AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Applications of Electron Spin Resonance II						
Course Code	FZK616		Couse Level	Third Cycle (Doctorate Degree)			
ECTS Credit	7	Workload	170 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	To teach electron spin resonance and applications.						
Course Content	Spin labeling methods and application in biological samples						
Work Placement							
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion, Individual Study, Problem Solving						
Name of Lecturer(s)							

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	15
Final Examination	1	60
Attending Lectures	14	10
Assignment	5	15

Recommended or Required Reading

1	Spin Labeling Theory and Applications, Lawrence J. Berliner
2	Biological magnetic resonance, Spin labeling, Lawrence J. Berliner
3	Electron Paramagnetic Resonance, B. C. Gilbert, M. J. Davies, K. A. McLauchlan

Week	Weekly Detailed Course Contents	
1	Theoretical	Electron spin resonance in biology
2	Theoretical	Spin labelling technique
3	Theoretical	The stability of the paramagnetic nitroxide group in spin labels
4	Theoretical	The synthesis of spin labels
5	Theoretical	Experimental procedures for prepation of spin labels
6	Theoretical	X-ray analysis of nitroxide crystals
7	Theoretical	ESR spectra of nitroxide crystals
8	Intermediate Exam	Midterm
9	Theoretical	The use of computers to process spin labeling data
10	Theoretical	The use of spin labels for studying the structure and function of enzymes
11	Theoretical	Anizotropic motion in liquid crystalline structures
12	Theoretical	Nitroxide spin probe investigations of liquid crystalline structures
13	Theoretical	Lipid spin labels in biological membranes
14	Theoretical	Molecular motion in biological membranes
15	Final Exam	Final Exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	4	3	98
Assignment	12	2	2	48
Midterm Examination	1	7	5	12
Final Examination	1	7	5	12
			Total Workload (Hours)	170
			[Total Workload (Hours) / 25*] = **ECTS**	7

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	To be able to learn the applications of Electron Spin Resonance in biology
2	To learn purpose of using spin labeling
3	To learn techniques of spin labeling
4	To understand the use of spin labels in biological samples
5	To apply spin labeling technique to their own experiments

Programme Outcomes *(Physics Doctorate)*

1	
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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	4	4	5	5
P2	4	4	5	5	4
P3	5	4	3	3	4
P4	4	3	3	4	3
P5	3	4	3	4	3
P6	3	3	3	4	3
P7	2	3	4	4	5
P8	4	4	3	3	4