



Department	Pharmacy
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<b>Course Name</b>	<b>physiology1</b>	<b>Course No.</b>	<b>0201233</b>
Prerequisite	Biology	Credit Hours	2
Number & date of course plan approval		Brief Description	See form QF02/0409

<b>Intended Learning Outcomes</b>	<ol style="list-style-type: none"> <li>The general objective of this course is to provide the students with a physiology course in which the prevalent theories for body function are studied. Students should understand how human body systems act together in complex body functions as a mandatory for understanding pharmacology and pathophysiology taught in later years. In this course we will emphasize on the mechanisms of communication between body systems and the importance of these mechanisms in maintaining homeostasis and keep body systems work in harmony.</li> <li>On completion of this course students will be able to explain the function of each organ and system considered within the course. This includes the physiology of autonomic nervous system, muscular system, the significance of blood circulation and other tissue fluids, explain the properties and function of blood, and the mechanism of acquired and passive immunity, functions and controls of the heart and blood vessels and the mechanisms regulating arterial pressure, blood volume and blood flow. Also the students should be able to describe the mechanics of respiration and transport of oxygen and carbon dioxide.</li> </ol>
<b>Course Topics</b>	<ol style="list-style-type: none"> <li>Functions of the plasma membrane.</li> <li>Homeostasis of internal environment &amp; feedback</li> <li>Autonomic nervous System.</li> <li>Blood.</li> <li>Cardiovascular System.</li> <li>Respiratory system</li> </ol>
<b>Text Books</b>	<ol style="list-style-type: none"> <li>Human physiology. 10<sup>th</sup> edition 2011 by Stuart Fox.</li> </ol>
<b>References</b>	<ol style="list-style-type: none"> <li>Conceptual Human Physiology, Davis. Holtz. Davis.</li> <li>Human &amp; Physiology, Lauralee Sherwood.</li> <li>Essentials of Anatomy &amp; Physiology, Seeley, Stephens, Tate.</li> <li>Anatomy &amp; Physiology, Tortora.</li> <li>Human Anatomy &amp; Physiology, Elaine N. Marieb.</li> <li>Text Book of Medical Physiology, Guyton &amp; Hall.</li> </ol> <p><b>Online Learning Center (OLC):</b> <a href="http://www.mhhe.com/foxg">www.mhhe.com/foxg</a></p>



□ Grade Determination	1 <sup>st</sup> Exam = 25% 2 <sup>nd</sup> Exam = 25% Final Exam = 50%	□ Practical Course Grade Determination	Course Work = 50% (Reports, Term Papers, Quizes) Final Exam = 50%	
Course Outline				
Week	Hours	Subjects	Chapters in Textbook	Notes
1	1 1	<b>Introduction to Physiology</b> <b>Homeostasis of internal environment</b> Positive feedback control; Negative feedback loops. <b>Functions of the plasma membrane:</b> Diffusion and osmosis; Carrier-mediated transport; Facilitated diffusion; Active transport; Bulk transport.	1, 3	
2	1 1	Body fluid and electrolytes Regulation of blood osmolality Acid base balance Membrane Potential; Equilibrium potentials.	1, 3	
3	1 1	<b>The Nervous System (Neurons &amp; Synapses):</b> Neurons & supporting cells; Electrical activity in axons; Ion gating in axons; Action potentials; Refractory Periods; Conduction of nerve impulses in myelinated and unmyelinated axons; Synapse; Electrical & chemical synapses;	7	
4	1 1	Action of neurotransmitter; Acetylcholine; Chemically regulated channels; Ligand-operating channels; G-Protein-operating channels; Acetylcholinesterase <b>The Muscles:</b> Types of muscles, muscle contraction and sliding theory, neural control.	7,12	
5	1 1	<b>The Autonomic Nervous System:</b> Neural control of involuntary effectors; Autonomic neurons; Divisions of the Autonomic nervous system; Sympathetic division; Collateral ganglia; Adrenal glands; Parasympathetic division	9	
6	1 1	Functions of the Autonomic nervous system; Adrenergic & cholinergic transmission; Responses to adrenergic stimulation; Responses to cholinergic stimulation; Organs with dual innervation (examples).	9	
7	1 1	<b>Heart &amp; Circulation:</b> Functions of the circulatory system; Major components of the circulatory system; Composition of the blood; Plasma;	13	

Week	Hours	Subjects	Chapters in Textbook	Notes
8	1 1	Formed elements of blood; Erythrocytes; Leukocytes; Platelets; Hematopoiesis; Regulation of Erythropoiesis.	13	
9	1 1	Red blood cell antigens and blood typing; ABO system; Transfusion reaction; Rh Factor; Blood clotting; Platelets and blood vessel walls; Clotting factors: formation of fibrin; Dissolution of clots; Anticoagulants.	13	
10	1 1	<b>Structure of the heart:</b> Pulmonary & systemic circulation; Atrioventricular & semilunar valves; Cardiac cycle & heart sounds; Pressure changes during cardiac cycle; Heart sounds; Heart murmurs.	13	
11	1 1	Electrical activity of the heart & the ECG; Myocardial action potential; Conduction tissues of the heart; Conduction of the impulse; Excitation-contraction coupling in heart muscle; ECG.	13	
12	1 1	<b>Cardiac Output, Blood flow, &amp; Blood Pressure:</b> Cardiac output; Regulation of cardiac rate; Regulation of stroke volume; Frank-Starling Law of the heart; Intrinsic control of contraction; Extrinsic control of contractility; Venous return; Blood volume; Regulation of blood volume by the kidneys; Regulation by ADH hormone; Regulation by aldosterone; Renin-angiotensin-aldosterone system; Atrial natriuretic peptide; Vascular Resistance to blood flow.	14	
13	1 1	Extrinsic regulation of blood flow; Regulation by sympathetic nerves; Parasympathetic control of blood flow; Paracrine regulation of blood flow; Intrinsic regulation of blood flow; Myogenic control mechanisms; Metabolic control mechanisms; Blood Pressure; Baroreceptor reflex; Atrial stretch reflexes; Measurement of blood pressure; Pulse pressure & mean arterial pressure.	14	
14	1 1	<b>Respiratory System:</b> Structure of respiratory system; Physical aspects of ventilation; Intrapulmonary & intrapleural pressures; Boyle's law; Physical properties of	16	



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		the lungs; Compliance; Elasticity; Surface tension; Surfactant & the respiratory distress syndrome; Mechanics of breathing.		
15	1 1	Pulmonary volumes and capacity, gas exchange, transport of O <sub>2</sub> and CO <sub>2</sub> , chemical control and neural control.	16	
16		<b>Final examination</b>		

Approved by Dept. Chair		Date of Approval	
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**Extra Information:** (Updated every semester and filled by course instructor)

<b>Course Instructor</b>	Alaa Hammad
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<b>Office hours</b>	9-11