Bioinformatics is a rapidly expanding field of study that uses computation to extract knowledge from biology data. It includes the collection, storage, retrieval, manipulation and modelling of data for analysis, visualization or prediction through the development of algorithms and software.

A Bachelor of Science degree in bioinformatics is offered within the Biology Department at UNO. This cross disciplinary degree requires bioinformatics courses offered jointly by the Biology Department in the College of Arts and Sciences and the Computer Science Department in the College of Information Science and Technology, as well as courses in mathematics, chemistry and biology from the College of Arts and Sciences.

A graduate of the UNO bioinformatics program will possess a solid background in a wide variety of positions throughout the biomedical and biotechnology industries, providing a solid foundation for graduate studies in bioinformatics or related areas and, with the addition of a few courses, medical school.

**Course Highlights in Bioinformatics:**

- Introduction to Bioinformatics
- Advanced Bioinformatics Programming
- Bioinformatics Algorithms
- Database Search & Discovery in Bioinfomatics
- Computerized Genetic Sequence Analysis

**Knowledge & Skills gained as a Bioinformatics major:**

**Knowledge**

- Knowledge of fundamental biological processes at organism, physiological, cellular and molecular levels.
- Basic understanding of principles of chemistry and their applications to living systems; properties of bio-molecules and their contribution to structure and function of cells.
- Understanding of computer programming methodology; including algorithm design and program development. Capability of designing and applying software tools for biological data analysis.
- Proficiency in the use of mathematical tools including discrete mathematics, calculus, and statistics.
- Integrated knowledge and technical skills gained from diverse scientific disciplines of biochemical, mathematical, computational and life sciences; understanding key problems, possible solutions, and latest advances in bioinformatics.
- Understanding of the process of scientific inquiry, preparation for rigorous research, quantitative problem solving skills, data analysis and interpretation of results.

**Skills**

- Design, conduct and interpret scientific research
- Conduct statistical analysis
- Apply a scientific approach to problems
- Communicate findings using models, charts and graphs
- Communicate new research findings to lay audiences

**Bioinformatics Major at a glance:**

- **Number of majors:** 12
- **Credit hours needed:** 81-84
- **Degrees offered:** B.S.
- **Minors offered:** No
- **Concentrations:** No
The University of Nebraska at Omaha shall not discriminate based upon age, race, ethnicity, color, national origin, gender-identity, sex, pregnancy, disability, sexual orientation, genetic information, veteran’s status, marital status, religion, or political affiliation.

**Career Opportunities:**

By nature, Liberal Arts majors make great employees in any field because of their ability to communicate effectively, think critically and solve complex problems. These timeless skills make them attractive to employers in a variety of professions. Specifically though, Bioinformatics majors often pursue careers as:

- Bioinformatician Analyst
- Cheminformatician
- Medical Informatics Analyst
- EMR Information Systems Analyst
- Nursing Informatics Specialist
- Chief Medical Information Officer
- Scientific Curator
- Network Analyst
- Research Scientist
- Phylogenitist
- Structural Analyst
- Bio-Statistician

* May require graduate study

When the Bioinformatics major is matched with complementary minors and thoughtful internships, new possibilities arise. A few examples are:

- **Bioinformatics** + Computer Science = High-tech Biological research
- **Bioinformatics** + Statistics = Health care related data research in biotech or pharmaceuticals
- **Bioinformatics** + Business = Industry jobs of all types that collect and interpret data
- **Bioinformatics** + English = Technical Writer

**Student Opportunities:**

- Maverick Club for Bioinformatics—UNO’s bioinformatics students, or those interested in bioinformatics
- Pre-Health Professionals Club
- Women in Science Technology Engineering & Mathematics
- Several student scholarships available

**Did you know?**

If you were to recite the entire ATCG sequence, pronouncing each of its 3 billion letters the genetic material notation is made of at a rate of 100 ATCG sequences per minute without sleeping, eating or drinking, you would cite for 57 years.

**For more information:**

For program information, contacts and course requirements:

[www.unomaha.edu//biology/](http://www.unomaha.edu//biology/)

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402.554.2641

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