



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Protein Purification Techniques							
Course Code		TBY414		Course Level		First Cycle (Bachelor's Degree)			
ECTS Credit	4	Workload	100 ( <i>Hours</i> )	Theory	2	Practice	0	Laboratory	2
Objectives of the Course		The aim of this course is to give the theoretical background of the methods used in protein purification. Isolation of the protein of interest from complex media is vital for the characterization of the function, structure and interactions of proteins or protein groups.							
Course Content		Protein structure and properties, Protein elution, Homogenization, Satrifugation, Gel filtration, Polyacrylamide gel electrophoresis (PAGE), SDS-PAGE, Protein staining in PAGE and SDS-PAGE gels, Isoelectric focusing (IEF), Protein determination							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Individual Study					
Name of Lecturer(s)									

### Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	70

### Recommended or Required Reading

1	Lehninger Principles of Biochemistry, David L. Nelson, Michael M. Cox (2012)
2	Temel ve İleri Moleküler Biyoloji Yöntemleri Genomik ve Proteomik Analizler, Güler Temizkan, Nazlı Arda, Nobel Tıp Kitabevleri (2018)

Week	Weekly Detailed Course Contents	
1	Theoretical	Structure ve properties of proteins
2	Theoretical	Extraction of proteins
3	Theoretical	Homogenisation
4	Theoretical	Santrifuge
5	Theoretical	Elektrophoresis methods
6	Theoretical	Gel filtration
7	Theoretical	Overview
8	Intermediate Exam	Midterm exam
9	Theoretical	Polyacrylamide gel electrophoresis (PAGE)
10	Theoretical	SDS-PAGE
11	Theoretical	Protein staining on PAGE and SDS-PAGE gels
12	Theoretical	Isoelectric focusing (IEF)
13	Theoretical	Protein determination
14	Theoretical	Overview
15	Final Exam	Final exam

### Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	13	1	2	39
Assignment	5	2	2	20
Individual Work	5	2	2	20
Midterm Examination	1	9	1	10
Final Examination	1	10	1	11
Total Workload (Hours)				100
[Total Workload (Hours) / 25*] = ECTS				4
*25 hour workload is accepted as 1 ECTS				



**Learning Outcomes**

1	Know the principles of homogenization
2	Knows centrifugation
3	Knows gel filtration
4	Know the structure of proteins
5	Knows PAGE Electrophoresis

**Programme Outcomes (Agricultural Biotechnology)**

1	To be able to develop skills in identifying, modeling and solving problems in agricultural biotechnology
2	To be able to synthesize life and engineering sciences for the effective resource planning of agricultural biotechnology applications
3	To be able to interpret about living organisms structure, metabolic and physiological processes in order to propose biotechnological solutions to the agricultural problems
4	To be able to analyze genomic, metabolomic and proteomic information via bioinformatic tools.
5	To have the ability to analyze collected data and interpret the results.
6	To have the ability of individual working ability and to make independent decisions, to work in inter-disciplinary and interdisciplinary teamwork, to communicate by expressing their ideas orally and in writing, clearly and concisely
7	To have the awareness of professional liabilities and ethics
8	To be able to follow current national and international problems

**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	5	5	5
P5	5	5	5	5	5
P6	4	4	4	4	4
P7	5	5	5	5	5
P8	4	4	4	4	4

