

Course Description Form

1. Course Name:	
Medical Physiology	
2. Course Code: ZUDE0204	
3. Semester / Year: 2025-2026	
Annual	
4. Description Preparation Date:	
10/8/2025	
5. Available Attendance Forms:	
Lectures (Theory) + Labs (Practical, Weekly)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2 hours weekly theory and 2 hours weekly practical for 30 weeks Total 120 hours – 4 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Ahmed Abdullah ajrash	Email: ahmed.ajrash@gamil.com
8. Course Objectives	
Course Objectives	1- Study the functions of body structures and its secretions 2- Learn the mechanisms used by the body to do different functions 3- Learn that the physiology is the science of physics and chemistry of living materials and use the practical methods to approve that 4- Learn about the infections and diseases that infect the body organs and how to control that 5- Learn about the body defense.
9. Teaching and Learning Strategies	
Strategy	1. Use PowerPoint lectures. 2. Method of debate and discussion. 3. Using smart screens and whiteboards to display scientific material. 4. Education in laboratories to acquire scientific skills. 5. Reports and projects and oral discussions.

10. Course Structure (Theory)

Week	Hours	Subject Title	Required learning outputs	Teaching Method	Assessment Method
First Semester					
1	2 Hrs. Theory	Introduction	Function organization of the human body, Cell physiology, Cell membrane, Cell components, Cell Junction	Power Point	Quiz
2	2 Hrs. Theory	Body fluid	Type of body fluids, Intracellular and extracellular, Daily intake of water, Daily loss of body water, Constituents of extracellular and intracellular fluids, Major factors contributing to the movement of fluid, Specialized Fluids of the Body) Edema (Types of Edemas, causes of edema, Measurement of body fluid volume, Dehydration, Types of dehydration, Classification, Causes, Signs and Symptoms of Dehydration	Power Point	Quiz
3	2 Hrs. Theory	Homeostasis and Transport across the cell membrane	Positive and negative feedback system, Diffusion (passive), Carrier-mediated transport (passive or active), Vesicular transport	Power Point	Quiz
4	2 Hrs. Theory	BLOOD	Composition of blood , Hematocrit, Plasma , Functions of blood), Red blood cells (Genesis of R.B.C, polycythemia, Anemia, Destruction of R.B.C.s	Power Point	Quiz
5	2 Hrs. Theory	White Blood Cells	Types of W.B.C. , Genesis of the leukocytes, Life span of the W.B.C, Phagocytosis, Inflammation, Leukemia's, Leukopenia	Power Point	Quiz

6	2Hrs. Theory	Hemoglobin	Formation of Hemoglobin , Iron Metabolism , Hb Compounds , Destruction of Hb , The common causes of jaundice	Power Point	Quiz
7	2 Hrs. Theory	Blood groups	Agglutination, Agglutinins, The Rh Group, Formation of Anti-Rh, agglutinins, Erythroblastosis Fetalis , Effect of the Mother's Antibodies on the Fetus, Transfusion Reactions resulting from mismatched Blood Types , Nature of Antibodies	Power Point	Quiz
8	2 Hrs. Theory	Hemostasis and blood coagulation	Vascular Spasm , Formation of a Platelet Plug , Mechanism of the Platelet Plug , Mechanism of Blood Coagulation , Prevention of Clotting in the Normal Vascular System , Prevention of Blood Coagulation outside the Body , Blood Disease	Power Point	Quiz
9	2 Hrs. Theory	Digestive system	The Functions of the digestive, Structural layers of digestive, Stomach, Secretions of the Stomach , Regulation of Stomach Secretion , Mixing of Stomach Contents, Stomach Emptying	Power Point	Quiz
10	2 Hrs. Theory	Digestive system	small intestine , Secretions of the Small Intestine, Movement in the Small Intestine, Liver, Functions of the Liver, Pancreatic Secretions, Regulation of Pancreatic Secretion, Large Intestine, Movement in the Large Intestine Digestion, Absorption, and Transport	Power Point	Quiz

11	2 Hrs. Theory	ORAL CAVITY and Salivary Glands	Functions of Mouth, Salivary Glands (Structure, Development, Major glands, Minor glands, Clinical correlations, Regulation of Salivary Secretion, Factors Influencing Salivary Flow and Composition) (Mastication, Deglutition, Bolus Formation for Swallowing, Digestion), (speech: Definition, Mechanism, Nervous Control, Applied Physiology	Power Point	Quiz
12	2 Hrs. Theory	Salivary functions and Regulation of Salivary Secretion	Composition of Saliva, Saliva Components, Properties of Saliva, Functions of Saliva, Effect of Drugs and Chemicals on Salivary Secretion, Maintenance of Tooth Integrity, The Diagnostic Applications of Saliva and forensic uses of saliva.	Power Point	Quiz
13	2 Hrs. Theory	Cardiovascular system	Blood vessels Heart: Layers, Valves, Actions of heart, Blood Vessels, Division of circulation, Properties of Cardiac Muscle, Action Potential and Ionic Basis, Conductive system of Human Heart	Power Point	Quiz
14	2 Hrs. Theory	Cardiovascular system	Blood pressure (Cardiac Cycle, Heart Sounds, Cardiac Output, Heart Rate and Regulation, Arterial Blood Pressure and Regulation of ABP Venous Pressure and Capillary Pressure, Arterial Pulse and Venous Pulse, Regional Circulation, Electrocardiogram, Hemorrhage, Circulatory Shock and Heart	Power Point	Quiz

			Failure, Cardiovascular Adjustments during Exercise		
15	Exam				
Second Semester					
1	1 Hrs. Theory	Respiratory system	Types of Respiration, Stages of Respiration, Respiratory tract, Non respiratory functions of respiratory tract, Mechanics of Pulmonary Ventilation, Types of Respiratory pressures, Factors causing and preventing collapsing tendency of lungs	Power Point	Quiz
2	1 Hrs. Theory	Respiratory system: Lung volumes and capacities	Compliance, Variation in Compliance, The resistance and the work of breathing, Dead space, Lung volume and Lung capacity, Ventilation, Respiratory Protective Reflexes , Pulmonary function tests, Regulation of Respiration, The relationship between oral health and respiratory disease	Power Point	Quiz
3	2 Hrs. Theory	SPECIAL SENSATION	Vision, Hearing, taste & smell (Structure of Eye, Visual Process and Field of Vision, Visual Pathway Pupillary Reflexes, Color Vision, and Errors of Refraction. Structure of Ear and Auditory Pathway ,Mechanism of Hearing and Auditory Defects, Sensation of Taste and Smell	Power Point	Quiz
4	2 Hrs. Theory	Temperature of the Body	Normal body Temperatures, Physiological Variations of body temperature, Heat Balance, Heat gain or heat production in the body, Heat loss from the body, Insulator System of the Body, Blood flow to the skin from the body core provides heat transfer,	Power Point	Quiz

			Regulation of body temperature, Mechanisms to decrease or increase body temperature, Sympathetic “Chemical” Excitation of heat production		
5	2 Hrs. Theory	Urinary system	Parts of Renal system, The Kidney, Functions of kidneys, Components of kidney, Parenchyma of kidney, Nephron and Juxtaglomerular Apparatus, Renal corpuscle, Structure of renal corpuscle, Tubular portion of nephron, Collecting duct	Power Point	Quiz
6	2 Hrs. Theory	Urinary system	Urine formation (Mechanism of urine formation, Glomerular Filtration, Pressure determining filtration, Tubular Reabsorption, Tubular secretion, Micturition, Nerve supply to urinary bladder and sphincters, Renal Function Tests, Relation between renal disease & oral health)	Power Point	Quiz
7	2 Hrs. Theory	Endocrine System	Introduction, Endocrine glands, Hormones, Nature of Hormones, Classification of hormones, Hormone Secretors, Hormonal action Hormone receptors, Synthesis and storage of hormones, Mechanism of hormonal function, Measurement of Hormone Concentrations in the Blood	Power Point	Quiz
8	2 Hrs. Theory	Major Endocrine Glands	Oral manifestations of endocrine dysfunction, Control Systems Involving Hypothalamus and Pituitary glands, The pituitary gland, Thyroid gland, Pancreas gland, Adrenal glands	Power Point	Quiz

9	2 Hrs. Theory	Muscular system	Muscle structure (Types, Structure, Microscopic Structure, Muscle Physiology, Properties, Contraction and contractile elements, Tone, Electrical and Molecular Changes during Muscular Contraction)	Power Point	Quiz
10	2 Hrs. Theory	Muscular system	Tone, contraction (Molecular Changes During Muscular Contraction, Neuromuscular Junction- Neuromuscular Transmission and Blockers, Nutrition and Metabolism (Energy Requirements))	Power Point	Quiz
11	2 Hrs. Theory	Nervous System	Nerve impulse, synapses Nervous System Division, Cranial nerves , Neuron and Neuroglia, Receptors, Nerve impulse, Synapse and Neurotransmitters	Power Point	Quiz
12	2 Hrs. Theory	Nervous System	(Reflex Activity, Somatosensory System and Somatomotor System, Physiology of Pain)	Power Point	Quiz
13	2 Hrs. Theory	Reproductive system	Aging & reproductive system (Male Reproductive System Female Reproductive System, Meiosis, Aging and Reproductive system.	Power Point	Quiz
14	2 Hrs. Theory	Aviation and Deep physiology	Body Response in high altitudes, physiological Changes in the Sea deep. Nutrition and metabolism (daily energy requirement, obesity and fitness)	Power Point	Quiz
15		Exam			

10. Course Structure (Practical)

Week	Hours	Subject title	Required learning outputs	Teaching Method	Assessment Method
First Semester					
1	2 Hrs. Practical	microscope	Microscope work		Quiz
2	2 Hrs. Practical	Collection of Blood Samples	How to draw a blood sample		Quiz
3	2 Hrs. Practical	Blood Smears	Viewing the components of the blood under the mask by staining		Quiz
4	2 Hrs. Practical	Functions of saliva & taste sensation	Explanation of the functions of saliva		Quiz
5	2 Hrs. Practical	Stimulation and collection of salivary secretion	Stimulation of saliva by stimulants		Quiz
6	2 Hrs. Practical	Separation of blood samples	Separation of blood components using Centrifuge		Quiz
7	2 Hrs. Practical	Differential WBCs	Differentiate between types of white blood cells		Quiz
8	2 Hrs. Practical	Total Count of WBSc	Calculating the number of white blood cells using a slide for counting blood cells		Quiz
9	2 Hrs. Practical	Total Count of RBSc	Calculating the number of red blood cells using a slide for counting blood cells		Quiz
10	2 Hrs. Practical	Blood groups	Knowing the different types of blood types among individuals		Quiz
11	2 Hrs. Practical	Estimation of hemoglobin	Definition of hemoglobin and testing for hemoglobin levels		Quiz
12	2 Hrs. Practical	Bleeding and clotting time	Define bleeding time and understand its clinical relevance, Recognize the normal range for bleeding		Quiz

			time and interpret abnormal values.		
13	2 Hrs. Practical	Self – monitoring of blood glucose test	Describe the purpose of glucose testing and its importance in diagnosing diabetes and monitoring blood sugar levels. 2. Identify the types of glucose tests available and their clinical uses. 3. Understand normal and abnormal glucose levels and interpret results.		Quiz
14	2 Hrs. Practical	Measurement of blood pressure & pulse rate	Understand the purpose of blood pressure measurement and its significance in cardiovascular health. , Describe the procedure for accurately measuring blood pressure. , Identify normal and abnormal blood pressure ranges and interpret readings.		Quiz
15	2 Hrs. Practical	Effect of exercise on blood pressure and respiratory rate	Understand the purpose of measuring respiratory rate and its importance in assessing respiratory and overall health. , Describe the correct technique for measuring respiratory rate. , Identify normal and abnormal respiratory rate ranges and interpret their clinical significance.		Quiz
Second Semester					
1	2 Hrs. Practical		Understand the purpose and importance of vision testing in assessing eye health and		Quiz

			detecting vision impairments, Describe the basic types of vision tests and their uses, Recognize normal and abnormal vision test results and understand their implications.		
2	2 Hrs. Practical	Physiology of vision test	Understand the purpose of hearing tests in assessing auditory health and detecting hearing impairments, Recognize normal and abnormal hearing test results and understand their clinical implications.		Quiz
3	2 Hrs. Practical	Physiology of hearing test	Understand the purpose of smell sensation testing in evaluating olfactory nerve function, Describe the basic procedure for assessing smell sensation, Recognize normal and abnormal findings and understand their clinical significance.		Quiz
4	2 Hrs. Practical	Physiology of smell sensation	Recognize normal and abnormal temperature ranges and interpret their clinical significance, Understand the purpose of measuring body temperature in assessing health and identifying fever or hypothermia.		Quiz
5	2 Hrs. Practical	Measurement of body temperature	Understand the purpose of thyroid function tests (TFTs) in assessing thyroid health and diagnosing thyroid disorders, Identify the main types of thyroid function tests and their specific uses.		Quiz

6	2 Hrs. Practical	Thyroid function (body mass index)	Identify the main types of thyroid function tests and their specific uses.		Quiz
7	2 Hrs. Practical	Thyroid function (body mass index)	Identify when to perform resuscitation or artificial respiration based on clinical signs.		Quiz
8	2 Hrs. Practical	Resuscitation &Artificial respiration	Understand the principles and methods of resuscitation and artificial respiration in emergency situations,Describe the key techniques used in CPR (Cardiopulmonary Resuscitation) and artificial respiration.		Quiz
9	2 Hrs. Practical	Resuscitation &Artificial respiration	Understand the role of skeletal muscle testing in determining muscle function and detecting neuromuscular diseases.		Quiz
10	2 Hrs. Practical	Physiology of Skeletal muscles	Explain standard techniques for assessing skeletal muscle strength and function.		Quiz
11	2 Hrs. Practical	Physiology of Skeletal muscles	Recognize normal and abnormal results, including their clinical consequences.		Quiz
12	2 Hrs. Practical	Physiology of Skeletal muscles	Understand the purpose of reflex testing in assessing the integrity of the nervous system, Describe the procedures for examining deep tendon and superficial reflexes,Recognize normal and abnormal reflex responses and their clinical significance		Quiz
13	2 Hrs. Practical	Examination of reflexes (motor function)			Quiz

14	2 Hrs. Practical	Seminars and examinations			Quiz
15		Seminars and examinations	Understand the purpose and importance of vision testing in assessing eye health and detecting vision impairments, Describe the basic types of vision tests and their uses, Recognize normal and abnormal vision test results and understand their implications.		2
			Understand the purpose of hearing tests in assessing auditory health and detecting hearing impairments, Recognize normal and abnormal hearing test results and understand their clinical implications.		

11. Course Evaluation

- 40 Marks along the year: divided as :
12.5 First course: 7.5 Theoretical including two exams, homework, reports, quizzes + 5 marks in practical part including quizzes, reports, Homework
12.5 Second course: 7.5 Theoretical including two exams, homework, reports, quizzes + 5 marks in practical part including quizzes, reports, homework
- 20 Marks: Practical Final exam
- 40 Marks: Theoretical Final Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	A.C. Guyton & J.E. Hall (2006). Textbook of Medical Physiology (11th ed). Elsevier Inc. ISBN 0-7216-0240-1
Main references (sources)	G.T. Tortora & B. Derrickson (2009). Principles of -1 ❖ Anatomy and Physiology (12th ed). John Wiley & Sons, Inc. ISBN 978-0-470-08471-7 K. Rogers (2011). Blood Physiology and Circulation (1st -2 ❖ ed). Rosen educational services .S. Roberts (2007). Human Physiology. Global Media -3 ❖ 4- Rodney A. Rhoades & George A. Tanner. Physiology

Recommended books and references (scientific journals, reports...)	Elsevier, Nature
Electronic References, Websites	NCBI, PubMed