

Northwest Arkansas Community College
Division of Science & Mathematics

BIOL 2324 Genetics

Catalog Description: This course will study the basic concepts in classical and molecular genetics. Topics include Mendelian inheritance and its variations, linkage, chromosomes, gene mapping, bacterial and viral genetics, extranuclear inheritance, DNA structure and replication, mutation, DNA repair, recombinant DNA technology, genetic code, and gene expression/regulation. Laboratory exercises illustrate principles of inheritance in various biological systems and provide hands-on experience with several recombinant DNA techniques.

Three hours lecture/discussion and three hours laboratory per week.

Prerequisites: At least one semester of college biology and one semester of college chemistry.

Credit hours/ Contact hours/ Load hours: 4/6/5

Target Audience/Transferability: A laboratory science course intended for science majors and students interested in genetics. BIOL 2324 is a transferable biology course and supports students seeking admission to a variety of professional programs as well as those seeking a bachelor's degree in biological sciences.

Student Learning Outcomes: Students completing this course will:

- Develop insight into the transmission of traits on the molecular, cellular, and organismal level
- Learn to make hypotheses and test them based on relevant facts of heredity and environment.
- Understand how a geneticist determines the number of genes involved with a specific trait based on a population data set.
- Be able to perform simple and complex genetic problems based on relevant facts in a real world situation.
- Be able to describe at the biochemical level expression from gene to phenotype
- Be able to describe relationships between mutations and new alleles.
- Understand the correct terminology and possibilities based in genetics and molecular biology.
- Demonstrate major recombinant DNA techniques used in genetics and molecular biology.

Topics:

- Mitosis and Meiosis
- Mendelian genetics
- Sex determination and Sex Chromosomes
- Genetic mutations
- Extranuclear inheritance

Northwest Arkansas Community College
Division of Science & Mathematics

- DNA structure, replication and variation
- Gene expression, regulation and development
- Genomics, rDNA tech,
- Proteomics, and Bioinformatics
- Population genetics

Forms of Assessment: Required forms of assessment include written examinations, formal laboratory journal, and demonstration of understanding of the principles presented in lecture. Also, students will be required to demonstrate proficiency in applying core laboratory skills and practices used in the study of genetics.