

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

**2023 - 2024 Academic Year**

**MEDICAL BIOLOGY**

**Syllabus**

<b>Course Description</b>					
<b>Name</b>	<b>Code</b>	<b>Semester</b>	<b>T+A Hour</b>	<b>Credit</b>	<b>ECTS</b>
MEDICAL BIOLOGY	COE1210781	Spring Semester	3+0	3	4
<b>Prerequisites Courses</b>					
<b>Recommended Elective Courses</b>					
<b>Language of Instruction</b>	English				
<b>Course Level</b>	First Cycle (Bachelor's Degree)				
<b>Course Type</b>	Elective				
<b>Course Coordinator</b>	Assoc.Prof. Özge ŞENSOY				
<b>Name of Lecturer(s)</b>	Assoc.Prof. Özge ŞENSOY, Res.Assist. Semih MACİT, Res.Assist. Birgün ASLAN				
<b>Assistant(s)</b>					
<b>Aim</b>	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.				
<b>Course Content</b>	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.				
<b>Course Learning Outcomes</b>			<b>Teaching Methods</b>	<b>Assessment Methods</b>	
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		
<b>Teaching Methods</b>	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				
<b>Assessment Methods</b>	A: Traditional Written Exam, F: Project Task, G: Quiz				
<b>Lecture Schedule</b>					
<b>Sequenc e</b>	<b>Topics</b>	<b>Preliminary Preparation</b>			
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				
<b>Evaluation Methods</b>		<b>Weight(%)</b>			
Midterm Exam		30			
General Exam		70			

<b>Resources</b>
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