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

Course Name	CODE	SEMESTER	T+L Hour	CREDIT	ECST
Introduction to Tissue Engineering	BENG515	FALL-SPRING	3 + 0	3	10

Prerequisite Courses	

Course Type	Optional
Course Language	English
Course Coordinator	Y.Doç.Dr. Alper İşoğlu
Lecturers	Y.Doç.Dr. Alper İşoğlu
Course Assistants	
Course Objectives	Tissue engineering and explaining important components
Learning Outcomes	Student • gets to know tissue engineering and its components better • learns scaffold selection criteria • recognizes tissue engineering products that have arrived at the clinical stage • learns how to design a tissue scaffold for a specific region
Course Content	Definition of tissue engineering; Relationship of cell-scaffold-biosignal molecules; Scaffold properties; Cell selection and stem cell; In vitro culture; Products which are obtained by tissue engineering on the clinical phase or preclinical; Organ tissue engineering

WEEKLY SUBJECTS AND RELATED PRELIMINARY PAGES

Week	Subjects	Preliminary
1	Tissue engineering definition and bases	Course book and articles from the literature
2	Tissue engineering basic components: cell-scaffold-biosignal molecules	Course book and articles from the literature
3	Tissue engineering basic components: cell-scaffold-biosignal molecules	Course book and articles from the literature
4	Tissue engineering properties, material selection	Course book and articles from the literature
5	Tissue engineering properties, material selection	Course book and articles from the literature
6	Cell selection according to targeted region	Course book and articles from the literature
7	In vitro cell culture	Course book and articles from the literature
8	Bone and cartilage tissue engineering	Course book and articles from the literature
9	Vascular tissue engineering	Course book and articles from the literature
10	Midterm exam	Course book and articles from the literature
11	Neural tissue Engining	Course book and articles from the literature
12	Skin tissue engineering	Course book and articles from the literature
13	Organ tissue engineering	Course book and articles from the literature
14	Products which are obtained by tissue engineering on the clinical phase or preclinical	Course book and articles from the literature
15	Products which are obtained by tissue engineering on the clinical phase or preclinical	Course book and articles from the literature

16	Final exam	Course book and articles from the literature

RESOURCES	
Course Notes	Course notes and slides
Other Resources	**Ders Kitabı:** "Principles of Tissue Engineering", Lanza, Langer, Vacanti, 1st Edition, 2014, Taylor&Francis.

MATERYAL PAYLAŞIMI	
Dökümanlar	Bu derse ait ders notları, slaytlar
Homework	1 homework will be given related to subject every week.
Exams	1 midterm exam and 1 final exam

RATING SYSTEM		
SEMESTER WORKS	**NUMBER**	**CONTRIBUTION**
Midterm	1	20
Homework	14	25
Quiz	14	25
TOTAL		70
Success Rate of Semester		70
Success Rate of Final	1	30
TOTAL		100

Course Catagory	
Basic Sciences and Mathematics	%50
Engineering Sciences	%50
Social Sciences	%0

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	Etkinlikler	Süresi (Saat)	Toplam İş Yükü)
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
Presentations	5	3	15
Homework	16	3	48
Midterm exam	1	15	15
Final exam	1	15	15
Total Work-Load			301
Total Work-Load / 30			301/30
Course ECTS Credit			10