

School of Engineering and Natural Sciences / Computer Engineering (English)

2022 - 2023 Academic Year

MEDICAL BIOLOGY

Syllabus

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
MEDICAL BIOLOGY	COE1210781	Spring Semester	3+0	3	4
Prerequisites Courses					
Recommended Elective Courses					
Language of Instruction	English				
Course Level	First Cycle (Bachelor's Degree)				
Course Type	Elective				
Course Coordinator	Assoc.Prof. Özge ŞENSOY				
Name of Lecturer(s)	Assoc.Prof. Özge ŞENSOY, Res.Assist. Birgün ASLAN				
Assistant(s)					
Aim	It is aimed to convey molecular-level knowledge pertaining to mechanism of cellular processes to 2 nd year biomedical engineering students in this course. Moreover, any types of experiment related to biology in the field of biomedical engineering will also be practiced. Finally, by means of knowledge gathered in this course students will be able to understand easier the problems (hot topics) related to cellular biology.				
Course Content	This course contains; Chemical Components of the cell, Proteins, DNA and chromosomes ,DNA replication, repair and recombination ,Protein Synthesis ,Manipulating Proteins, DNA and RNA + Visualizing Cells,Membrane Structure and Transport ,Intracellular Compartments and Intracellular Vesicular Trafficking ,Cell Communication ,Cytoskeleton,Cell Cycle and Programmed Cell Death + mechanics of cell division ,Cell Junctions/ extracellular matrix ,Development of Multicellular Organisms ,Histology ,Cancer ,The Adaptive Immune System.				
Course Learning Outcomes			Teaching Methods	Assessment Methods	
1) Equipped with the basic concepts of cellular biology and so easily understand the related problems in the field.			10, 13, 14, 17, 2, 21, 3, 8	A, D, E	
2) Capable of testing concepts related to cellular biology by means of experiments.			12, 13, 14, 15, 17, 2, 3, 8	E	
3) Capable of analyzing some cellular biology related hot topics			10, 12, 15, 17, 3, 9		
4) Capable of analyzing, organizing, discussing results of experiments and expressing them by his/her own.			1, 10, 13, 14, 17, 3	D, E	
Teaching Methods	1: Lecture, 10: Brainstorming, 12: Case study, 13: Experiment / Laboratory, 14: Self-Study, 15: Problem solving, 17: Reflective Thinking, 2: Question - Answer, 21: -, 3: Discussion, 8: Teamwork, 9: Simulation				
Assessment Methods	A: Written Exam, D: Project / Design, E: Quiz				
Lecture Schedule					
Sequence	Topics	Preliminary Preparation			
1	Chemical Components of the cell, Proteins, DNA and chromosomes				
2	DNA replication, repair and recombination				
3	Protein Synthesis				
4	Manipulating Proteins, DNA and RNA + Visualizing Cells				
5	Membrane Structure and Transport				
6	Intracellular Compartments and Intracellular Vesicular Trafficking				
7	Cell Communication				
8	Cytoskeleton				
9	Cell Cycle and Programmed Cell Death + mechanics of cell division				
10	Cell Junctions/ extracellular matrix				
11	Development of Multicellular Organisms				
12	Histology				
13	Cancer				
14	The Adaptive Immune System				
Evaluation Methods		Weight(%)			
Midterm Exam		30			
General Exam		70			

Resources
Molecular Biology of the Cell, 5 th Edition, Alberts, Johnson, Lewis, Raff, Roberts, Walter Sunum, hands-on1) Molecular Biology of the Cell, 5 th Edition, Alberts, Johnson, Lewis, Raff, Roberts, Walter
2) Essential Cell Biology, 3 rd Edition, Alberts, Bray, Hopkin, Johnson, Johnson, Lewis, Raff, Roberts