AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Proteomics								
Course Code	TBY424		Couse Level	First Cycle (Bachelor's Degree)					
ECTS Credit	3	Workload	74 *(Hours)*	Theory	2	Practice	0	Laboratory	0
Objectives of the Course	The aim of this course is to teach main concepts of Proteomic to students such as it is based on the proteome as a complete set of proteins produced by a given cell or organism under a defined set of conditions and provide a unique global perspective on how this molecules interact and cooperate to create and maintain a working biological system and applications of proteomics in other scientific fields								
Course Content	Transition from Genomic to Proteomic; General Features of Proteins; Purification technics that is used in proteomic analysis; Characterization technics that is used in proteomic analysis; Analysis of protein sequences and Proteomic; Structural Proteome Analysis; Protein-protein interactions and proteomic; Usage of protein modification in proteom analysis; Functional Proteome Analysis; Proteomic Applications								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion, Individual Study								
Name of Lecturer(s)	Lec. Evrim ELÇİN								

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	30
Final Examination	1	70

Recommended or Required Reading	
1	Principles of Proteomics, RM Twyman
2	Proteomik, Münir Tuncer, 2022, Palme Yayınevi
3	INTRODUCTION TO PROTEOMICS: Principles and Applications -Nawin Mishra, 2010, John Wiley & Sons, Inc.

Week	Weekly Detailed Course Contents	
1	Theoretical	From Genomics to Proteomics, Scope of proteomics
2	Theoretical	General Features of Proteins: Protein structure and function
3	Theoretical	Strategies for protein seperation (I): Principles of two-dimensional gel electrophoresis; two-dimensional gel electrophoresis in proteomics
4	Theoretical	Strategies for protein seperation (II): Principles of liquid chromatography in proteomics; Multidimensional liquid chromatography
5	Theoretical	Strategies for protein identification (I): Protein identification with antibodies; Determining protein sequences by chemical degradation
6	Theoretical	Strategies for protein identification (II): Mass spectrometry in proteomics; Protein identification using data from mass spectrometry
7	Theoretical	Strategies for protein quantitation: Quantitative proteomics with standard 2D gels; Quantitative proteomics with mass spectrometry
8	Intermediate Exam	Midterm Exam
9	Theoretical	Proteomics and the analysis of protein sequences, basic principles of protein sequence comparison
10	Theoretical	Structural proteomics: The value of protein structure in proteomics; Techniques for solving protein structure; Comparing protein structure
11	Theoretical	Interactions proteomics: Principles of protein-protein interaction analysis; Protein interaction maps; Proteins and tiny molecules
12	Theoretical	Protein modification in proteomics: Phosphoproteomics, overwiev of protein phosphorylation
13	Theoretical	Protein chips and functional proteomics
14	Theoretical	Applications of proteomic: Proteomics and plant biotechnology, Pharmaceutical proteomics, disease diagnosis, drug development
15	Final Exam	Final Exam

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	13	2	2	52

Assignment	4	1	1	8
Midterm Examination	1	6	1	7
Final Examination	1	6	1	7
			Total Workload (Hours)	74
			[Total Workload (Hours) / 25*] = **ECTS**	3
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	To provide a unique global perspective on how this molecules interact and cooperate to create and maintain a working biological system
2	To provide information regarding the proteome which is a complete set of proteins produced by a given cell or organism under a defined set of conditions
3	To gain the principles of protein separation, identification and quantification methods
4	Proteomics and to provide its connection with agricultural production.
5	To understand the relations between experimental logic, analytical thinking, quantitative analysis and problem solving.

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	4	4	4	5	5
P3	4	4	4	4	5
P4	4	4	4	4	5
P5	4	4	4	4	5
P6	2	2	2	2	5
P7	4	4	4	2	5
P8	4	4	4	4	5