Bioinformatics is an interdisciplinary scientific discipline that addresses problems related to the collection, processing, and analysis of the vast amounts of data describing the structure and function of biological systems, combining aspects of computer science, molecular biology, chemistry, and mathematics. Bioinformatics merges computer and information science with the study of genetic information and biological structures. Bioinformatics allows researchers to open new windows of insight into our genetic makeup, providing pathways to understanding disease processes, and creating novel diagnostic and treatment strategies. To capitalize on the growing body of knowledge regarding the genome, there is an immense and growing need for experts in this field.

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.

Cool Courses in Bioinformatics:
- Introduction to Bioinformatics
- Advanced Bioinformatics Programming
- Bioinformatics Algorithms
- Database Search & Discovery in Bioinformatics

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: 90 | Credit hours needed: 76 |
| Degrees offered: B.S. | Minor offered: Yes |
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:

- Bioinformatics 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

The Bioinformatics major includes coursework in:

- Computer Science
- Mathematics
- Chemistry
- Biology
- Bioinformatics
- Biomedical Informatics

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?

- People share 7% of their genetic material with the E.coli bacteria, 21% with worms, 90% with mice and 98% with chimpanzees.
- If all the chromosomes from all the nuclei in the human body were to be arranged lengthwise, it would measure around 180 000 million kilometers, or more than 1000 times the distance from Earth to the sun.

For more information:

For program information, contacts and course requirements: [www.unomaha.edu/biology](http://www.unomaha.edu/biology)

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