ABDULLAH GUL UNIVERSITY
GRADUATE SCHOOL OF ENGINEERING & SCIENCE
BIOENGINEERING DEPARTMENT
COURSE DESCRIPTION AND SYLLABUS

Course Name	CODE	SEMESTER	T+L Hour	CREDIT	ECST
Biosensors	527	FALL-SPRING	3 + 0	3	10

Prerequisite Courses	None

Course Type	Elective
Course Language	English
Course Coordinator	Assoc. Prof. Dr. Sevil Dinçer İşoğlu
Lecturers	Assoc. Prof. Dr. Sevil Dinçer İşoğlu, Asst. Prof. İsmail Alper İşoğlu
Course Assistants	None
Course Objectives	Give basic information to students about how to develop biosensors
Learning Outcomes	Students, • Able to define biologic compounds used in biosensors and materials that carry these compounds • Able to apply knowledge of different types of measurement methods
Course Content	Introduction, enzymatic biosensors, immune-biosensors, Nucleic acid biosensors, cell based biosensors, electrochemical biosensors, optic biosensors; fluorescence, "Surface Plasmon Resonances", other measurement methods, immobilization of biologic compounds, properties and types of material that carry biologic compounds.

WEEKLY SUBJECTS AND RELATED PRELIMINARY PAGES

Week	Subjects	Preliminary
1	Introduction	Recommended books and scientific publications
2	Enzymatic biosensors	Recommended books and scientific publications
3	Immune-biosensors	Recommended books and scientific publications
4	Nucleic acid biosensors	Recommended books and scientific publications
5	Cell based biosensors	Recommended books and scientific publications
6	Electrochemical biosensors	Recommended books and scientific publications
7	Electrochemical biosensors	Recommended books and scientific publications
8	Optic biosensors	Recommended books and scientific publications
9	Fluorescence	Recommended books and scientific publications
10	"Surface Plasmon Resonances"	Recommended books and scientific publications
11	Other measurement methods	Recommended books and scientific publications
12	Immobilization of biologic compounds	Recommended books and scientific publications
13	Immobilization of biologic compounds	Recommended books and scientific publications
14	Properties and types of material that carry biologic compounds	Recommended books and scientific publications
15	Properties and types of material that carry biologic	Recommended books and

	compounds	scientific publications
16	Final	

RESOURCES	
Course Notes	1. J.Cooper, T.Cass, Biosensors
Other Resources	Related articles and course notes

MATERIAL SHARING	
Documents	-
Homework	Homework, presentation at the end of semester
Exams	Midterm, final

RATING SYSTEM		
SEMESTER WORKS	**NUMBER**	**CONTRIBUTION**
Midterm	1	35
Presentation	1	25
TOTAL		60
Success Rate of Semester		60
Success Rate of Final		40
TOTAL		100

Course Category	
Basic Sciences and Mathematics	50%
Engineering Sciences	50%
Social Sciences	

THE RELATIONSHIP BETWEEN THE LEARNING OUTCOMES AND PROGRAM COMPETENCE

No	Program Outcomes	Contribution Level				
		1	2	3	4	5
1	Understanding of Life Sciences, Mathematics and Engineering at the post-graduate level, and being able to implement of this knowledge into bioengineering problems				x	
2	Having the ability of developing a new scientific method or a technological product or process, and, designing experiments, implementing, collecting data and evaluating regarding these issues				x	
3	Choosing technical equipment used in the applications related to bioengineering, having sufficient knowledge in adopting and using new technological equipment				x	
4	Having the ability of reaching the information, using resources, contributing to the literature by transferring the process and results of scientific studies as written or verbally in the national and international environments				x	
5	Having the ability of working as an individual or a team, in the teams composed of discipline or different disciplines, gaining awareness of leadership and taking responsibility				x	
6	Having advanced level of foreign language knowledge to manage efficient verbal, written and visual communication in the major field					x
7	Having the understanding of ethics in science and the responsibility in profession with the awareness of lifelong learning, being beneficial to society and sensitiveness to global issues			x		
8	Being aware of the social impacts of the solutions and applications of the challenges regarding Bioengineering			x		

*From 1 to 5, it increasingly goes.

ECTS / WORK-LOAD TABLE

Activities	Activities	Duration (Hour)	Total (Work-Load)
Course Duration (Including exam week: 16x total course hour)	16	3	48
Out of Class Exercise Time (Pre-study, reinforcement)	16	7	112
Searching on Internet, library study	16	3	48

Presentation	5	3	15
Homework	16	3	48
Midterms	1	15	15
Final	1	15	15
Total Work-Load			301
Total Work-Load / 30			301/30
Course ECTS Credit			10