AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Biochemistry of Free Radicals								
Course Code	BYK530		Couse Level	Second Cycle (Master's Degree)					
ECTS Credit	5	Workload	125 *(Hours)*	Theory	2	Practice	2	Laboratory	0
Objectives of the Course	The aim of this course is to give the students the understanding of free radical types and radicalic reactions in biological systems, to give the students an understanding of oxidative damage which is one of the most emphasized subjects of science by giving basic information about free radicals								
Course Content	Definition of free radicals, oxygen radicals and oxygen-derived free radicals, types of free radicals, protection systems against oxidants in biological systems, superoxide theory, peroxidation of lipids								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Experiment, Demonstration, 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	Oxidative stress: oxidants and antioxidants Helmunt Sies
2	Cellular antioxidant defense mechanisms Ching Kuang Chow

Week	Weekly Detailed Course Contents	
1	Theoretical	Free Radicals
2	Theoretical	Types of free radicals; reactive oxygen species and reactive nitrogen species
3	Theoretical	Superoxide radical, hydroxyl radical (fenton reaction) and ozone
4	Theoretical	Peroxyl and alkoxyl radical, nitric oxide radical and sulfur radical
5	Theoretical	Free radical formation and endogen-exogenous effects
6	Theoretical	Mechanisms of action of free radicals I
7	Theoretical	Mechanisms of action of free radicals II
8	Intermediate Exam	Quiz
9	Theoretical	Effects of free radicals on biomolecules such as carbohydrate, lipid, protein and DNA
10	Theoretical	Effects of free radicals on biomolecules such as carbohydrate, lipid, protein and DNA
11	Theoretical	Measurements of free radicals
	Practice	Measurements of free radicals
12	Practice	Measurements of free radicals
13	Practice	Measurements of free radicals
14	Practice	Measurements of free radicals
15	Theoretical	Oxidative Stress and Antioxidant Defense
16	Final Exam	Final exam

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	10	1	3	40
Lecture - Practice	4	1	3	16
Assignment	11	1	3	44
Individual Work	5	1	4	25
			Total Workload (Hours)	125
			[Total Workload (Hours) / 25*] = **ECTS**	5

**25 hour workload is accepted as 1 ECTS*

Learning Outcomes	
1	Understanding the effects of free radicals on biomolecules such as carbohydrates, lipids, proteins and DNA
2	Literature review and interpretation of free radicals
3	Serbest radikal türlerini öğrenebilme
4	To be able to understand and use conventional biochemical techniques used in the determination of free radicals
5	To understand the mechanisms of action of free radicals
6	To understand the difference between oxidative stress and antioxidant defense

Programme Outcomes *(Biochemistry (Medical) Master)*	
1	To have basic theoretical knowledge about biochemistry and to help understanding biochemistry
2	To have the basic laboratory knowledge, apparatus and methods used in biochemistry
3	Analysis: To be able to analyze information critically
4	Synthesis: To be able to synthesize and adapt the knowledge in the field from different directions
5	Evaluation: To critically evaluate research in the field

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

	L1	L2	L3	L4	L5	L6
P1	5	4	5	5	4	5
P2	4	5	4	5	5	4
P3	5	4	5	5	4	4
P4	4	4	4	4	4	5
P5	5	5	5	5	5	5