

University of Jordan  
Faculty of Medicine  
Department of Physiology and Biochemistry  
Syllabus: Introduction to Physiology (0501110)  
FOR MEDICAL STUDENTS  
Spring 2013

Subjects	Lect. No.	Pages I Guyton	Date
Introduction to Physiology: General outline of physiology. <b>Homeostasis</b> , control systems, negative & positive feedback mechanism	1	3-9	
Cell Membrane	2	11-14	
Transport-I (Passive) A. Simple Diffusion B. Facilitated Diffusion C. Osmosis	3	45-56	
Units: moles, osmoles and equivalent. Osmosis and osmotic pressure	4		
Transport-II (Active) A. Primary Active. B. Secondary Active: Co-and Counter-Transport C. Vesicular transport	5-6	45-56	
Excitable Membranes: Resting Membrane Potential: Origin And Determinants. Distribution Of Different Ions Across Cell Membranes	7		
Electrochemical Equilibrium (Nernst Equation) As a Predictor For RMP - $E_{Na^+}$ , $E_{K^+}$ , $E_{Ca^{++}}$ , $E_{Cl^-}$ -Other Equations Which Predict RMP: Goldman-Hodgkin-Katz Equation And Chord Conductance Equation	8-9		
Autonomic Nervous System (I) Organization: Sympathetic and Parasympathetic	10		
Autonomic Nervous System (II)	11		
Abnormalities of body fluid volume regulation Hypo-osmotic dehydration & overhydration. Hyper-osmotic dehydration & overhydration. Edema (definition, types, difference between IC & EC edema).	12		
Body Water: Distribution & Measurements	13		
All or none versus graded potential	14		
Excitatory Post Synaptic Potential EPSP And Inhibitory Post Synaptic Potential IPS	15		

Basic neuronal circuits: Synapses: types, transmission of AP, neurotransmitters, facilitation, inhibition, summation, electrical events, processing, fatigue...etc. Excitatory and Inhibitory postsynaptic potential	16-17		
- Neurotransmitters, types, synthesis, location (pre-and postganglionic) - Receptors: types and location. - Adrenal medulla.	18		
Neurons: Types and classifications	19		
Receptors: types and adaptation - Membrane or intracellular - Ion channels - G-protein - Enzyme linked - Intracellular - Second messengers - cAMP and cGMP, Phospholipid - Calcium calmodulin and IRS	20-21		
Signal Transduction (Regulation of cellular machinery) Extracellular regulators: nervous, endocrine, paracrine and autocrine	22-23		
Steroids: Their Signal Transduction And Mechanism Of Action	24		
Microcirculation: Capillary Structure; Fluid Filtration (Forces) & Reabsorption - Starling Law Of Capillary Exchange - Lymphatic System	25-26		
Action Potential: Cardiac Action Potential (Fast Response AP) Vs Slow Response AP (The Pacemaker Concept)	27-28		

Midterm Exam 40%

Final Exam 60%

Textbook: Guyton and Hall Textbook of Medical Physiology: 12<sup>th</sup> edition 2011