

BIOLOGICAL SCIENCES/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 adviser 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, 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 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 which 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.

Early Experience

After or during an introductory course, students will have an opportunity to complete a brief exploratory experience in a secondary biological sciences program. Students will observe and possibly assist a biological sciences professional. This experience helps students relate course work to actual teaching situations.

Student Advisement

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

For Further Information

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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

General 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 | |
| Stat. 330 - Introductory Statistics..... | 3 |
| Science & Technology | |
| Biol. 150, 150L - General Biology I and Lab..... | 3, 1 |
| Biol. 151, 151L - General Biology II and Lab..... | 3, 1 |
| Chem. 121, 121L - General Chemistry I and Lab..... | 3, 1 |
| Humanities & Fine Arts..... | 6 |
| Social & Behavioral Sciences..... | 6 |
| Wellness..... | 2 |
| Cultural Diversity..... | - |
| Global Perspective..... | - |
| Total..... | 42 |

College and Department Requirements Credits

| | |
|---|-------------|
| Hum/Soc. Science Electives (B.S. Degree)..... | 6 |
| Hum/Soc. Science Electives (B.A. Degree)..... | 12 |
| Second Year Language Proficiency..... | - |
| Totals..... | 6-12 |

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. 459 - Evolution..... | 3 |
| Biol. 491 - Seminar..... | 2 |
| Bot./Zoo. 315, 315L - Genetics and Lab..... | 3, 1 |
| Chem. 121, 121L - General Chemistry I and Lab..... | 3, 1 |
| Chem. 122, 122L - General Chemistry II and Lab..... | 3, 1 |
| Chem. 240 - Survey or 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 Electives..... | 3 |
| 300-400 Level Botany Electives..... | 3 |
| 300-400 Level Zoology Electives..... | 3 |
| Totals..... | 78 |

CURRICULUM TOTAL..... 122

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 adviser or with the Office of Registration and Records.