AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Antioxidative Metabolism								
Course Code	VBY639		Couse Level	Third Cycle (Doctorate Degree)					
ECTS Credit	5	Workload	130 *(Hours)*	Theory	2	Practice	2	Laboratory	0
Objectives of the Course	Definition and sources of free radicals, antioxidants, pathophysiological effects of radicals, determinations of free radical end products and endogenous antioxidants								
Course Content	Free radicals, lipid peroxidation, protein oxidation, antioxidant vitamins, effective antioxidant proteins and other effective antioxidant compounds, determination of antioxidant capacity, determination of reduced and oxidized glutathione, determination of malondialdehyde, determination of antioxidant vitamins								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation)								
Name of Lecturer(s)									

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Final Examination	1	100

Recommended or Required Reading	
1	Free radical and antioxidant protocols/
2	Free Radical Biology & Medicine
3	Free-Radical-Induced DNA Damage and Its Repair : A Chemical Perspective (Sonntag, Clemens)

Week	Weekly Detailed Course Contents	
1	Theoretical	Definition of free radicals
	Practice	Presentation of laboratory materials
2	Theoretical	Oxygen free radicals
	Practice	Preparation of application plan
3	Theoretical	Reactive oxygen species
	Practice	Preparation of chemicals and solutions
4	Theoretical	Sources of free radicals
	Practice	MDA analysis
5	Theoretical	Endogenous sources
	Practice	GSH analysis
6	Theoretical	Exogenous sources
	Practice	SOD analysis
7	Theoretical	The effects of free radicals
	Practice	NO analysis
8	Practice	Catalase analysis
	Intermediate Exam	Midterm exam
9	Theoretical	Lipit peroksidasyonu
	Practice	Vitamine A analysis
10	Theoretical	The effects of free radicals on protein and DNA
	Practice	Beta-caroten analysis
11	Theoretical	Removal of free radicals
	Practice	Vitamine E analysis
12	Theoretical	Antioxidant defence mechanisms
	Practice	Vitamine C analysis
13	Theoretical	Enzymatic antioxidants
	Practice	Bilirubin analysis
14	Theoretical	Nonenzymatic antioxidants
	Practice	GST analysis

15	Theoretical	The effects of free radicals in diseases
	Practice	Evaluation of results
16	Final Exam	Final exam

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	15	1	2	45
Lecture - Practice	15	1	2	45
Assignment	2	2	0.5	5
Term Project	1	11	1	12
Quiz	2	2	0.5	5
Midterm Examination	1	6	1	7
Final Examination	1	10	1	11
			Total Workload (Hours)	130
			[Total Workload (Hours) / 25*] = **ECTS**	5
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	To learn lipid peroxidation, oxidation of proteins and carbonhydrates
2	2. To learn endogenous and exogenous antioxidants
3	Perform routine analysis of lipid peroxidation and antioxidant analysis
4	To learn the sources of free radicals
5	To learn the effects of free radicals on protein and DNA

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	5		5	5
P4			5		
P5			5		
P8	5	5		5	5
P10			5		
P12	5	5		5	5