

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

**2023 - 2024 Academic Year**

**PHYSIOLOGY**

**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>
PHYSIOLOGY	ISM2015432	Yearly	126+24	0	11
<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 Course				
<b>Course Coordinator</b>	Prof.Dr. Gürkan ÖZTÜRK				
<b>Name of Lecturer(s)</b>	Prof.Dr. Gürkan ÖZTÜRK, Assoc.Prof. Sundus TARIQ				
<b>Assistant(s)</b>					
<b>Aim</b>	To evaluate how the human body works as a whole and with all functional elements - from molecules to cells, organs and systems.				
<b>Course Content</b>	This course contains; Musculoskeletal system physiology, Blood and circulatory system physiology., Respiratory and gastrointestinal system physiology.,Nervous system physiology.,Endocrine, urogenital and renal physiology..				
<b>Course Learning Outcomes</b>			<b>Teaching Methods</b>	<b>Assessment Methods</b>	
Explain functional organisation of the nervous system			10, 16, 9	C	
Describe synapses, neurotransmitters and neuromodulators			10, 16, 9	C	
Explain how the central nervous system regulates autonomic function.			10, 16, 9	C	
Explain how the brain interprets the electrical signals it receives in terms of modality, location, intensity and duration of stimulus, consciousness.			10, 16, 9	C	
Discuss somatic sensations (Tactile, position, pain, thermal sensations, hearing, vision, taste, and smell).			10, 16, 9	C	
List functions of thalamus, cerebellum and basal ganglions.			10, 16, 9	C	
Outline the neurological steps involved in voluntary movements.			10, 16, 9	C	
Describe the characteristics of sleep stages and its neurophysiological measurements.			10, 16, 9	C	
Outline the endocrine control functions of the hypothalamus.			10, 16, 9	C	
Describe the steps involved in erythropoiesis and synthesis of hemoglobin.			10, 16, 9	C	
Outline the main electrical and mechanical properties of the heart.			10, 16, 9	C	
Discuss excitation-contraction coupling in the heart.			10, 16, 9	C	
Explain the electrophysiological bases and give normal values of the voltage and duration of the ECG waves, intervals and segments.			10, 16, 9	C	
Describe the ECG diagnosis of important cardiac arrhythmias.			10, 16, 9	C	
Identify the phases of the cardiac cycle.			10, 16, 9	C	
Describe the causes and pathophysiological consequences of acute and chronic heart failure.			10, 16, 9	C	
Describe neural and hormonal control of tissue blood flow.			10, 16, 9	C	
Discuss the functions of the respiratory system and the influence of rate and depth of breathing on work of ventilation.			10, 16, 9	C	
Explain the effects of changes in the rate of ventilation and other conditions on the partial pressures of O <sub>2</sub> and CO <sub>2</sub> in the alveolar air.			10, 16, 9	C	
Draw the oxygen dissociation curves for HbA, HbF and myoglobin.			10, 16, 9	C	
Discuss the roles of the respiratory centers in regulating ventilation.			10, 16, 9	C	
Discuss the cardiovascular adjustments in exercise in terms of changes in venous return, stroke volume, heart rate, ejection fraction, cardiac output and blood flow redistribution.			10, 16, 9	C	
Describe the basic steps of digestion, secretion and explain how it plays a role in the gastrointestinal tract.			10, 16, 9	C	
Explain how mechanical and chemical digestion occurs in the gastrointestinal tract.			10, 16, 9	C	
It explains how assimilated nutrients (e.g., glucose, amino acids, and fatty acids) pass into the bloodstream.			10, 16, 9	C	
Understand the metabolic roles of the liver and biliary system.			10, 16, 9	C	
Explain what metabolism is and what functions it performs in the body.			10, 16, 9	C	
Explain regulation of hormone secretion, negative and positive feedback control mechanisms in hormone secretion regulation.			10, 16, 9	C	
Describe the relationships of the hypothalamus to the anterior and posterior pituitary glands.			10, 16, 9	C	
Outline synthesis and secretion of thyroid hormones.			10, 16, 9	C	
Describe the cellular arrangements and functional components of the adrenal gland.			10, 16, 9	C	
Describe the cellular arrangements and functional components of the pancreas.			10, 16, 9	C	
Describe the basic structure and functions of kidneys and discuss the mechanism for maintaining ECF homeostasis.			10, 16, 9	C	
Summarize the processes of glomerular filtration and renal clearance while stating normal values for renal blood flow, renal plasma flow and glomerular filtration rate.			10, 16, 9	C	
Outline the process involved in urine formation.			10, 16, 9	C	
Discuss the tubular functions explaining the magnitude and mechanisms of solute and water reabsorption in the proximal convoluted tubule, loop of Henle, distal tubule and collecting duct.			10, 16, 9	C	
Outline the regulation of fluid - water balance in the body and explain how ADH and thirst regulate water balance.			10, 16, 9	C	
Explain the regulation of important ions like sodium, potassium, magnesium etc and how their balance/imbalance play role in physiological and pathophysiological processes.			10, 16, 9	C	
Describe the processes of sex determination, see differentiation and puberty.			10, 16, 9	C	
Explain the functional anatomy of male reproductive system and how mechanisms of brain centres, the hypothalamus, the anterior pituitary, and the testes interactively regulate testicular function.			10, 16, 9	C	
Explain the functional anatomy of female reproductive system and what physiologic changes occur in female reproductive organs during the menstrual cycle, pregnancy and post-partum.			10, 16, 9	C	
<b>Teaching Methods</b>	10: Discussion Method, 16: Question - Answer Technique, 9: Lecture Method				

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<b>Course Learning Outcomes</b>		<b>Teaching Methods</b>	<b>Assessment Methods</b>
<b>Assessment Methods</b>		C: Multiple-Choice Exam	
<b>Lecture Schedule</b>			
<b>Sequence</b>	<b>Topics</b>	<b>Preliminary Preparation</b>	
1	Musculoskeletal system physiology		
2	Blood and circulatory system physiology.		
3	Respiratory and gastrointestinal system physiology.		
4	Nervous system physiology.		
5	Endocrine, urogenital and renal physiology.		
<b>Evaluation Methods</b>		<b>Weight(%)</b>	
Midterm Exam		40	
General Exam		60	

<b>Resources</b>
Medical Physiology – Guyton Ganong’s Review of Medical Physiology Molecular Biology of the cell - Alberts Principles of Neurological Sciences - Kandel Color Atlas of Physiology Color Atlas of Pathophysiology