

Master Syllabus

BTN 2230 - Molecular Biology Techniques

Division: Science, Mathematics and Engineering

Department: Biotechnology

Credit Hour Total: 4.0

Lecture Hrs: 2.0 **Lab Hrs:** 4.0

Prerequisite(s): BIO 1111 AND BTN 1130 AND CHE 1111

Other Prerequisite(s): AND Restricted to Majors

Date Revised: July 2014

Course Description:

Structure and function of macromolecules and their interactions in DNA replication, DNA cloning and genetic engineering techniques analysis, introduction to public domain DNA and protein sequence databases, use of software and internet resources for database searching. Two classroom, four lab hours per week.

General Education Outcomes:

- ▣ Written Communication Competency
- ▣ Critical Thinking/Problem Solving Competency
- ▣ Values/Citizenship/Community Competency
- ▣ Computer Literacy Competency
- ▣ Information Literacy Competency

Course Outcomes:

Structure of Proteins, Nucleic Acids and Macromolecular Complexes

Identify and explain the physical and chemical nature of proteins and nucleic acids and explain the macromolecular interactions.

Assessment Method: Locally developed exams

Performance Criteria: 60% or more of available exam points

Coordination of Macromolecular Function in Cells

Explain the overall purpose and process of regulating gene activity in both prokaryotes and eukaryotes.

Assessment Method: Locally developed exams

Performance Criteria: 60% or more of available exam points

Function of Macromolecules

Describe DNA replication, transcription and translation. Compare and contrast these mechanisms between prokaryotic and eukaryotic cells.

Assessment Method: Locally developed exams

Performance Criteria: 60% or more of available exam points

Experimental Manipulation of Macromolecules

Describe the use of plasmids, transposons and bacteriophages in recombinant DNA technology and genetic engineering.

Assessment Method: Locally developed exams

Performance Criteria: 60% or more of available exam points

Outline:

Structure and Function of Nucleic Acids and Proteins
DNA Replication, Transcription and Translation
Mutations, Mutagenesis and DNA Repair
Regulation of Gene Activity in Prokaryotes and Eukaryotes
Recombinant DNA Technology
Gene Cloning and Genetic Engineering