



كلية الطب البشري
Faculty of Medicine



The Hashemite University

Course Syllabus

General Physiology

1	Course title	General Physiology
2	Course number	111501106
3	Credit hours (theory, practical)	3
	Contact hours (theory, practical)	3 hours lectures per week
4	Course meeting time	Sun-Mon-Tues 9-10; 10-11
	Course location	Allied Health Stadium
5	Program title	Doctor of Medicine
7	Awarding institution	The Hashemite University
8	Faculty	Faculty of Medicine
9	Department	Basic medical sciences
10	Level of course	First year medical students
11	Year of study and semester (s)	2018/2019 second semester
12	Final Qualification	MD degree
13	Other department (s) involved	None
14	Language of Instruction	English
15	Date of production/revision	09/2018

Course Coordinator:

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	Room 3020. Extension 5409
Office hours	Sun-Tues 11:00 a.m-1:00 p.m
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Course Description:

This course gives a general introduction to Physiology.

Intended Learning Outcomes (ILOs):

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| <ol style="list-style-type: none"> 1. To introduce and familiarize students with basic definitions and principles related to physiology as a study of the living body at molecular, cellular as well as the level of intact organism 2. To introduce the concept of internal environment and homeostasis and to present some examples of homeostatic mechanisms of the major functional systems and various control systems that are utilized by different organs to regulate various physiological functions 3. To cover the physiological implications related to circulating body fluids and hemodynamics 4. To describe principles and mechanisms of membrane transport 5. To describe the physiological implications related to body fluids 6. To describe the electrical and ionic events that underline the excitation of nerves, muscles as well as the mechanism underlying skeletal muscle contraction 7. To describe general principles and mechanism of synaptic transmission and electrical properties of synaptic potential 8. To cover general organization and functional aspects of the autonomic nervous system 9. To describe basic mechanisms of cellular communications. Different groups of regulators and receptors 10. To familiarize the student with heat homeostasis and body temperature regulation |
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Topic Outline and Schedule:

Week	Reference	General Objective
1	Jan 31, 2019 CH 1 (P3-10) CHP2 (P11-14)	<ul style="list-style-type: none"> *General outline of physiology; Definition of physiology fields with emphasis on human physiology *Cells as living units of the body *Basic cell functions *Organizational levels of tissues, organs, systems and organism *The origin of nutrients and removal of metabolic waste products in multicellular organism as compared to unicellular *Homeostasis concept

2	Feb 7 CH 1 (P3-10) CHP 2 (P11-14)	*External and internal environments. Extracellular versus intracellular fluid compartments *The role of circulating body fluids, continuous fluid exchange between different fluid compartments *Body fluid compartments *Feedback concepts (negative and Positive feed back)
3	Feb 14 CH 14 (P169-177) CH 25 (P305-320)	*Solutions, Isotonic, hypertonic hypotonic *Tonicity versus osmolarity *Osmolarity & regulation of extracellular fluid volume *Volume and osmolarity of ECF and ICF in abnormal states *Hypertonicity versus hypotonicity. Edema dehydration *Microcirculation. Lymphatic system
4	Feb 21 CH 14 (P169-177) CH 25 (P305-320)	*Overview of the circulation. Pressure, flow & resistance *Total body water (TBW), body fluid compartments determinants *Composition of extracellular fluid compartment (ECF) *Composition of intracellular fluid compartment (ICF)
5	Feb 28 CH 14 (P169-177) CH 25 (P305-320)	*Fluid exchange between different compartments *Measurement of different fluid compartment (indicator dilution and law of mass preservation) *Osmosis and osmotic pressure concepts *Mole. Osmole osmolarity versus osmolality. Equivalentts
6	March 6 CH 31 (P409-416)	*Acid-Bas balance
7	March 13 CH 44 (P47-58)	*Transport across cell membrane *Passive transport (simple diffusion; facilitated diffusion) *Active transport Primary and secondary *Mass transport. Phagocytosis pinocytosis
8	March 20 CH 5 (P61-73)	*General outline of neural function *Excitable membranes. Resting membrane potential(RPM), origin and determinants *Electrochemical equilibrium (Nerst equation) *Goldman-Hodgkin-Katz equation
9	March 27 CH 5 (P61-73)	*Action potential (AP) initiation and propagation. *Special types of AP , Slow response and pacemaker concept *Cardiac AP(fast response AP) *Latent and ectopic pacemakers *All or non versus graded AP
10	April 3 CH 46 (P577-591)	*Synapses: types. Transmission of AP, neurotransmitters *EPSP, IPSP *Neural circuits, Divergence, convergence reverberating cycles *Neural and endocrine integration to maintain homeostasis *Extra cellular regulators: nervous, endocrine, paracrine, autocrine
11	April 10 CH 46 (P583-584) CH 75 (P925-936)	*Signal transduction *Receptors, sensation, types, neural versus hormonal *Ionic channels. *Second messengers, cAMP, GMP,etc
12	April 17	*Autonomic nervous system, Sypmthetic Vs. parasympathetic

	CH 61 (P773-783)	*Neurotransmitters, types . receptors types, locations (pre and post ganglionic) *Adrenal medulla
13	April 24 CH 6,7,8	*Skeletal muscles, levels of organization *Neuromuscular junction and transmission *Excitation contraction and molecular basis of muscle contraction *Smooth and cardiac muscle contraction. Comparison of the three types of muscle (skeletal, cardiac and smooth)
14	May 2 CH 74 (P911-915) CH 78 (P966-967)	*Body temperature regulation *Physiology and structure of steroid hormones
15	May 9	Revision
16	May 16	Final exams

Note: Chapters and pages from GUYTON AND HALL Textbook of Medical Physiology. 13TH edition. 2016

Teaching Methods and Assignments:

<p>Development of ILOs is promoted through the following teaching and learning methods:</p> <ol style="list-style-type: none"> 1. Textbook & references 2. Lecture notes

Evaluation Methods:

Grading Policy:

First in-course exam (MCQ)	30 Marks
Second in-course exam (MCQ)	30 Marks
Final Exam at the end of the semester	40 Marks
Total	100 Marks

Course Policies:

<p>Late Assignments: According to college policy Missed exams: According to college policy Absence : According to college policy Cheating: According to college policy Classroom Protocol: According to college policy Student rights and responsibilities: According to college policy</p>
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References:

Author	Title
GUYTON AND HALL	Textbook of Medical Physiology, 13th edition or latest edition.
Lauralee Sherwood	Human Physiology from Cells to System, latest edition.

Additional information:

The semester is 16 weeks:
-14 weeks lectures as outlined above
-Last two weeks for final exams according to university regulations.