



Document Approval Date	Course Syllabus	Document Code
		AP01-PR05

Department: Dept. of Basic Medical Sciences

Official Stamp:

Course Identification	
Course Name: Introduction To Physiology	Course Code and Number: MED117
Number of Credit Hours: 3 hours	Semester: Second semester
Course Status:	Teaching Language: English
Pre-requisite:	Course Coordinator: Dr. Ejlal Abu-El-Rub & Dr.Hakam Alkhateeb

General Information	
Teaching Method	<input checked="" type="checkbox"/> Face-to-Face <input type="checkbox"/> Online <input type="checkbox"/> Blended
Course Description	<p>This course is an INTRODUCTORY course that is designed to introduce and familiarize first-year medical students with basic knowledge and principles of physiology. The course begins with fundamental mechanisms that apply to most, if not all, areas of body function. These include body fluid compartments, diffusion, osmosis, membrane transport, cell membrane physiology, and general principles of muscle function. These topics are often termed general physiology, because of their general applicability to all areas of physiology. Then various organ systems will be covered including; the cardiovascular system, which is a part of every other organ system, followed by kidney function and acid-base balance. The kidney is an essential organ in the maintenance of body fluid, electrolyte, and pH homeostasis. Additionally, the kidney plays an important role in the long-term regulation of blood pressure. Then, I will move to the pulmonary system. This important system mediates the intake of oxygen and the disposal of waste products of metabolism, e.g., carbon dioxide and contributes to acid-base balance in the body. Another system that will be covered is the gastrointestinal system, which is responsible for processing food into material that can be transported across the intestinal epithelium and absorbed into the body. The course concludes with endocrine functions, featuring mechanisms in each major endocrine organ. Emphasis is placed on hormone receptors and the intracellular signaling mechanisms triggered by binding of hormones to these receptors, which is important for future therapeutics.</p>



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Course Objectives	<ol style="list-style-type: none">1. To introduce and familiarize students with basic definitions and principles related to physiology by studying -in general fashion- human body at molecular and cellular levels2. Describe the fundamental processes underlying the normal function of cells, tissues, organs, and organ systems of the human body.3. Apply the known knowledge of normal body systems functions and regulations to explain the pathophysiology underlying common diseases4. Develop critical thinking skills by applying physiological concepts and principles to solve problems and questions in logical way.
Course Learning Outcomes (CLOs)	<p>CLO1: Understand the basic physiological processes that govern the function of human body systems such as homeostasis</p> <p>CLO2: Apply the basic physiological principles and processes in explaining the pathological mechanisms of common diseases affected the human body systems</p> <p>CLO3: Correlate the functions of human body systems to each other and spot them as a whole picture which is important in explaining any pathological changes</p> <p>CLO4: Retrieve the correct physiological processes and principles to solve problems in logical way or to use them precisely in any discussion sessions</p> <p>CLO5: Differentiate between normal and abnormal physiological processes clearly and correctly</p> <p>CLO6: Relate and recall these physiological concepts to understand other interconnected medical courses including Anatomy, Histology, Pathology and Pharmacology</p> <p>CLO7: Engage in critical thinking and logical interpretation</p>

Mapping Course Learning Outcomes CLOs to Program Learning Outcomes PLOs							
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7
CLO1	x						
CLO2	x						
CLO3	x						
CLO4	x						

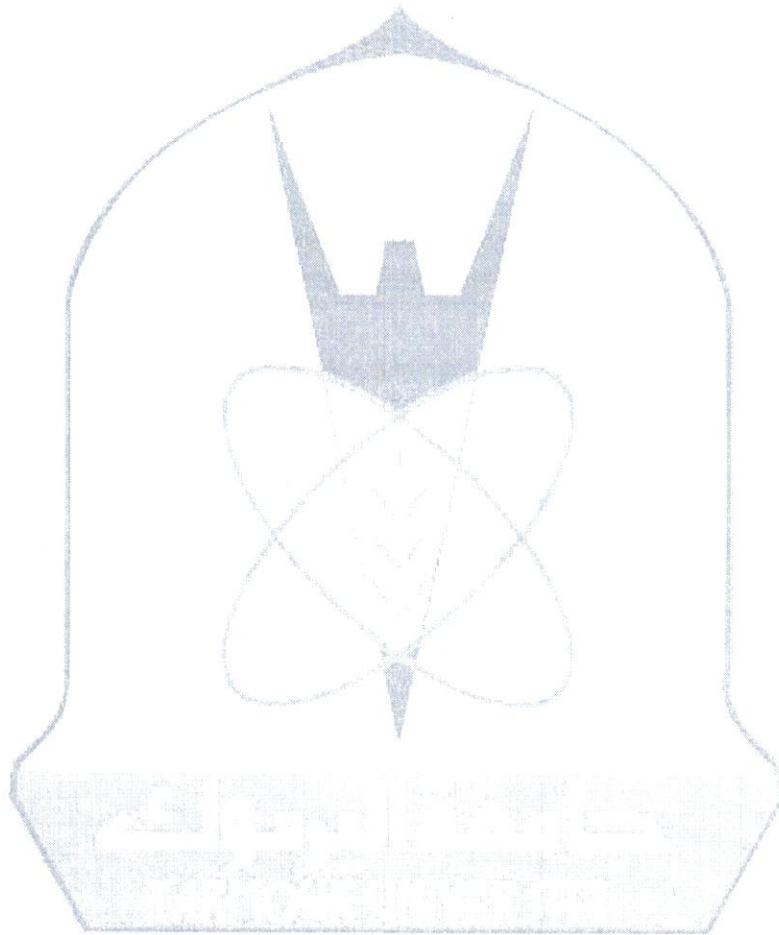


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CLO5	x						
CLO6		x					
CLO7				x			





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Assessment Methods				
Assessment Type	Date and Time	Assessment Method	Mark (%)	CLOs
Midterm Exam		MCQ questions	50%	
Activities*	Activity (1)	Quiz		
	Activity (2)	Quiz		
	Activity (3)	videos		
	Activity (4)	Quiz		
	Activity (5)	Quiz		
Final Exam		MCQ questions	50%	

*The instructor must choose at least three activities from the following: quizzes, assignments, projects, videos, discussions, etc.

Course Contents, Schedule, and Instruction Methods		
Week	Course Content and Description	Instruction Method**
Week 1	Introduction and Homeostasis: Lecture 1: 1- Introduction to physiology 2- Homeostatic mechanisms of major functional systems, 3- Definition of Homeostasis.	Lecture-based and discussion
	Lecture 2: 1- The Extracellular Fluid and the milieu interior (internal environment). 2- Control systems of the body: Characteristics of control systems, negative feedback nature of most control systems, positive feedback. Adaptive control system	Lecture-based and discussion



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Week	Course Syllabus	Document Code
Week 2	Plasma membrane and transport: Lecture 1: 1- General characteristics of cell membrane. Transport of ions 2- and molecules through the cell membrane: Diffusion; simple and facilitated, osmosis	Lecture-based and discussion
	Lecture 2: 1-Primary active transport; characteristics and importance of active transport. 2- Secondary active transport (co-transport and counter – transport)	Lecture-based and discussion
Week 3	Introduction to Nervous system: Lecture 1: 1- Origin of electrical potentials: Ionic equilibria and the resting membrane potential. 2- Calculation of resting membrane potential using Nernst equation.	Lecture-based and discussion
	Lecture 2: 1- Generation and conduction of nerve action potential 2- Ionic basis of action potential and its properties. Propagation of action potential, serial versus salutatory conduction	Lecture-based and discussion
Week 4	Introduction to Central and Peripheral Nervous Systems: Lecture 1: 1- Overview functions and organization of nervous system 2- Cerebral cortex areas, Basal ganglia, cerebellum, thalamus and hypothalamus and their functions	Lecture-based and discussion
	Lecture 2: 1- Autonomic nervous system: introduction and general organization. 2- Chemical transmission of autonomic junctions cholinergic and adrenergic transmission Types of cholinergic and adrenergic receptors.	Lecture-based and discussion



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	3-Effects of sympathetic and parasympathetic stimulation on specific visceral organs and their role in the regulation of visceral functions.	
Week 5	Muscle Physiology Lecture 1: 1- Sliding theory of muscle contraction 2- Excitation contraction coupling and molecular basis of skeletal muscle contraction	Lecture-based and discussion
	Lecture 2: 1-Neuromuscular Junction and Neuromuscular transmission 2- Excitation contraction coupling and molecular basis of skeletal muscle contraction of skeletal Muscle contraction	Lecture-based and discussion
Week 6	Blood physiology and components Lecture 1: 1- Plasma components and its function 2-Erythrocytes structure, function, and Erythropoiesis 3-Platelets and Hemostasis Lecture 2: 1-Clotting cascade 2-Leukocytes subtypes, production, and functions	Lecture-based and discussion
Week 7	Endocrine System Lecture 1: 1- Endocrine system; comparison between endocrine and nervous systems 2- Hormones; chemical structure, transport and receptors 3- Variation in responsiveness of target cells to their hormones 4- Hormones of pituitary gland Lecture 2:	Lecture-based and discussion



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	1- Thyroid gland and it's hormones 2- Pancreatic hormones 3- Adrenal gland and it's hormones	
Week 8	Midterm Exam will include "12" lectures from week 1-week 6	
Week 9	Cardiac Physiology Lecture 1: 1-Over view of the cardiovascular system 2-The cardiac cycle and cardiac output	Lecture-based and discussion
	Lecture 2: 1-Electrical activity of the heart, electrocardiogram 2-Control of heart rate and cardiac arrhythmias 3-Hemodynamics, blood pressure and blood flow. Microcirculation and lymphatic	Lecture-based and discussion
Week 10	Lecture 1: Blood Pressure description and Measurement	Lecture-based and discussion
	Respiratory Physiology Lecture 2: 1-Overview of the respiratory systems. Pulmonary ventilation 2-Mechanical aspects of breathing.	Lecture-based and discussion
Week 11	Respiratory Physiology (Continue) Lecture 1: 1-Pulmonary circulation, gas diffusion and transport of oxygen and carbon dioxide. 2-Control of breathing	Lecture-based and discussion
	Digestive system physiology Lecture 2: 1-Overview of the Gastrointestinal system, the four basic GIT functions; motility, section, digestion and absorption 2-Functions of the stomach	Lecture-based and discussion



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Week 12	Digestive system physiology (Continue) Lecture 2: 1-Functions of the pancreas 2- Functions of small and large intestine	Lecture-based and discussion
	Renal Physiology Lecture 2: 1-Overview of the renal system, functional anatomy of nephron. 2-Renal circulation and Glomerular filtration	Lecture-based and discussion
Week 13	Renal Physiology (Continue) Lecture 1: 1-Glomerular filtration rate and it's regulation 2-Tubular functions, solutes and water transport	Lecture-based and discussion
	Lecture 2: 1-Mechanism of urine concentration 2-Counter current Multiplier and counter current exchanger	Lecture-based and discussion
Week 14	Revision lecture I	Questions and Answers
	Revision Lecture II	Questions and Answers
Week 15		
Week 16		
Week 17	Final Exam will include "10" lectures from week 8-week12	
Week 18		

**Instruction method is as follows:

- **Face-to-Face course:** Face-to-face class
- **Online course:** Interactive synchronous or asynchronous
- **Blended course:** Face-to-face or Online (synchronous or asynchronous)



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Main Textbook and References	
Main Textbook	1.Sherwood L., Fundamentals of Human Physiology, 4th Edition, Brooks/Cole, 2011 2.LINDA S. COSTANZO, Physiology, 6 th Edition, 2018
Other References	Validated Online Scientific Sites

Policies and Instructions***	
Attendance (For lectures and exams)	<ol style="list-style-type: none">1) Attendance at lectures is strongly encouraged. This is attributed in part to the fact that what instructor provides in lecture is not always available from subscription notes or the textbook.2) Excused absences for examinations will normally be given only in cases of serious illness or a death in the student's immediate family. Any other excuses will not be accepted.3) Students should report absences on exam dates to both the Course Director and the Office of the Dean.4) An un-excused absence will result in a grade of zero for that exam. This is a standard policy of the School of Medicine.5) Make-up exams are given only in unusual circumstances and they include written exams.6) I welcome constructive comments on exam questions. Please make these comments via email.
Activities	
Late Submission	
Exams	The format of assessment for the Midterm and Final exams will be multiple choice questions (MCQ)
Cheating and Plagiarism	

***For more information, please see the student handbook.