

## 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