

University of Jordan
 Dept. Biological Sciences
 Physiology (0344363)
 Spring 2011-2012

Instructor: Hana Hammad, Ph.D.
 Office: 308, Biology Building
 Phone: 535-5000 / Ext.22202
 E-mail: hhammad@ju.edu.jo
 Office Hours: *Check Blackboard*

Course Outline

Textbook: Widmaier, E.P., Raff, H. and Strang, K. T. Vander's Human Physiology The Mechanisms of Body Function. 12th Ed. New York, McGraw-Hill, 2011.

The following topics will be covered in this course; it is the student responsibility to check Blackboard for details and announcements.

<http://Blackboard.ju.edu.jo>

Student username: 0344363_std password: 0344363_std

Lecture No.	Chapter No.	Topic
1-5	1	Introduction Homeostasis: A Framework for Human Physiology 1.1 The Scope of Physiology 1.2 How is the Body Organized? 1.3 Body Fluid compartments 1.4 Homeostasis: A Defining Feature of Physiology 1.5 General Characteristics of Homeostatic Control Systems 1.6 Components of Homeostatic Control 1.7 Intercellular Chemical Messengers 1.8 Processes Related To Homeostasis
6-8	5	Control of Cells by Chemical Messengers 5.1 Receptors 5.2 Signal Transduction Pathways
9-13	6	Neuronal Signaling and the Structure of the Nervous System <u>Neural Tissue</u> 6A.1 Structure and Maintenance of Neurons 6A.2 Functional Classes of Neurons 6A.3 Glial Cells 6A.4 Neural Growth & Regeneration (<i>self reading</i>) <u>Membrane Potentials</u> 6B.1 Basic Principles of Electricity 6B.2 The Resting Membrane Potential 6B.3 Graded Potentials and Action Potentials
14-18		<u>Synapses</u> 6C.1 Functional Anatomy of Synapses

		6C.2 Mechanisms of Neurotransmitter Release 6C.3 Activation of the Postsynaptic Cell 6C.4 Synaptic Integration 6C.5 Synaptic Strength 6C.6 Neurotransmitters and Neuromodulators 6C.7 Neuroeffector Communication <u>Structure of the Nervous System</u> 6D.4 Autonomic nervous system 6D.5 Blood Supply, Blood Brain Barrier, and Cerebrospinal Fluid
19-21	7	Sensory Physiology 7A.1 Sensory Receptors 7B.1 Somatic Sensation 7B.2 Vision
22-24	9	Muscle 9A.1 Structure 9A.2 Molecular Mechanisms of Skeletal Muscle Contraction 9A.3 Mechanics of Single-Fiber Contractions 9A.4 Skeletal Muscle Energy Metabolism 9A.6 Whole-Muscle Contraction
25-28	11	The Endocrine System <u>Principles of Hormonal Control Systems</u> 11A.1 Hormones Structures and Synthesis 11A.2 Hormone Transport in the Blood 11A.3 Hormone Metabolism and Excretion 11A.4 Mechanism of Hormone Action 11A.5 Inputs that Control Hormone Secretion 11A.6 Types of Endocrine Disorders <u>The Hypothalamus and Pituitary Gland</u> 11B.1 Control Systems Involving the Hypothalamus and Pituitary <u>The Thyroid Gland</u> 11C.1 Synthesis of Thyroid Hormones 11C.2 Control of Thyroid Function 11C.3 Actions of Thyroid Hormones <u>The Endocrine Response to Stress</u> 11D.1 Physiological Functions of Cortisol 11D.2 Functions of Cortisol in Stress 11D.3 Adrenal Insufficiency and Cushing's Syndrome 11D.4 Other Hormones Released During Stress
29-30	12	Cardiovascular Physiology <u>Overall Design of the Circulatory System</u> 12A.1 System Overview 12A.2 Pressure, Flow, and Resistance
31-33		<u>The Heart</u> 12B.1 Anatomy 12B.2 Heartbeat Coordination

34-36		12B.3 Mechanical Events of the Cardiac Cycle 12B.4 The Cardiac Output 12B.5 Measurement of Cardiac Function <u>The Vascular System</u> 12C.1 Arteries 12C.2 Arterioles <u>Integrative Cardiovascular Function: Regulation of Systemic Arterial Pressure</u> 12D.1 Baroreceptor Reflexes
37-41	13	<u>Respiratory Physiology</u> 13.1 Organization of the Respiratory System 13.2 Ventilation and Lung Mechanics 13.3 Exchange of Gases in Alveoli and Tissues 13.4 Transport of Oxygen in Blood 13.5 Transport of Carbon Dioxide in Blood 13.6 Transport of Hydrogen Ions Between Tissues and Lungs 13.7 Control of Respiration
42-45	14	<u>The Kidneys and Regulation of Water and Inorganic Ions</u> <u>Basic Principles of Renal Physiology</u> 14A.1 Renal Functions 14A.2 Structure of the Kidneys and Urinary System 14A.3 Basic Renal Processes 14A.4 The Concept of Renal Clearance 14A.5 Micturition <u>Regulation of Ion and Water Balance</u> 14B.1 Total-Body Balance of Sodium and Water 14B.2 Basic Renal Processes for Sodium and Water 14B.3 Renal Sodium Regulation 14B.4 Renal Water Regulation 14B.7 Potassium Regulation 14B.8 Renal Regulation of Calcium and Phosphate Ion

EVALUATION:

The grade for the course is derived from performance on tests, quizzes, assignments and lab projects. Total possible points = 100 as follows:

- **Tests:** 80 points. Two announced tests will be given (20 points each) and a final test (40 points). Tests will cover material from lectures, required reading material, and assignments:
 - Test 1* - March 12th, Monday
 - Test 2* - April 18th, Wednesday
 - Final Test* - To be announced
- **Student's evaluation** (20 points total): includes quizzes, class participation, and lab material.