



BTEC 222 - BIOPROCESSING: LARGE SCALE PURIFICATION

Units Lecture	0.80	Units Lab	0.80	Units Total	1.50
Total Hrs Lecture	12.00	Total Hrs Lab	37.00	Total Course Hrs	49.00

COURSE DESCRIPTION

This laboratory course develops the skills and knowledge related to purification of biological molecules produced on a large scale. Students will utilize the most common types of separation equipment, including tangential flow filtration, centrifugation, and column chromatography. Students will become familiar with the cleaning, sanitization, calibration, operation, and monitoring of large scale purification equipment. The course emphasizes the use of current Good Manufacturing Practices (cGMP), process control strategies, and students gain experience following Standard Operating Procedures (SOP). Not open to students with credit in BTEC 220.

ENROLLMENT RESTRICTIONS

PREREQUISITES

None

COREQUISITES

None

ADVISORIES

BTEC 110; BTEC 120; Eligibility for ENGL 100.

OUTLINE OF COURSE CONTENT

The course will address the following topics:

Students will be required to analyze, evaluate, compare, and perform tasks related to the following concepts and techniques. [hrs lec; hrs lab]

I) The properties of proteins used to isolate and separate them in recovery and purification. [2; 7]

II) Common separation methods. [6; 18]

A) Buffer preparation.

B) Centrifugation.

C) Chromatography.

D) Filtration.

E) Electrophoresis.

III) Quality control and compliance. [3; 9]

A) Current Good Manufacturing Practices (cGMP) principles and Standard Operating Procedures (SAP) and Batch Production Records (BPR) maintenance.

IV) Communication of results. [1; 2]

A) Communicate results and analysis in written and seminar format.

PERFORMANCE OBJECTIVES

Upon successful completion of this course, students will be able to do the following:

a. Work in teams. The purpose of the team format is to emulate the industrial working environment that promotes a sense of responsibility, self esteem, self management, integrity and honesty, and ability to work in a social setting that emphasizes the following skills:

1. Generate new ideas, individually or as a group.
2. Formulate alternative solutions.
3. Develop a plan of action.
4. Interpret data in all formats.
5. Apply principles to solutions of problems.
6. Develop a learning environment.

b. Apply the basic concepts behind the techniques used to separate proteins and other biomolecules.

c. Select and properly use the instrumentation required to measure buffer conditions and protein quantity.



- d. Apply biochemical and process control concepts to protein and biomolecule separation techniques.
- e. Use current Good Manufacturing practices (cGMP) principles by following Standard Operating Procedures (SOP) and keeping records in Batch Production Record (BPR) format.
- f. Communicate results and analysis in written and seminar format.