

University of Jordan  
Faculty of Medicine  
Department of Physiology and Biochemistry  
Syllabus: Introduction to Physiology (0501110)  
FOR MEDICAL STUDENTS  
Spring 2024-2025

Subjects	Lect. No.	Pages in Guyton Jordan Edition	Pages in Guyton 14 <sup>th</sup>	Pages in Guyton 13 <sup>th</sup>
Introduction to Physiology: General outline of physiology. Homeostasis, control systems, negative & positive feedback mechanism	1	3-10	3-10	3-10
Cell Membrane	2	12-15	13-16	11-14
Units: moles, osmoles and equivalent. Osmosis and osmotic pressure	3-4			
Transport-I (Passive) A. Simple Diffusion B. Facilitated Diffusion C. Osmosis		47-54	51-59	47-54
Transport-II (Active) A. Primary Active. B. Secondary Active: Co-and Counter-Transport C. Vesicular transport		55-59	59-62	55-59
Excitable Membranes: Resting Membrane Potential: Origin And Determinants. Distribution Of Different Ions Across Cell Membranes	5-8	61-73	63-76	61-74
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				
All or none versus graded potential		61-73	63-76	61-74
Excitatory Post Synaptic Potential EPSP And Inhibitory Post Synaptic Potential IPS	9	587-593	573-576	587-593
Autonomic Nervous System (I) Organization: Sympathetic and Parasympathetic	10-11	773-780	763-773	773-780
Autonomic Nervous System (II)				
Body Water: Distribution & Measurements	12-13	305-321	305-320	305-316
Abnormalities of body fluid volume regulation Hypo-osmotic dehydration & overhydration. Hyper-osmotic dehydration & overhydration. Edema (definition, types, difference between IC & EC edema).				
Action Potential: Cardiac Action Potential (Fast Response AP) Vs	14-15			

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Slow Response AP (The Pacemaker Concept)		113-113 123-129	113-117 127-133	109-113 123-129
Basic neuronal circuits: Synapses: types, transmission of AP, neurotransmitters, facilitation, inhibition, summation, electrical events, processing, fatigue...etc. Excitatory and Inhibitory postsynaptic potential	16-19	577-593	572-585	580-593
- Neurotransmitters, types, synthesis, location (pre-and postganglionic) - Receptors: types and location. - Adrenal medulla.		584-587 595-606	576-579 587-598	585-586 595-606
Neurons: Types and classifications				
Microcirculation: Capillary Structure; Fluid Filtration (Forces) & Reabsorption - Starling Law Of Capillary Exchange - Lymphatic System	20-21	189-199	193-204	189-199
Receptors: types and adaptation - Membrane or intracellular - Ion channels - G-protein - Enzyme linked - Intracellular - Second messengers - cAMP and cGMP, Phospholipid - Calcium calmodulin and IRS	22-27	925-935	915-927	925-935
Signal Transduction (Regulation of cellular machinery) Extracellular regulators: nervous, endocrine, paracrine and autocrine		954-956	944-946	954-956
Steroids: Their Signal Transduction And Mechanism Of Action		970-971 976-977	960-961 966-967	970-971 976-977

Midterm Exam 40% and Evaluation

Final Exam 60%

Textbook: Guyton and Hall Textbook of Medical Physiology: 13<sup>th</sup> edition 2016, Jordan Edition or 14<sup>th</sup> edition 2021