Course Specifications

General Information

Course name	Molecular Biology (2)
Course number	BIOL4379
Faculty	
Department	
Course type	Major Needs
Course level	4
Credit hours (theoretical)	3
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

1 - The course covers the following subjects: Introduction to Recombinant DNA basics, Gel electrophoresis, Nucleic acid hybridization, PCR, DNA clones, DNA vectors, introduction to proteomics, IEF and 2-D Gel electrophoresis, DNA arrays and other application in molecular biology

Course Contents

1 - Recombinant DNA Basics
2 - The Uses of Recombinant DNA
3 - Gel Electrophoresis
4 - Nucleic Acid Hybridization Assays
5 - DNA Structure and Complementary Base Pairing
6 - DNA Renaturation, Annealing, and Hybridization
7 - Hybridization Assays
8 - The Polymerase Chain Reaction
9 - Templates, Primers, and DNA Polymerase
10 - The PCR Amplification Process
11 - Applications of PCR
12 - Constructing Recombinant DNA Molecules
13 - DNA Clones
14 - Sources of DNA for Cloning
15 - Cutting and Joining DNA
16 - DNA Vectors
17 - Introduction to Proteomics
18 - Technologies for Proteomics
19 - Protein Identification
20 - 1D-SDS-PAGE
21 - Isoelectric Focusing (IEF)
22 - 2-D Gel Electrophoresis (2-DE)
23 - Steps of 2-DE
24 - Resolution of 2-DE Gels
25 - Reproducibility of Protein Profiles Obtained by 2-DE
26 - Stains and Dyes of 2-DE
27 - Image Analysis in 2-DE
28 - DNA and Protein Microarray Technologies
29 - DNA Arrays
30 - Design of a Microarray System
31 - Attachment of a Single DNA Molecule to a Silicon Surface
32 - How to Choose an Array

Students Assessment

Assessment Method	TIME	MARKS
First hour exam	60minutes	20
Second hour exam	60minutes	20
Attendence		10
Final exam	120minutes	50

Books and References

Recommended books 1- Principle and techniques of Biochemistry and Molecular Biology.6th ed. 2005