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

Course Name	CODE	SEMESTER	T+L Hour	CREDIT	ECST
Cancer Biology and Treatment	BENG514	FALL-SPRING	3 + 0	3	7,5

Prerequisite Courses	-

Course Type	Elective
Course Language	English
Course Coordinator	Assist. Prof. AYSUN ADAN
Lecturers	DR. AYSUN ADAN, DR. MONA EL KHATIB
Course Assistants	-
Course Objectives	The details of basic princibles of cancer development at the level of molecular and cell biology and how these basic concepts applied to cancer diagnosis and treatment will be covered. Current literature knowledge in this field will be discussed.
Learning Outcomes	1. Differences between normal and cancer cells 2. Factors causing cancer 3. Mechanisms involved in cancer development 4. Molecular approaches used in cancer treatment 5. Searching scientific databases and sources, project writing and presentation skills for students
Course Content	Carcinogenesis, cell cycle and regulation, oncogenes, tumor suppressor genes, angiogenesis, metastasis and invasion, interactions between tumor and its environment, cancer treatment strategies

WEEKLY SUBJECTS AND RELATED PRELIMINARY PAGES

Week	Subjects	Preliminary
1	Introduction to cancer: properties of cancer cells and general definitions	Scientific Articles
2	Carcinogenesis	Scientific Articles
3	Tumor suppressor genes and oncogenes	Scientific Articles
4	Cell cycle and cancer	Scientific Articles
5	Cell death mechanisms I	Scientific Articles
6	Cell death mechanisms II	Scientific Articles
7	Multi Drug resistance in cancer	Scientific Articles
8	Invasion and Metastasis	Scientific Articles
9	Presentation I	Scientific Articles
10	Angiogenesis	Scientific Articles
11	Epigenetics in cancer	Scientific Articles
12	Tumor microenvironment	Scientific Articles
13	Cancer stem cell	Scientific Articles
14	Cancer treatmen approaches	Scientific Articles
15	Presentation II	Scientific Articles
16	FINAL EXAM	Scientific Articles

RESOURCES

Course Notes	Weinberg, RA. *The Biology of Cancer*. Garland Science, Taylor & Francis Group, LLC, New York, NY, USA Alberts, B. *Molecular Biology of the Cell.* Garland Science, Taylor & Francis Group, LLC, New York, NY, USA

Other Resources	Current Scientific review and research articles

MATERIAL SHARING	
Documents	Lecture notes will be shared
Homework	Two scientific research article will be presented by student till the end of semester
Exams	Final Exam

RATING SYSTEM		
SEMESTER WORKS	**NUMBER**	**CONTRIBUTION**
Presentation (Midterm)	2	40
Final	1	60
TOTAL		100
Success Rate of Semester		40
Success Rate of Final		60
TOTAL		100

Course Category	
Basic Sciences and Mathematics	X
Engineering Sciences	
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
Reading			
Searching on Internet, library study	16	5	90
Material Designing, practice			
Preparation of report			
Preparation of presentation	2	10	20
Presentation	2	3	6
Homework			
Midterms			
Final	1	24	24
Total Work-Load			300
Total Work-Load / 30			300/30
Course ECTS Credit			7,5