MiraCosta College

BTEC 203 - TECHNIQUES IN DNA AMPLIFICATION

Units Lecture	0.80	**Units Lab**	0.30	**Units Total**	1.00
Total Hrs Lecture	12.00	**Total Hrs Lab**	12.00	**Total Course Hrs**	24.00

COURSE DESCRIPTION

This advanced course is designed to provide skills in the performance of the polymerase chain reaction (PCR), a technique commonly used to amplify DNA in forensics and the biotechnology laboratory. Instruction will focus on understanding the process; potential applications of DNA amplification; and the skills related to the set up, performance, and evaluation of the outcome of the technique. The course assumes some prior knowledge of solution preparation and gel electrophoresis.

ENROLLMENT RESTRICTIONS

PREREQUISITES	*COREQUISITES*	*ADVISORIES*
None	None	BTEC 110

OUTLINE OF COURSE CONTENT

The course will address the following topics:

Documentation and maintenance of lab notebook: 1
Laboratory safety and hazard awareness: 2
DNA replication: 1
Applications of PCR: 2
Amplification of DNA: 12
Agarose gel electrophoresis: 4
Optimizing amplification reactions: 2

PERFORMANCE OBJECTIVES

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

1. Demonstrate ability to follow instructions for laboratory procedures.
2. Maintain a lab notebook documenting lab procedures, calculations and results.
3. Demonstrate understanding of the process of DNA replication and how it relates to DNA amplification in the laboratory.
4. Evaluate the potential applications of the technique to forensics, recombinant DNA technology and other areas.
5. Perform procedures related to setting up reactions that result in the amplification of targeted DNA.
6. Demonstrate and follow protocols for inputting parameters into an operating program for an instrument utilized in amplifying DNA.
7. Evaluate the outcome of an experiment that includes identifying and trouble-shooting difficulties and suggesting strategies to optimize the outcome.