

## **BIOLOGICAL SCIENCES OR BIOLOGICAL SCIENCES EDUCATION**

Biological sciences, in the broadest sense, is the study of life. As such, it is a subject of great diversity and requires a background in many academic disciplines. A biologist must have a basic understanding of and be able to synthesize knowledge from physics, chemistry, geology, math and the social sciences as they relate to living systems. The biological sciences courses needed for a major are selected from a variety of life science departments at North Dakota State University.

### **The Program**

Students who want to obtain broad training and knowledge in the life sciences can major in biological sciences or biological sciences education. These degrees differ primarily in that the latter includes the education sequence needed for teacher certification in both North Dakota and Minnesota. (It is advised that students who intend to teach in Minnesota meet with the science education advisor early to discuss additional requirements for teacher certification in that state.) A comprehensive science education major also is available (see separate fact sheet).

### **Major Options**

Biological sciences, with its many areas of emphasis, may fulfill the requirements for environmental studies, wildlife management, or graduate and pre-professional programs. Pre-professional courses prepare you for entrance into medical school, dental school or other areas related to medicine. Although a specific environmental science option exists in biological sciences (see separate fact sheet), with appropriate course selection, the general biological sciences degree also can provide a broad understanding of the complex relationship between the living and nonliving world. In addition, more traditional course sequences can provide an emphasis in organisms or in cellular/molecular biology.

The biological sciences education major prepares you not only for secondary school science teaching, but also for pre-professional programs, graduate school and other career areas. You will have a solid biological sciences major while developing an adequate proficiency in related science areas. This type of preparation allows greater flexibility for potential teaching positions that cross descriptive areas.

**Minor Program** -- A minor in biological sciences consists of 18 credits of introductory (BIOL 150, 150L; BIOL 151, 151L, and BOT 372) and advanced courses. Since application of scientific knowledge varies as to occupation, the type of advanced courses selected is left flexible, thus allowing maximum usefulness for people in other disciplines.

### **Career Opportunities**

Careers in the biological sciences are available in industry, government organizations, research groups, medical areas, environmental organizations and education. In addition to jobs in traditional areas such as medicine, teaching and research, newer areas of employment such as resource management and development, conservation, molecular biology and biotechnology also continue to develop. Future employment possibilities can be enhanced by careful selection of the elective courses, minors or even double majors. Beneficial areas to combine with biological sciences include business management, computer science, art or graphic design, communication and a variety of agriculture disciplines. Graduates with a biological sciences emphasis are needed to work in biological supply facilities, are hired for pharmaceutical development or sales, act as science editors and writers, and do computer modeling and simulation.

### **Student Advisement**

Students will be assigned individual advisors who will work closely in program planning and in other ways to advise and assist them. Students are encouraged to seek their advisors' help whenever needed.

### **Student Teaching**

Student teaching is the culmination of the teaching program. Students have the opportunity to apply skills acquired in college courses under the supervision of an experienced biological sciences educator.

### **Certification**

Upon completing this program, students are eligible for certification to teach biological sciences in most states. The program is accredited by the National Council for Accreditation of Teacher Education.

## Sample Curriculum

### Biological Sciences Education Requirements Credits

First Year Experience	
UNIV 189 - Skills for Academic Success.....	1
Communication	
COMM 110 - Fundamentals of Public Speaking.....	3
ENGL 110, 120 - College Composition I, II.....	3, 3
ENGL 324 - Writing in the Sciences.....	3
Quantitative Reasoning	
MATH 146 - Applied Calculus I.....	4
Science & Technology.....	10
Humanities & Fine Arts.....	6
Social & Behavioral Sciences.....	6
Wellness.....	2
Cultural Diversity.....	-
Global Perspective	
GEOL 105 - Physical Geology.....	3
<b>Total.....</b>	<b>40</b>

### Teaching Specialty Requirements Credits

BIOL 124, 124L - Environmental Science and Lab.....	3, 1
BIOL 150, 150L - General Biology I and Lab.....	3, 1
BIOL 151, 151L - General Biology II and Lab.....	3, 1
BIOL 220, 220L - Human Anatomy and Physiology I and Lab.....	3, 1
BIOL 221, 221L - Human Anatomy and Physiology II and Lab.....	3, 1
BIOL 364 - General Ecology.....	3
BIOL 359 - Evolution.....	3
BIOL 491 - Seminar (Capstone).....	2
BOT 315, 315L - Genetics and Lab <i>or</i> ZOO 315, 315L - Genetics and Lab.....	4
CHEM 121, 121L - General Chemistry I and Lab.....	4
CHEM 122, 122L - General Chemistry II and Lab.....	4
CHEM 240 - Survey of Organic Chemistry.....	3
CHEM 260 - Elements of Biochemistry.....	4
GEOL 105, 105L - Physical Geology and Lab.....	3, 1
GEOL 106, 106L - The Earth Through Time and Lab.....	3, 1
PHYS 211, 211L - College Physics I and Lab.....	3, 1
PHYS 212, 212L - College Physics II and Lab.....	3, 1
STAT 330 - Introductory Statistics.....	3
ZOO 370 - Cell Biology.....	3
CSCI Elective.....	3
300-400 Level Botany Elective.....	3
300-400 Level Zoology Elective.....	3
<b>Total.....</b>	<b>68</b>
<b>Professional Education Requirements.....</b>	<b>31</b>
<b>CURRICULUM TOTAL.....</b>	<b>140</b>

**This sample curriculum is not intended to serve as a curriculum guide for current students, but rather an example of course offerings for prospective students. For the curriculum requirements in effect at the time of entrance into a program, consult with an academic advisor or with the Office of Registration and Records.**

## For Further Information

Department of Biological Sciences  
North Dakota State University  
Stevens Hall 201  
Dept #2715  
PO Box 6050  
Fargo, ND 58108-6050

Tel. (701) 231-6155

Fax: (701) 231-7149

Email: [Lisa.Montplaisir@ndsu.edu](mailto:Lisa.Montplaisir@ndsu.edu)

Web: [www.ndsu.edu/scimath](http://www.ndsu.edu/scimath)

*or*

Dani Kvanvig-Bohnsack, Academic Advisor  
College of Human Development and Education  
North Dakota State University

Dept #2600

PO Box 6050

Fargo, ND 58108-6050

Tel. (701) 231-9849

Fax: (701) 231-7174

Email: [Danielle.Kvanvig@ndsu.edu](mailto:Danielle.Kvanvig@ndsu.edu)

Web: [www.ndsu.edu/hde](http://www.ndsu.edu/hde)

*or*

Dr. Wendy Reed, Department Head  
Department of Biological Sciences  
North Dakota State University  
Stevens Hall 218

Dept #2715

PO Box 6050

Fargo, ND 58108-6050

Tel. (701) 231-7087

Fax: (701) 231-7149

Email: [Wendy.Reed@ndsu.edu](mailto:Wendy.Reed@ndsu.edu)

Web: [www.ndsu.edu/biology](http://www.ndsu.edu/biology)