AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Regenerative Tissue Engineering								
Course Code	BYK625		Couse Level		Third Cycle (Doctorate Degree)				
ECTS Credit	3	Workload	75 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	To teach the basic concepts of cell and tissue engineering, especially by emphasizing the interaction of cells with each other and their environment.								
Course Content	The concept of tissue engineering, biomaterials and propertiesi, the importance of different structural skeletons in tissue engineering, regenerative medicine and application areas of regenerative medicine, the use of stem cells in regeneration of bone and cartilage tissues, bone and cartilage cell production in artificial tissue enviroments and comparison to other methods of cell culture (eg, a single layer, pellets, 3D culture method, etc.).								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion								
Name of Lecturer(s)									

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

Recommended or Required Reading	
1	Fundamentals of Tissue Engineering and Regenerative Medicine: Ulrich Meyer,Jörg Handschel,Hans Peter Wiesmann
2	Tissue Engineering in Regenerative Medicine: Harold S. Bernstein

Week	Weekly Detailed Course Contents	
1	Theoretical	Brief history and current position of tissue engineering course
2	Theoretical	Introduction to basic cell and tissue biology and concepts
3	Theoretical	Examples of tissue engineering from nature: Embryogenesis and development
4	Theoretical	Embryonic and adult stem cells
5	Theoretical	Remodeling and wound healing
6	Theoretical	Tissue regeneration
7	Theoretical	Tissue scaffolding, material selection, production and properties
8	Intermediate Exam	Regenerative Tissue Engineering Midterm Exam
9	Theoretical	Factors controlling cell and tissue growth and differentiation; Growth factors, Extracellular matrix
10	Theoretical	Intercellular interaction; Receptor / ligand interactions Cell-biomaterial interactions
11	Theoretical	Cellular mechanics
12	Theoretical	Gene expression in cells
13	Theoretical	Bioreactor design and advanced devices
14	Theoretical	Tissue engineering applications: - Bone, cartilage, vascular grafts - Heart, liver, nerve regeneration
15	Theoretical	Biological, physical and chemical limitations of tissue engineering systems
16	Final Exam	Regenerative Tissue Engineering Final Exam

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	1	2	42
Midterm Examination	1	14	2	16
Final Examination	1	15	2	17
			Total Workload (Hours)	75
			[Total Workload (Hours) / 25*] = **ECTS**	3
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	To teach basic definitions and concepts in cell and tissue engineering, stem cell, biodegradable scaffold and cell-biomaterial interactions
2	Examination of the basic components of tissue engineering, selection, production and evaluation methods of these components and their potential clinical applications
3	To gain the ability of researching, analyzing, comparing and criticizing the existing methods and proposing alternative solutions.
4	To be able to distinguish the interdisciplinary characteristics of clinical and research methods and examination of successful working examples between medical doctors, basic scientists and engineers
5	Discussion of ethical values ??in tissue engineering with examples

Programme Outcomes *(Biochemistry (Medical) Doctorate)*	
1	To have basic theoretical knowledge about biochemistry and to help understanding biochemistry
2	To have the basic laboratory knowledge, apparatus and methods used in biochemistry
3	Analysis: To be able to analyze information critically
4	Synthesis: To be able to synthesize and adapt the knowledge in the field from different directions
5	Evaluation: To critically evaluate research in the field

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	5	5	5	5
P2	4	5	5	4	5
P3	5	4	5	5	4
P4	4	4	4	4	5
P5	5	5	5	5	4