AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Recombinant Protein Production and Purification								
Course Code	MBTK636		Couse Level	Third Cycle (Doctorate Degree)					
ECTS Credit	10	Workload	249 *(Hours)*	Theory	1	Practice	3	Laboratory	0
Objectives of the Course	The aim of this course is to give ability to use methods for recombinant proteins production and their purification								
Course Content	Laboratory practice will be done and information will be given about genetic design of recombinant proteins, cells used for recombinant protein production, induction methods, cell break, extraction and protein purification methods								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Experiment, Discussion, Individual Study								
Name of Lecturer(s)									

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

Recommended or Required Reading	
1	Basic Biotechnology by Colin Ratledge and Bjorn Kristiansen, Cambridge, U.K. ; New York : Cambridge University Press, 2006.

Week	Weekly Detailed Course Contents	
1	Theoretical	Recombinant proteins and hormones
2	Theoretical	Vectors used for of recombinant protein production
3	Theoretical	Restriction enzymes, their use and classification
4	Practice	DNA and RNA Modification enzymes and their uses, mutagenesis
5	Practice	Specific and modified primer design and programs
6	Practice	Gene transfer to E. coli
7	Practice	Gene transfer to fungi
8	Intermediate Exam	Midterm exam
9	Practice	Selective media and its preparation
10	Practice	Induction of recombinant protein synthesis
11	Practice	Methods for cell disruption and practice
12	Practice	Methods for protein purification
13	Practice	Methods for protein purification
14	Practice	Protein analysis methods
15	Final Exam	Final exam

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	13	0	1	13
Lecture - Practice	13	0	3	39
Assignment	6	0	15	90
Seminar	3	0	6	18
Laboratory	5	0	4	20
Individual Work	13	0	3	39
Quiz	6	0	4	24
Midterm Examination	1	0	3	3

Final Examination	1	0	3	3
			Total Workload (Hours)	249
			[Total Workload (Hours) / 25*] = **ECTS**	10
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	Will have information on gene cloning and recombinant synthesis
2	Will know and use vectors and cells used for recombinant protein production
3	Will know and use gene engineering methods and sequence modification with in vitro muthagenesis
4	Ability to use recombinant protein technology
5	Will know and use protein purification and analysis methods

Programme Outcomes *(Molecular Biotechnology(English) Interdisciplinary Doctorate)*	
1	Ability to identify, analyze and understand problems related to molecular biotechnology and finding valid conclusions with basic knowledge in biotechnology
2	Ability to appropriately use laboratories and their associated equipment as part of research and observation activities through various branches of sciences
3	Ability to understand and interpret biological processes at cell, tissue, organ, system and organism levels
4	Ability to decide and apply appropriate tools and techniques in biotechnological manipulation
5	Ability to comprehend fundamentals of genetics and molecular biology and carry out basic methods in relevant applications
6	Ability to apply the fundamentals of protein and DNA chemistry, and immunology to techniques in biotechnology
7	. Ability to understand and practice basics of applied biotechnology, with acquired knowledge on problem solving approaches
8	Ability to understand and interpret basics of molecular applications within medical, agriculture, veterinary and forensic sciences
9	Ability to perceive biological existence at the global and regional scales, together with comprehension of associated problems
10	Acquiring appropriate knowledge in the field of basic sciences to support perception, analysis and interpretation of biological facts, and ability to use and practice relevant methods for this goal
11	Ability to develop proficiency in laboratory management, including maintenance of an orderly work environment, inventory and ordering, and set up or maintenance of equipment
12	Ability to learn essential methods in microbiology and basic skills in a microbiology labortaory
13	Ability to demonstrate proficiency with standard techniques in liquid measurement, recombinant DNA technology, protein purification and identification, and cell culture

Contribution of Learning Outcomes to Programme Outcomes *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

	L1	L2	L3	L4	L5
P1	5	5	5	5	5
P2	5	5	5	5	5
P3	3	3	3	3	3
P4	5	5	4	4	4
P5	5	5	4	4	4
P6	3	3	3	3	3
P7	4	4	5	5	5
P8	4	4	5	5	5
P9	4	4	5	5	5
P10	4	4	5	5	5
P11	3	3	3	3	3
P12	3	3	3	3	3
P13	5	5	5	5	5