

**ABDULLAH GUL UNIVERSITY
INSTITUTE OF SCIENCE AND TECHNOLOGY
BIOENGINEERING DEPARTMENT
INFORMATION OF COURSE INTRODUCTION AND PRACTICE**

Course Name	CODE	SEMESTER	I+P Hour	CREDIT	AKTS
Stem Cell	BENG 537	Spring-Fall	3 + 0	3	10

Prerequisite Courses	none
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Course Type	Major
Course Language	English
Course Coordinator	Mona El Khatib
Lecturers	Dr. Mona El Khatib
Course Assistants	
Purpose of Course	This course will introduce a broad range of topics related to stem cell biology. It will present stem cells in relation to many aspects of basic and applied biology and medicine including development, regeneration/repair, and cancer. The course will cover the following concepts and themes: pluripotency and reprogramming, pluripotent cell types, organ systems, stem cells and cancer, therapeutics and ethics.
Learning Outcome	<ol style="list-style-type: none"> 1- Become familiar with Stem cell biology 2- Ability to integrate biological information and engineering principles 3- Creating practical applications of stem cells in biomedicine 4- Give students both a broad background and the opportunity to apply critical thinking skills to recent data in the field.
Course Content	Introduction to sem cells, Germline stem cells and germline-derived pluripotent stem cells, Embryonic Stem Cells, Induced pluripotent stem cells & direct differentiation, Chromatin in stem cell biology, Hematopoietic Stem cells, Mesenchymal SCs, Cardiac Stem cells, Intestinal and skin stem cells, Regeneration, Cancer Stem cells, Stem cell markers, Stem Cell therapy, Stem cell research, Ethical issues associated with stem cell biology

WEEKLY SUBJECTS AND RELATED PRELIMINARY PAGES

Week	Subjects	Preliminary
1	Introduction to concepts in stem cell biology	-
2	Germline stem cells and germline-derived pluripotent cells	-
3	Embryonic Stem cells	-
4	Induced pluripotent stem cells & direct differentiation	-
5	Chromatin in stem cell biology	-
6	Hematopoietic Stem cells	-
7	Mesenchymal SCs	-
8	Cardiac Stem Cells	-
9	Intestinal and skin stem cells	-
10	Regeneration	-
11	Cancer stem cells	-
12	Stem cell markers	-
13	Stem cell therapy	-
14	Stem cell research	-
15	Ethical issues associated with stem cell biology	-
16	FINAL	-

RESOURCES

Course Notes	notes and slides
Other Resources	-

MATERIAL SHARING

Documents	Lecture notes
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Homework	-
Exams	One Midterm and one final

RATING SYSTEM		
SEMESTER WORKS	NUMBER	CONTRIBUTION
Midterm	1	50%
Quiz	-	-
Homework	-	-
Final	1	50%
TOTAL	2	100%
Success Rate of Semester		50
Success Rate of Final		50
TOTAL		100

Course Category	
Basic Sciences and Mathematics	X
Engineering Sciences	
Social Sciences	

THE RELATIONSHIP BETWEEN THE LEARNING OUTCOMES AND PROGRAM COMPETENCE						
		Impurity Level				
		1	2	3	4	5
No Program Competence						
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	Activites	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)			
Reading	16	3	48
Scanning on Internet, library study	16	3	48
Material Designing, practice	16	3	48
Preparation of report	15	2	30
Preparation of presentation			
Presentation	10	3	30
Homework			
Midterms	1	15	15
Final	1	15	15
Total Work-Load			297
Total Work-Load / 30			297/30

Course ECTS Credit			10
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