

**International School of Medicine / Medicine (English)**

**2023 - 2024 Academic Year**

**Cellular Organization**

**Syllabus**

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
Cellular Organization	03. Committee	Fall Semester	66+12	0	6
<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>	Committee				
<b>Course Coordinator</b>					
<b>Name of Lecturer(s)</b>					
<b>Assistant(s)</b>					
<b>Aim</b>	The aim of this committee is to provide basic concepts and information on the subject by examining the anatomy of human and microbial cells, the effects of microorganisms on human health, the structure and functioning of macromolecules in cells and biochemical metabolic pathways related to the energy cycle in the cell in accordance with the main theme of "Cell Structure"; to provide an understanding of the psychological and neurological mechanisms underlying human behavior.				
<b>Course Content</b>	This course contains; Basics of molecular biology and genetics for cellular functions, The functions of macromolecules, mechanisms of DNA damage and cell death, cell membrane and transport system, Lipids, oxidation of fatty acids, ketogenesis, lipoproteins, steroids, sphingolipids, lipogenesis, oxidative phosphorylation, fatty acids, antioxidants, bioenergy, carbohydrate metabolism, production of energy, function of DNA, intracellular signal production, enzymes, hormones, vitamins, inorganic molecules, The effect of microbiota on the human biology, classification, structure and genetic features of microorganisms, microbial genome, resistance mechanisms, Lab methods to diagnose microorganisms, Types of microscopes, visualization of cellular structures using light microscope. Review of several tissues including muscle tissue, oocytes, connective tissue, fertilization, neurogenesis, bilaminar and three laminar embryonic disc, embryonic folding, Sensation, perception and attention, Memory, learning and representation of information. Stimuli, instincts, sleep, dream and imagination, sensorial development. Effects of genetics and environment on behavioral development. Psychosocial and psychosexual development, defense mechanisms, personality types. Behavioral disorders and psychological disease. Understanding physiological status of a patient. Patient and physician relations. Basic communication techniques. How to inform the patient with deadly disease "breaking the bad news", grievance.				
<b>Course Learning Outcomes</b>			<b>Teaching Methods</b>	<b>Assessment Methods</b>	
Learn anatomical structure of eukaryotic and prokaryotic (both human and microbial) cells Develop understanding how eukaryotic and prokaryotic microbial cells and viruses can impact human health Learn macro-molecular structures and functions in human cells (e.g. DNA damage and apoptosis; cell death); cellular interactions with its environment. Learn biochemical structures of macro-molecules (Cont'd) and bioenergy pathways and cycles Learn how to use light microscope; histological examination of human tissues and cells; cellular mechanisms of human reproduction and organogenesis Understand human senses, perception, attention, and urges; cognitive developmental theories; social impact on behavioral development; patient – physician interrelationships			16, 17, 9	A, D	
<b>Teaching Methods</b>	16: Question - Answer Technique, 17: Experimental Technique, 9: Lecture Method				
<b>Assessment Methods</b>	A: Traditional Written Exam, D: Oral Exam				
<b>Lecture Schedule</b>					
<b>Sequence</b>	<b>Topics</b>	<b>Preliminary Preparation</b>			
1	Basics of molecular biology and genetics for cellular functions, The functions of macromolecules, mechanisms of DNA damage and cell death, cell membrane and transport system,				
2	Lipids, oxidation of fatty acids, ketogenesis, lipoproteins, steroids, sphingolipids, lipogenesis, oxidative phosphorylation, fatty acids, antioxidants, bioenergy, carbohydrate metabolism, production of energy, function of DNA, intracellular signal production, enzymes, hormones, vitamins, inorganic molecules				
3	The effect of microbiota on the human biology, classification, structure and genetic features of microorganisms, microbial genome, resistance mechanisms, Lab methods to diagnose microorganisms				
4	Types of microscopes, visualization of cellular structures using light microscope. Review of several tissues including muscle tissue, oocytes, connective tissue, fertilization, neurogenesis, bilaminar and three laminar embryonic disc, embryonic folding				
5	Sensation, perception and attention, Memory, learning and representation of information. Stimuli, instincts, sleep, dream and imagination, sensorial development. Effects of genetics and environment on behavioral development. Psychosocial and psychosexual development, defense mechanisms, personality types. Behavioral disorders and psychological disease. Understanding physiological status of a patient. Patient and physician relations. Basic communication techniques. How to inform the patient with deadly disease "breaking the bad news", grievance				
<b>Evaluation Methods</b>		<b>Weight(%)</b>			
Midterm Exam		60			
General Exam		40			

Resources
1. Biochemistry (Lippincott Illustrated Reviews Series)
2. Microbiology: An Introduction (Gerard J. Tortora et al., 13th Edition & Class notes)
3. Medical Biology & Genetics (Essential Cell Biology, Bruce Alberts et al., 4th Ed.)
4. Histology (Junqueira's Basic Histology Text & Atlas - Anthony & Albert's Essential Cell Biology)
5. Behavioral Science (Class notes)