

University of Jordan
Faculty of Medicine
Department of Physiology and Biochemistry
Syllabus: Introduction to Physiology (0501110)
FOR MEDICAL STUDENTS
Spring 2022

Subjects	Lect. No.	Pages in Guyton 12 th	Pages in Guyton 13 th
Introduction to Physiology: General outline of physiology. Homeostasis, control systems, negative & positive feedback mechanism	1	MK 3-9	3-10
Cell Membrane	2	MK 11-14	11-14
Transport-I (Passive) A. Simple Diffusion B. Facilitated Diffusion C. Osmosis	3	MK 45-52	 47-54
Units: moles, osmoles and equivalent. Osmosis and osmotic pressure	4	MK	
Transport-II (Active) A. Primary Active. B. Secondary Active: Co-and Counter-Transport C. Vesicular transport	5-6	MK 52-56	54-59
Excitable Membranes: Resting Membrane Potential: Origin And Determinants. Distribution Of Different Ions Across Cell Membranes	7	MK 57-69	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	8-9		
Autonomic Nervous System (I) Organization: Sympathetic and Parasympathetic and - Adrenal medulla.	10	MK 729-740	773-785
Autonomic Nervous System Molecular basis of function (II)	11		
Body Water: Distribution & Measurements	12	285-296	
Abnormalities of body fluid volume regulation Hypo-osmotic dehydration & overhydration. Hyper-osmotic dehydration & overhydration. Edema (definition, types, difference between IC & EC edema).	13		305-316
All or none versus graded potential	14	560-562	596-598
Excitatory Post Synaptic Potential EPSP And Inhibitory Post Synaptic Potential IPS	15	552-557	587-592
Basic neuronal circuits: Synapses: types, transmission of AP, neurotransmitters, facilitation, inhibition, summation, electrical events, processing, fatigue...etc. Excitatory and Inhibitory postsynaptic potential	16-17	550-552 563-570	584-587 599-606

Subjects	Lect. No.	Pages in Guyton 12th	Pages in Guyton 13th
- Neurotransmitters, types, synthesis, location (pre-and postganglionic) - Receptors: types and location	18		
Neurons: Types and classifications	19	563-564	599-600
Microcirculation: Capillary Structure; Fluid Filtration (Forces) & Reabsorption - Starling Law Of Capillary Exchange - Lymphatic System	20-21	177-186	189-198
Action Potential: Cardiac Action Potential (Fast Response AP) Vs Slow Response AP (The Pacemaker Concept)	22-23	101-104 115-120	109-113 123-129
Receptors: types and adaptation - Membrane or intracellular - Ion channels - G-protein - Enzyme linked - Intracellular - Second messengers - cAMP and cGMP, Phospholipid - Calcium calmodulin and IRS	24-25	881-891	925-036
Signal Transduction (Regulation of cellular machinery) Extracellular regulators: nervous, endocrine, paracrine and autocrine	26-27	910-912 940-941	954-956 984-985
Steroids: Their Signal Transduction And Mechanism Of Action	28	926-927 931	970-971 976

Midterm Exam 40%

Textbook: Guyton and Hall Textbook of Medical Physiology: Jordan Edition = 13th edition