



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Isolation and Purification of Proteins							
Course Code		VBY649		Couse Level		Third Cycle (Doctorate Degree)			
ECTS Credit	4	Workload	100 ( <i>Hours</i> )	Theory	1	Practice	2	Laboratory	0
Objectives of the Course		Isolation and purification of proteins used in the methods and their principles. Affinity chromatography, ultrafiltration, electrophoresis, gel filtration, ion exchange chromatography using methods of protein purification.							
Course Content		Isolation and purification of proteins used in the methods and their principles. Affinity chromatography, ultrafiltration, electrophoresis, gel filtration, ion exchange chromatography using methods of protein purification.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Experiment, Demonstration, Individual Study					
Name of Lecturer(s)									

### Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	10
Final Examination	1	60
Quiz	2	10
Assignment	4	20

### Recommended or Required Reading

1	Lippincott's Illustrated Reviews Biyokimya Seri Editörleri Richard A HARVEY, Pamela C. CHAMPE Biyokimya Çeviri Editörü Doç.Dr. Engin ULUKAYA, Nobel Tıp Kitabevleri 2007
2	Lehninger Biyokimyanın İlkeleri. David L. Nelson Michael M. COX. Çeviri Editörü Prof.Dr. Nedret KILIÇ, Palme Yayıncılık
3	Harper Biyokimya Robert K. Murray, Daryl K. Granner, Peter A. Mayes, Victor W. Rodwell. Çeviri Editörleri: Nurtan DİKMEN, Tuncay ÖZGÜNEN. Nobel Tıp Kitabevleri

Week	Weekly Detailed Course Contents	
1	Theoretical	Introduction of protein purification
	Practice	Centrifugation
2	Theoretical	Precipitation of proteins
	Practice	Precipitation
3	Theoretical	Gel filtration
	Practice	Dialysis
4	Theoretical	Ultrafiltration and lyophilization
	Practice	Liophilisation
5	Practice	Midterm Exam Evaluation
	Intermediate Exam	Midterm Exam
6	Theoretical	Protein solutions preconcentration
	Practice	Ultrafiltration
7	Theoretical	Column chromatography
	Practice	Column chromatography
8	Theoretical	Ion exchange chromatography
	Practice	Ion exchange chromatography
9	Theoretical	Affinity chromatography
	Practice	Affinity chromatography
11	Practice	Midterm Exam Evaluation
	Intermediate Exam	Midterm Exam
12	Theoretical	Electrophoresis techniques
	Practice	SDS electrophoresis
13	Theoretical	Isoelectric focusing



13	Practice	SDS electrophoresis
14	Theoretical	Blotting techniques
	Practice	Western blotting
15	Theoretical	Discussion
16	Final Exam	Final exam

**Workload Calculation**

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	1	14
Lecture - Practice	14	0	2	28
Assignment	4	7	1	32
Quiz	2	5	0.5	11
Midterm Examination	1	7	1	8
Final Examination	1	6	1	7
Total Workload (Hours)				100
[Total Workload (Hours) / 25*] = <b>ECTS</b>				4

\*25 hour workload is accepted as 1 ECTS

**Learning Outcomes**

1	Laboratory work to learn the layout of the
2	Protein determination methods as applied to learn
3	To have information about precipitation of proteins
4	To have knowledge about electrophoresis
5	To have information about chromatography

**Programme Outcomes (Biochemistry (Veterinary Medicine) Doctorate)**

1	Has a deep and broad knowledge about the field and the interdisciplinary area related with the field through the achievements gained in undergraduate and professional levels.
2	Has the knowledge to create original ideas, analyze them and develop definition/product/diagnosis methods by using the knowledge gained in undergraduate and/or professional experience, when needed.
3	Is knowledgeable about theories and practices in methodological and scientific research methods to run an independent research.
4	Excels in the laboratory, clinical and similar fields by using the theoretical and practical information gained in former education, and has the ability to create solutions in related fields.
5	Designs and develops scientific methodology for the advanced level/newly defined/emerged problems about the field.
6	Excels in the known scientific methods in the field for the advanced level/ newly defined/emerged problems.
7	Designs unique researches and implements independently.
8	Analyzes, synthesizes and evaluates the new ideas in related fields by using critical thinking.
9	Plans, creates teams and carries out the interdisciplinary research projects in order to create solutions to the known/newly defined problems.
10	Joins to congresses, panels, symposiums, workshops, seminars, article discussions and problem solving sessions in different disciplines, and exchanges information with the other professionals to contribute to the solutions.
11	Broadens the borders of scientific information by publishing scientific articles in national and/or international peer-reviewed journals.
12	Creates new ideas and methods to contribute to the technological, social and cultural progress, or to help the development of information society by using the theoretical, practical, independent research, abilities responsibly.
13	Designs and implements social projects with the awareness of creating an information society.
14	Compiles and interprets any type of data (field observation, scientific knowledge etc.) in accordance with the aims.
15	Develops and uses strategies about related topics with the field.
16	Implements and defends institutional and practical information and abilities in accordance with the needs of the country and the world, and changes when necessary.
17	Follows up and uses all the updates about the field (scientific information, legislations etc.), and has the qualification to change them.
18	Adopts lifelong learning as a principle and acknowledges that the information gained through research is the most valuable gain.

**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
P2	5		5	5	5
P3	5				
P4		5	5	5	5
P8	5				
P12	4	4	4	4	4
P15	4		4	5	3
P17	4				
P18		3	3	3	3

