

School of Health Sciences / Nursing
2023 - 2024 Academic Year
MEDICAL BIOLOGY and GENETICS
Syllabus

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
MEDICAL BIOLOGY and GENETICS	HEM1182330	Fall Semester	3+0	3	4
Prerequisites Courses					
Recommended Elective Courses					
Language of Instruction	Turkish				
Course Level	First Cycle (Bachelor's Degree)				
Course Type	Required				
Course Coordinator	Prof.Dr. Esra ÇAĞAVI				
Name of Lecturer(s)	Assist.Prof. Neşe AYŞIT				
Assistant(s)	Res. Asst. Furkan Büyükkal				
Aim	To examine the general concepts about the general structure and functions of the cell and hereditary material and to inform about genetic mechanisms. To examine the concepts of medical biology and genetics and the mechanisms of cellular functioning.				
Course Content	This course contains; Introduction to Medical Biology and cell examination methods,Cell organization, cell membrane and properties,Cell organelles, cytoskeleton and cellular connections,Transport and stimulus transmission across the cell membrane,Cellular energy and metabolism,Genetic material, nucleic acids: DNA – RNA and replication,Transcription and translation,Cell cycle and cell division,Chromosomal structure and number anomalies,DNA damage and repair mechanisms,Cell senescence, apoptosis and cancer,Mendelian genetics and inheritance patterns,Stem cell biology and treatments,Human genome project.				
Course Learning Outcomes			Teaching Methods	Assessment Methods	
Explains the scope of medical biology, cellular characteristics, different cell types, and cell analysis methods.			10, 16, 9	A	
Defines the macromolecules in the cell and classifies them according to their properties.			10, 16, 9	A	
Explains the structure and function of the cytoskeleton. Explains the cell organelles and their role in the survival of the cell.			10, 16, 9	A	
Defines and differentiates the transport mechanisms through the cell membrane.			10, 16, 9	A	
Defines DNA replication.			10, 16, 9	A	
Defines the transcription and translation of genes, establishes the relationship with protein synthesis.			10, 16, 9	A	
Explains DNA damage and causative factors. Classifies and explains the repair mechanisms. He establishes a relationship with Aziz Sançar's work. Defines chromosomal anomaly and mutation, establishes the relationship with genetic diseases.			10, 16, 9	A	
Explains the purposes of techniques used in molecular biology			10, 16, 9	A	
Describes the cell cycle, division and phases.			10, 16, 9	A	
Explain cell aging and its causes. Defines cell death and cancerization			10, 16, 9	A	
Describes the basic properties of stem cells and explains the relationship between other cell types			10, 16, 9	A	
Defines the basic concepts of inheritance			10, 16, 9	A	
Explains the relationship between Mendelian Genetics and genetic diseases			10, 16, 9	A	
Teaching Methods	10: Discussion Method, 16: Question - Answer Technique, 9: Lecture Method				
Assessment Methods	A: Traditional Written Exam				
Lecture Schedule					
Sequenc e	Topics	Preliminary Preparation			
1	Introduction to Medical Biology and cell examination methods	Preparing for the relevant subject from the first source			
2	Cell organization, cell membrane and properties	Preparing for the relevant subject from the first source			
3	Cell organelles, cytoskeleton and cellular connections	Preparing for the relevant subject from the first source			
4	Transport and stimulus transmission across the cell membrane	Preparing for the relevant subject from the first source			
5	Cellular energy and metabolism	Preparing for the relevant subject from the first source			
6	Genetic material, nucleic acids: DNA – RNA and replication	Preparing for the relevant subject from the first source			
7	Transcription and translation	Preparing for the relevant subject from the first source			
8	Cell cycle and cell division	Preparing for the relevant subject from the first source			
9	Chromosomal structure and number anomalies	Preparing for the relevant subject from the first source			
10	DNA damage and repair mechanisms	Preparing for the relevant subject from the first source			
11	Cell senescence, apoptosis and cancer	Preparing for the relevant subject from the first source			
12	Mendelian genetics and inheritance patterns	Preparing for the relevant subject from the first source			
13	Stem cell biology and treatments	Preparing for the relevant subject from the first source			
14	Human genome project				
Evaluation Methods		Weight(%)			
Midterm Exam		40			
General Exam		60			

Resources	
1.	Kasap H, Kasap M, Demirhan O, Alptekin D, Lüleyap Ü, Pazarbaşı A, Güzel İ. Kasap, H. (Ed.).(2017) Tıbbi Biyoloji ve Genetik. Akademisyen Tıp Kitabevi. İstanbul.
2.	Chandar N, Viselli S (2012). Lippincott's Illustrated Reviews serisinden: Hücre ve Moleküler Biyoloji, Nobel Tıp Kitabevleri, İstanbul.