information

- **Department Web Site:**
www.ndsu.edu/biology/ (<http://www.ndsu.edu/biology/>)
- **Credential Offered:**
B.S.; B.A.; Minor
- **Official Program Curriculum:**
catalog.ndsu.edu/undergraduate/program-curriculum/biological-sciences/ (<http://catalog.ndsu.edu/undergraduate/program-curriculum/biological-sciences/>)

Biological sciences is an exciting, rewarding area of science that prepares students for a variety of careers. Biology is at the intersection of many societal challenges including environmental quality and human health, and our students finish their degrees well prepared to help solve these problems. The program provides hands-on experience in biological research and focuses on student experience and interests. Department faculty are involved in scientific research that answers questions in molecular and cellular biology, evolution, population biology, ecology, and science education. Students interested in biological sciences will need a strong interest and aptitude in the sciences and possess the ability to think both analytically and comprehensively.

CAREER Opportunities

Students graduate with an excellent foundation to pursue rewarding careers or gain admission into graduate and professional programs. Our graduates pursue many different careers including medical doctors, optometrists, dentists, physician assistants, chiropractors, genetic counselors, veterinarians, state and federal wildlife biologists, naturalists, wildlife rehabilitators, directors of zoological parks, conservation biologists, environmental consultants, teachers, and researchers. Students leave well-prepared to continue in graduate degree programs that require a solid background in the biological sciences. Most professional scientists can anticipate graduate education as being essential for career advancement.

High School Preparation

High school students are encouraged to take year-long courses in biology, chemistry, physics, algebra, geometry and trigonometry and, if available, an advanced science course and pre-calculus.

The Program

The program integrates studies in zoology, botany, and biological sciences and offers students the flexibility to customize their field of study to align course selection with educational and professional goals. The program integrates broad-based biology foundation classes with specializations, such as biomedical science or conservation biology, in later years. With appropriate course selection, the biological sciences degree provides a broad understanding of the complex relationship between the living and nonliving world. Students choose a research-based course in biology that focuses on antibiotics, wild-life ecology and conservation, STEM education, genomics, or biomedical research. Students have the option to choose an emphasis in Biomedical Science, Ecology and Conservation, or Environmental Sciences. Students planning to enter a health professional program, such as medical school, should refer to the plan of study for the Biomedical Science emphasis. Minors are available in Zoology and Botany with a Biological Sciences minor option for non-biology majors.

PROGRAM OUTCOMES

1. Makes connections between biology, the physical sciences and math.
2. Identifies scientific issues and uses the scientific method, including experimental design, data collection, analysis, and interpretation.
3. Understands the philosophical underpinnings of scientific reasoning.
4. Demonstrates the ability to use sources of information in biology, including published literature and scientific databases, and to evaluate the quality of information sources.
5. Demonstrates the ability to acquire and analyze experimental data and use quantitative analysis to interpret biological data.
6. Demonstrates the ability to develop numerical and graphical models and to simulate biological mechanisms.
7. Demonstrates the ability to use scientific techniques necessary for data gathering and analysis.
8. Communicates effectively in writing, speech, and visual presentations within a variety of contexts.
9. Understands the role of teamwork and individual effort in scientific endeavors; discusses issues constructively and appreciates different ideas and viewpoints.
10. Understands professional standards in science and its applications, including the responsible use of information.

Related Experiences

Career and professional program opportunities are enhanced by work experiences and extra-curricular involvement including student organization participation, internships, volunteering, work and research experiences. Part-time, science-related work and research experiences are available in several North Dakota State University departments, as well as at the nearby U.S. Department of Agriculture laboratories. Off-campus work, such

as summer employment with public agencies or private organizations, is especially valuable and has sometimes been the entry point for a first permanent position after graduation. NDSU offers many extra-curricular activities, including student organizations suitable to diverse personal and professional interests.

Accelerated Program

The Department of Biological Sciences offers an Accelerated Bachelor and Master of Science program. The program allows students to begin thesis research during their junior year and simultaneously pursue their Bachelor of Science and Master of Science degrees in biological sciences. Students will work closely with a faculty member in our department who will serve as a mentor. The program is designed to produce a research-based master's degree. Students must be at junior standing with a minimum cumulative GPA of 3.5.

Sample Program Guide

IMPORTANT DISCLAIMER: This guide is not an official curriculum. This guide is a sample four-year degree plan of how students might plan this major with other degree requirements to complete their education in four years. Student plans will vary from this sample due to a variety of factors, such as, but not limited to, start year, education goals, transfer credit, and course availability. To ensure proper degree completion, enrolled students should utilize Degree Map (<https://www.ndsu.edu/registrar/degreemap/>) and Schedule Planner (<https://www.ndsu.edu/onestop/degree-map-and-planning/>) in Campus Connection and consult regularly with academic advisors to ensure graduation requirements are being met.

First Year			
Fall	Credits	Spring	Credits
BIOL 189		1 BIOL 151 & 151L	4
BIOL 150 & 150L		4 CHEM 122 & 122L	4
CHEM 121 & 121L		4 ENGL 120	3
ENGL 110		3 MATH 146 or 165	4
MATH 103		3	
		15	15
Second Year			
Fall	Credits	Spring	Credits
BIOL 315 & 315L		4 PHYS 120 (or PHYS 211, and 211L, and 212, and 212L)	3
BIOL 270, 271, 272, 273, 274, or 275		3 BIOL 364 or 370	3
CHEM 240 (or CHEM 341, and 341L, and 342, and 342L))		3 Social & Behavioral Sciences Gen Ed	3
COMM 110		3 Wellness Gen Ed	2
STAT 330		3 BIOL 359	3
		Free elective	3
		16	17
Third Year			
Fall	Credits	Spring	Credits
ENGL 324		3 BIOL 300-400 Elective	3
BIOL 300-400 Elective		3 Social & Behavioral Science/Global Perspective Gen Ed	3
Humanities & Fine Arts/Cultural Diversity Gen Ed		3 Free Elective	9
Free Elective		6	
		15	15
Fourth Year			
Fall	Credits	Spring	Credits
BIOL 300-400 Elective		6 BIOL 300-400 Elective	3

Humanities & Fine Arts Gen Ed	3	Free Elective	9
Free Elective	6		
	15		12

Total Credits: 120