



Philadelphia University  
Faculty of pharmacy  
Department of clinical sciences  
Second semester, academic year 2017 / 2018

**Course syllabus**

<b>Course title: Physiology (1)</b>	<b>Course code: 0510231</b>
<b>Course level: Second year</b>	<b>Course prerequisite (s) and/or corequisite (s): Anatomy and Histology 0510131</b>
<b>Lecture time:</b> 9/10-10 ح ث خ 11/10-12 ح ث خ 9/45-11/15 نر	<b>Credit hours: 3 hours</b>
	<b>Contact hours: 9 hours</b>
<b>Location:</b>	<b>Faculty of Nursing</b>

**Academic Staff Specifics**

<b>Name</b>	<b>Rank</b>	<b>Office number and location</b>	<b>Office hours</b>	<b>E-mail address</b>
<b>Dr.J.S. Mulla Abed</b>	<b>professor</b>	<b>Faculty of Nursing 204</b>		<b>jmullaabed@philadelphia.edu.jo</b>

**Course module description**

The course is designed to provide the students with knowledge about the normal functions and mechanism of various physiological systems basis on the anatomical and histological correlation, including: blood cells and blood clotting, nerves and muscles, Contractions of skeletal muscles, excitation contraction coupling. Neuromuscular transmission, Autonomic nervous system, Digestive system, renal system, finally, acid & base balance and electrolytes balance & imbalance.

**Course objectives:**

The course is designed for pharmacy students and it introduces them to the science of physiology by defining the concept of physiology and the term homeostasis and its importance to the human body to achieve normal function.

**Course/ resources**

**Text book/ books( title, author (s), publisher, year of publication**

Text Book

Introduction to Human physiology Laura Lee Sherwood 9<sup>th</sup> edition international edition copyright 2016

**References**

1. Text Book of Medical physiology By Guyton & Hall publisher Philadelphia Saunders 13<sup>th</sup> ed .(2014)

- **Support material (s) (vcs, acs, etc).**

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- **Study guide (s) (when applicable)**

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- **Laboratory Handbook/ books (when applicable)**

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**Teaching methods(Lectures, discussion groups, tutorials, problem solving, debates, etc)**

Lectures, discussion groups

**Learning outcomes:**

- Knowledge and understanding

At the end of the course students will have:

- 1: information about the functional principles; and mechanisms; of action of the above mentioned systems and building further functional anatomical and histological relationship which have been studied previously by students.
- 2: make better understanding for physiology II.

- Cognitive skills (thinking and analysis).

At the end of the course students will be able to

- 1- Compare the normal physiological mechanisms with abnormal ones
- 2- Analyze the normal physiological mechanisms

- Communication skills (personal and academic).

At the end of the course students will be able to

Engage with group work for doing certain scientific activity in physiology and research Activity

- Transferable Skills.

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- Psychomotor Skills (When applicable)

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## **Assessment instruments**

- Exams (First, Second and Final Exams)
- Quizzes.
- Short reports and/ or presentations, and/ or Short research projects
- Homework assignments

<b><u>Allocation of Marks</u></b>	
<b>Assessment Instruments</b>	<b>Mark</b>
First examination	<b>20</b>
Second examination	<b>20</b>
Final examination: 50 marks	<b>40</b>
Reports, research projects, quizzes, homework, Projects	<b>20</b>
Total	<b>100</b>

## **Documentation and academic honesty**

- Documentation style (with illustrative examples)

Whenever applicable students should conduct their assignments themselves whether individually or in group work referencing all information data figures and diagrams taken from literature. The references should be given according to the acceptable format.

- Protection by copyright

Students should realize that some published information or data are the property their authors and they are not allowed to use it without asking permission from the originators.

- Avoiding plagiarism.

Plagiarism is the unauthorized use or close imitation of the language and thoughts of another author and the representation of them as one's own original work without proper acknowledgment of the author or the source . students must pursue their studies honestly and ethically in accordance with the academic regulations . Cheating in exam and plagiarism are totally unacceptable and those who intentionally commit such acts would be subjected for penalties according to the university regulations.

**Course/ academic calendar**

<b>week</b>	<b>Basic and support material to be covered</b>	<b>Homework/reports and their due dates</b>
(1)	<b>Blood &amp; Circulation: Functions of the circulatory system; Major components of the circulatory system; Composition of the blood; plasma; Formed elements of blood; Hematopoiesis; Regulation of Erythropoiesis; White blood cells types and Functions</b>	
(2)	<b>Red blood cell antigens and blood typing; ABO system; Transfusion reaction; Rh Factor; Blood clotting; factors : formation of fibrin; Dissolution of clots; Anticoagulants. Hemolytic Diseases. Bleeding disorders. Capillary Exchange. Acid-Base Balance of the Blood.</b>	
(3)	<b>THE NERVOUS SYSTEM (NEURONS &amp; SYNAPSES): Neurons &amp; supporting cells; Electrical activity in axons; Action potentials; All or none law;</b>	
(4)	<b>Refractory Periods; Conduction Of nerve impulses in myelinated and un myelinated axons;.</b>	
(5)	<b>Synapse; Electrical &amp; chemical Synapses;</b>	
(6) <b>First examination</b>	<b>Action of neurotransmitter; Acetylcholine; Chemically Regulated channels; Ligand-Operating channels; G-Protein-Operating channels; Acetyl cholinesterase</b>	
(7)	<b>Physiology of muscle cells: Membrane action potentials in Skeletal and smooth muscles fibers</b>	
(8)	<b>Physiology of muscle cells, Neuromuscular transmission and Muscles contractions.</b>	
(9)	<b>THE AUTONOMIC NERVOUS SYSTEM: Neural control of the Autonomic Nervous; Division; Collateral ganglia; Adrenal glands; parasympathetic division.</b>	
(10)	<b>Functions of the Autonomic Nervous system; Adrenergic &amp; Cholinergic transmission; Responses to adrenergic Stimulation; Responses to Cholinergic Stimulation; Organs with dual innervation</b>	
(11) <b>Second examination</b>	<b>Physiology of GIT functions of Mouth, salivary glands, pharynx, Small intestine.</b>  <b>Physiology of GIT:</b>  <b>Digestion and absorption of Nutrients, carbohydrate, proteins AND lipids,</b>	

<b>(12)</b>	<p>large intestine and rectum, defecation reflex Liver and pancreas importance of bile Functions of pancreatic Enzymes and its roles In digestion</p>	
<b>(13)</b>	<p><b>PHYSIOLOGY OF THE KIDNEYS.</b> Structure &amp; function of the Kidneys: Gross structure of the Urinary system; Micturition Reflex; Microscopic structure; Nephron tubules. <b>Glomerular filtration:</b> Glomerular ultra filtrate; Physiology of glomerular Filtration rate; Sympathetic Nerves effects, Renal Auto regulation, Reabsorption <b>Of salt &amp; water: Reabsorption In proximal tubule; Active and Passive transport; The Countercurrent multiplier; Ascending limb of the loop of Loop of Hence; Countercurrent multiplication;</b></p>	
<b>(14)</b>	<p><b>Collecting duct:</b> Effect of ADH. <b>Renal plasma clearance:</b> Transport process affecting Renal clearance; Tubular Secretion of drugs; Renal Clearance of insulin; Measurement of GFR; Clearance Calculations; Clearance of urea; Clearance Of PAH: measurement of renal Blood flow; Reabsorption of glucose; Glycosuria.</p>	
<b>(15)</b>	<p><b>Renal control of electrolyte &amp; acid-base balance: Rol of aldosterone in Na , K balance; Sodium reabsorption; Potassium secretion. Aldosterone secretion: Juxtaglomerular apparatus; Rennin secretion; Role of Macula dense; Relationship between Na + , k+ , and h+ Renal acid –base regulation reabsorption of HCO<sub>3</sub> in the proximal tubule; Urinary buffers</b></p>	
<b>(16)</b> <b>Final Examination</b>	<p><b>ACID AND BASE BLANCE, ELECTROLYTES BALANS AND IMBALNCE :</b> Fluids and electrolyte's , water compartments, regulation of water intake and output, Electrolytes, Electrolytes in body fluids Electrolyte regulation , Acid- base balance , buffer system, Bicarbonate buffer system , phosphate buffer system, Respiratory mechanisms , Respiratory compensating for metabolic acedia's, Respiratory alkalosis Renal mechanisms , Effects of pH changes .</p>	

### **Expected workload:**

On average students need to spend 2 hours of study and preparation for each 50-minute lecture/tutorial.

### **Attendance policy:**

Absence from lectures and/or tutorials shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse acceptable to and approved by the Dean of the relevant college/faculty shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.

### **Other Education Resources**

#### **Books**

Review of medical physiology By William F Ganong CD 2015

#### **Journals**

Am . J. of physiology

#### **Websites**

[www.freemedicaljournals.com](http://www.freemedicaljournals.com)

[www.ahajournals.org](http://www.ahajournals.org)

[www.oxfordjournals.org](http://www.oxfordjournals.org)

[www.wikipedia.org](http://www.wikipedia.org)