

Vocational School / Medical Laboratory Techniques

2023 - 2024 Academic Year

MOLECULAR BIOLOGICAL METHODS

Syllabus

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
MOLECULAR BIOLOGICAL METHODS	TLT2278200	Spring Semester	2+0	2	4
Prerequisites Courses					
Recommended Elective Courses	None				
Language of Instruction	Turkish				
Course Level	Short Cycle (Associate's Degree)				
Course Type	Required				
Course Coordinator	Assist.Prof. Elif Zeynep YILMAZ				
Name of Lecturer(s)	Lect. Sibel ÖZALP				
Assistant(s)	None				
Aim	Teaching the main principles of molecular biology techniques to the students				
Course Content	This course contains; Molecular Biology Techniques: Overview,Introduction of lab materials and machines,Physical and chemical homogenization techniques,DNA isolation and analysis,RNA isolation and analysis,Polymerase chain reaction (PCR) and gene cloning,Gene sequencing,Protein isolation and purification,Determining the concentration of proteins and electrophoretic analysis,Methods based on hybridization of nucleic acids and proteins,Basic principles and methods for enzymatic assay to determine enzyme activity,Spectroscopic techniques,Cell culture,Microscopic applications.				
Course Learning Outcomes			Teaching Methods	Assessment Methods	
1.Tell the idea of molecular biology techniques			12, 13, 16, 9	A	
2. Explain the field of application these techniques at the lab			12, 13, 16, 9	A	
Teaching Methods	12: Problem Solving Method, 13: Case Study Method, 16: Question - Answer Technique, 9: Lecture Method				
Assessment Methods	A: Traditional Written Exam				
Lecture Schedule					
Sequence	Topics	Preliminary Preparation			
1	Molecular Biology Techniques: Overview	Studying the subject from the lecture notes given by the teaching staff.			
2	Introduction of lab materials and machines	Studying the subject from the lecture notes given by the teaching staff.			
3	Physical and chemical homogenization techniques	Studying the subject from the lecture notes given by the teaching staff.			
4	DNA isolation and analysis	Studying the subject from the lecture notes given by the teaching staff.			
5	RNA isolation and analysis	Studying the subject from the lecture notes given by the teaching staff.			
6	Polymerase chain reaction (PCR) and gene cloning	Studying the subject from the lecture notes given by the teaching staff.			
7	Gene sequencing	Studying the subject from the lecture notes given by the teaching staff.			
8	Protein isolation and purification	Studying the subject from the lecture notes given by the teaching staff.			
9	Determining the concentration of proteins and electrophoretic analysis	Studying the subject from the lecture notes given by the teaching staff.			
10	Methods based on hybridization of nucleic acids and proteins	Studying the subject from the lecture notes given by the teaching staff.			
11	Basic principles and methods for enzymatic assay to determine enzyme activity	Studying the subject from the lecture notes given by the teaching staff.			
12	Spectroscopic techniques	Studying the subject from the lecture notes given by the teaching staff.			
13	Cell culture	Studying the subject from the lecture notes given by the teaching staff.			
14	Microscopic applications	Studying the subject from the lecture notes given by the teaching staff.			
Evaluation Methods		Weight(%)			
Midterm Exam		40			
General Exam		60			

Resources
Instructor's lecture notesMolecular Biology Techniques: An Intensive Laboratory Course (Walt Ream, Katharine G. Field), 1999. Moleküler Biyolojide kullanılan yöntemler, Prof.Dr. Güler Temizkan, Prof.Dr.Nazlı Arda, Nobel Tıp Kitabevleri, 2008.