

Course Detailed Description – Procedures of the Course Plan Committee /Faculty of Pharmacy	QF02/0408–2.1E
--	----------------

Department	Pharmacy
------------	----------

Course Name	Physiology 1	Course No.	0201233
Prerequisite	Anatomy and Histology	Credit Hours	2
Number & date of course plan approval	2016/2017	Brief Description	See form QF02/0409

Course Objective	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, explained and discussed as a mandatory for understanding pharmacology and pathology taught in later years and how human body systems act together in complex body functions. In this course we will emphasize on the mechanisms of communication between body systems and the importance of these mechanisms in maintaining homeostasis and correct functioning of other body systems.
Intended Learning Outcomes	<ol style="list-style-type: none"> 1. 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, explained and discussed as a mandatory for understanding pharmacology and pathology taught in later years and how human body systems act together in complex body functions. In this course we will emphasize on the mechanisms of communication between body systems and the importance of these mechanisms in maintaining homeostasis and correct functioning of other body systems. 2. On completion of this course students will be able to describe the structure and explain the function of each major organ / organ system considered within the course, explain the physiology of autonomic nervous system, muscular system. Discuss 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 in humans and the mechanisms regulating arterial pressure, blood volume and blood flow. Describe the mechanics of respiration and transport of oxygen and carbon dioxide; explain how basic life processes are integrated through nervous and endocrine activity in particular their effects on the skeletal, cardiovascular and respiratory systems.
Course Topics	<ol style="list-style-type: none"> 1. Functions of the plasma membrane. 2. Homeostasis of internal environment & feedback. 3. The Nervous System (Neurons and Synapses). 4. Autonomic nervous system. 5. Blood. 6. Cardiovascular system. 7. Respiratory system.
Text Books	Human Physiology, 14th edition, Stuart Ira Fox, McGraw Hill, 2016.

References	<p>1. Essentials of Human Anatomy and Histology, 11th edition, Marieb E.N. (2015) Pearson Education, Inc.</p> <p>2. Principles of Anatomy and Physiology, 13th edition, Gerard J. Tortora and Bryan H. Derrickson (2012), Wiley and Sons, Inc.</p> <p>3. Online Learning Center: http://highered.mheducation.com/sites/0073378119/student_view0/index.html</p>
Grade Determination	<p>1st Exam = 25%</p> <p>2nd Exam = 25%</p> <p>Final Exam = 50%</p>

Course Outline

Week	Hours	Subjects	Chapters in Textbook	Notes
1	\	Introduction to Physiology Homeostasis of internal environment & feedback: Control systems; Negative feedback loops.	1	
2	\	Positive feedback control; Neural & endocrine regulation; control of hormone secretion.	1	
3	\	Functions of the plasma membrane: Diffusion and osmosis; Regulation of blood osmolality; Carrier-mediated transport; Facilitated diffusion; Active transport; Bulk transport; Membrane Potential; Equilibrium potentials; Resting membrane potential.	6	
4	\	The Nervous System (Neurons & Synapses): Neurons & supporting cells; Electrical activity in axons; Ion gating in axons; Action potentials; All or none law;	7	
5	\	Refractory Periods; Conduction of nerve impulses in myelinated and unmyelinated axons; Synapse; Electrical & chemical synapses;	7	
6	\	Action of neurotransmitter; Acetylcholine; Chemically regulated channels; Ligand-operating channels; G-Protein-operating channels; Acetylcholinesterase.	7	
7	\	The Autonomic Nervous System: Neural control of involuntary effectors; Autonomic neurons; Divisions of the Autonomic nervous system; Sympathetic division; Collateral ganglia; Adrenal glands; Parasympathetic division	9	

8	\	Functions of the Autonomic nervous system; Adrenergic & cholinergic transmission; Responses to adrenergic stimulation; Responses to cholinergic stimulation; Organs with dual innervation (examples).	9	
9	\	Heart & Circulation: Functions of the circulatory system; Major components of the circulatory system; Composition of the blood; Plasma;	13	
Week	Hours	Subjects	Chapters in Textbook	Notes
10	\	Formed elements of blood; Erythrocytes; Leukocytes; Platelets; Hematopoiesis; Regulation of Erythropoiesis;	13	
11	\	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	
12	\	Structure of the heart: Pulmonary & systemic circulation; Atrioventricular & semilunar valves; Cardiac cycle & heart sounds; Pressure changes during cardiac cycle; Heart sounds; Heart murmurs;	13	
13	\	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	
14	\	Cardiac Output, Blood flow, & Blood Pressure: 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	
15	\	Extrinsic regulation of blood flow; Regulation by sympathetic nerves; Parasympathetic control	14	



Course Detailed Description – Procedures of the Course Plan Committee /Faculty of Pharmacy

QF02/0408–2.1E

	<ul style="list-style-type: none"> \ \ 	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		
Week	Hours	Subjects	Chapters in Textbook	Notes
16	<ul style="list-style-type: none"> \ \ \ 	Respiratory System: Structure of respiratory system; Physical aspects of ventilation; Intrapulmonary & intrapleural pressures; Boyle's law; Physical properties of the lungs; Compliance; Elasticity; Surface tension; Surfactant & the respiratory distress syndrome; Mechanics of breathing	16	

Approved by Dept. Chair		Date of Approval	
-------------------------	--	------------------	--

Extra Information: (Updated every semester and filled by course instructor)

Course Instructor	Wassan Jarrar, Ezeddin Gassar
Office No.	215 , 411
Extension	272, 197
Email	wassan.jarrar@zuj.edu.jo , ezeddin.gassay@zuj.edu.jo
Office hours	