OXIDATIVE SYSTEM AND ANTIOXIDANTS

1	Course Title:	OXIDATIVE SYSTEM AND ANTIOXIDANTS	
2	Course Code:	TBK 6005	
3	Type of Course:	Optional	
4	Level of Course:	Third Cycle	
5	Year of Study:	1	
6	Semester:	1	
7	ECTS Credits Allocated:	5.00	
8	Theoretical (hour/week):	1.00	
9	Practice (hour/week):	2.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:	No	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. ZEHRA SERDAR	
15	Course Lecturers:	-	
16	Contact information of the Course Coordinator:	zserdar@uludag.edu.tr 2953914 Uludağ Üniversitesi Tıp Fakültesi, Temel Tıp Bilimleri Binası, Tıbbi Biyokimya Anabilim Dalı, 16059	
17	Website:		
18	Objective of the Course:	a) To teach the structures, physical and chemical characteristics, metabolites, endogen and exogen sources of the free radicals, and cellular damages such as lipid peroxidation, protein and carbohydrate oxidation and DNA damage and, their roles at the development of the diseases. b) To teach the structures and functions of the intracellular antioxidants, membrane antioxidants and extracellular antioxidants and, their roles at the development of the diseases.	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	To explain the basic concepts related to free radicals
		2	To explain the basic concepts related to antioxidants
		3	To explain the roles of free radicals at the development of the several diseases
		4	To explain the roles of antioxidants at the development of the several diseases
		5	To acquire with the basic information that can be helpful in the evaluation and interpretation of some clinical cases.
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21	Course Content:		

	Course Content:	
Week	Theoretical	Practice
1	Description of the free radicals	Introduction of spectrophotometer
2	Metabolites and chemical structures	Measurement of MDA at spectrophotometer
3	Reactivite and half-life	Measurement of conjuge dien at spectrophotometer
4	Endogen sources	Introduction of HPLC
5	Exogen sources	Measurement of MDA at HPLC
6	Role of free radicals in cellular damage development	Measurement of protein carbonyls at spectrophotometer
7	Measurement methods of the free radicals	Measurement of carotenoids at spectrophotometer
8	Description of the antioxidants	Measurement of vitamin E at spectrophotometer
9	Intracellular antioxidants	Measurement of vitamin E at HPLC
10	Membrane antioxidants	Measurement of catalase at spectrophotometer
11	Extracellular antioxidants	Measurement of SOD at spectrophotometer
12	Non-classifiable antioxidants	Measurement of GPX at spectrophotometer
13	Measurement methods of the antioxidants	Measurement of PON at spectrophotometer

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	1.00	14.00
Practicals/Labs	14	2.00	28.00
Self study and preperation	14	7.00	98.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	0	0.00	0.00
Others	0	0.00	0.00
Final Exams	1	10.00	10.00
Total Work Load			150.00
Total work load/ 30 hr			5.00
ECTS Credit of the Course			5.00

22	Textbooks, References and/or Other

1. Kılınç K, Kılınç A. Oksijen toksisitesinin aracı molekülleri. 33(2): 110 – 118.
2. Valko M, Leibfritz D, Moncol J, Cronin MT, Mazur M, physiological functions and human disease. Int J Biochem Cell Biol 39: 44-84, 2007.
3. Ghaskadbi SS, Lele RD. Free radicals and antioxidants in human health: current status and future prospects. J
4. Laguerre M, Lecomte J, Villeneuve P. Evaluation of the ability of antioxidants to counteract lipid oxidation: Existing Research. 2007; 46: 244–282.
5. Halliwell B, Gutteridge J M C Free radicals in biology

23	Assesment

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	0	0.00
Quiz	0	0.00
Home work-project	0	0.00
Final Exam	1	100.00
Total	1	100.00
Contribution of Term (Year) Learning Activities to Success Grade		0.00
Contribution of Final Exam to Success Grade		100.00

Total	100.00
Measurement and Evaluation Techniques Used in the Course	

24	ECTS / WORK LOAD TABLE

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	2	1	0	3	2	0	0	0	0	0	0	0	0	0	0	0
ÖK2	2	1	0	3	2	0	0	0	0	0	0	0	0	0	0	0
ÖK3	2	1	0	3	2	0	0	0	0	0	0	0	0	0	0	0
ÖK4	2	1	0	3	2	0	0	0	0	0	0	0	0	0	0	0
ÖK5	2	1	0	3	2	0	0	0	0	0	0	0	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	**1 very low**		**2 low**		**3 Medium**			**4 High**			**5 Very High**					