School of Engineering and Natural Sciences / Electrical and Electronics Engineering (English)

2024 - 2025 Academic Year

MEDICAL BIOLOGY

Syllabus

Course Description					
Name	**Code**	**Semester**	**T+A Hour**	**Credit**	**ECTS**
MEDICAL BIOLOGY	EEE1110781	Fall 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 ÖZÇOLAK ASLAN, Res.Assist. Semih MACİT
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.
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,Mechanics of cell division ,Cell Junctions/ extracellular matrix ,Development of Multicellular Organisms ,Histology ,Immune System -I,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, 14, 16, 17, 19, 20, 37, 5	A, F, G
2) Capable of testing concepts related to cellular biology by means of experiments.	10, 12, 13, 14, 16, 17, 20, 5	G
3) Capable of analyzing some cellular biology related hot topics	10, 12, 13, 19, 20, 21	
4) Capable of analyzing, organizing, discussing results of experiments and expressing them by his/her own.	10, 14, 17, 19, 20, 9	F, G
5) The etiology of the disease is understood and an alternative solutions are provided to solve.	10, 12, 13, 14, 16, 19, 3	

Teaching Methods	10: Discussion Method, 12: Problem Solving Method, 13: Case Study Method, 14: Self Study Method, 16: Question - Answer Technique, 17: Experimental Technique, 19: Brainstorming Technique, 20: Reverse Brainstorming Technique, 21: Simulation Technique, 3: Problem Baded Learning Model, 37: Computer-Internet Supported Instruction, 5: Cooperative Learning, 9: Lecture Method
Assessment Methods	A: Traditional Written Exam, F: Project Task, G: 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	Mechanics of cell division	
10	Cell Junctions/ extracellular matrix	
11	Development of Multicellular Organisms	
12	Histology	
13	Immune System -I	
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