

Northwest Arkansas Community College
(Science and Mathematics Division)

Discipline Code
BIOL

Course Number
2104

Course Title
Biotechnology I

Catalog Description

The second course in a three-part series in the biotechnology program. The course stresses the theory and practice of separation techniques and safety procedures that would be employed in the purification and assay of such biomolecules as nucleic acids, proteins and other related substances and the relationship of these molecules to living organisms. An emphasis is placed on the use of laboratory tools and equipment to familiarize the student with current biochemical techniques. Three hours lecture and three hours lab weekly.

Prerequisites

BIOL 1103 Introduction to Biotechnology (or its equivalent) with a grade of C or better.

Credit Hours

4 credit hours

Contact hours

45 lecture contact hours. 45 laboratory hours

Load hours

5 load hours

Semesters Offered

Spring

ACTS Equivalent

None

Grade Mode

A-F

Learning Outcomes

Students completing this course will:

- Demonstrate proper scientific laboratory record keeping.
- Identify and calculate concentration of selected products.
- Determine type of separation method to isolate product.

- Explain the process of isolating products from microorganisms and the applications.
- Demonstrate the process of proper handling genetically engineered organisms and utilize all necessary safeguards.
- Apply the principles learned to comprehend, evaluate, and solve problems observed in biological chemical isolation and purification.

General Education Outcomes Supported

None

Standard Practices

Topics list

- Lab safety
- Biochemistry
- Basic calculations for preparing solutions
- Bioreactors
- Column separation
- Chromatography
 - Identification
 - Separation
- Spectrophotometry
- Membrane separation
- Membrane sterilization
- Applications of identification and purification

Learning activities

- Courses must, at a minimum, cover the core learning outcomes for each topic.
- Laboratory exercises should include chromatography, utilization of bioreactors, spectrophotometry, membrane separation, column separation, and membrane sterilization.

Assessments

Minimum requirements:

- Written exams that include higher order thinking questions
- Lab notebooks/write-ups
- Final exam that includes some comprehensive questions.

Grading guidelines

- A minimum of 70% of the grade must be proctored, supervised, or otherwise verified.
- Approximately 25% of the grade must come from lab work since the lab and lecture credits for this course are combined.

Revision Date October 31, 2022