



University of Baghdad
College of Nursing
Undergraduate Curriculum
Human Physiology



1. **Course Title: Human Physiology**
2. **Course Number: 107**
3. **Credit Hours:** Total of (4) credits :
Theory (3) credits.
Practical (1) credits.
4. **Course Calendar:** Total (14) hours weekly of (15) weeks :
Theory: (3) hrs.
practical: (2) hrs .
5. **Placement: First years /Second Semester**
6. **Course Description:**

Detailed study of the functioning, integration and interrelationships of the following organ systems of the human body using lecture and lab exercises: Neurologic (Including Autonomic and Special Senses), Muscular, Endocrine, Cardiac, Circulatory, Renal, Reproductive (including Pregnancy, Development, Growth and Senescence), Immune, Hematologic, Respiratory **system**.

Course Objective:

- 1- Introducing the students to the structure and functions of the human organs.
- 2- Understand the functional principles, anatomical structures, biochemistry and genetic characteristics of the organs, organs and secretions of the human body such as enzymes, hormones and other bodily fluids
- 3- Learn how to use the microscope and the processes of preparing microscopic slides to conduct laboratory tests, in addition to various diagnostic tests, such as diagnosing blood groups and distinguishing white blood cells from red blood cells, as well as using the ECG device for the heart muscle and knowing the functions of each of its halls.
- 4- Clarify how to use laboratory equipment and tools for practical physiology, the purpose of their use, and what examination they are used for .

7. Course Outline:

Theoretical Content

Part I: Introduction to Human Physiology:

- 1.1. Introduction of Physiology
- 1.2. Physiology of **Body fluids(water) and electrolyte**
 - 1.2.1. Definitions, Composition of body fluids
 - 1.2.2. Types of body fluids,
 - 1.2.3. Electrolytes of the body fluids_
 - 1.2.4. Movement of, body fluids 1) Hydrostatic pressure 2) osmotic pressure,
 - 1.2.5 Regulation of Water Output
 - 1.2.6, Disorders of water imbalance

Part II: Physiology of Digestive System:

- 2.1. Composition and Functions of Salivary Secretion
- 2.2. Swallowing
- 2.3. Gastric Secretion.
- 2.4. Digestion and Regulate the Secretion.
- 2.5. Digestion and Absorption in Small Intestine
- 2.6, Secretion, Digestion and Absorption in Large Intestinal,
- 2.7. Function of Liver, Pancreas and Gallbladder
- 2.8. Movement of Digestive Material
- 2.9. Control of Digestive Functions

Part III: Physiology of Muscular System:

- 3.1. Study the general function of the Muscles.
- 3.2. Types and functions of different parts of these organs.
- 3.3. Contraction of skeletal muscles.
- 3.4. Sliding theory and its steps.
- 3.5. Action potential and ions fluxes.
- 3.6. muscular performance.
- 3.7. Muscle tone.
- 3.8. Source of energy stored in muscles.
- 3.9. Hormones and muscle.

Part IV: Physiology of Nervous System:

- 4.1. Membrane potential.
- 4.2. Types of membrane channels.
- 4.3. Action potential.
- 4.4. Synapses and Conduction of Nerve Impulses –action potentials.
 - 4.4.1. Types of synapses.
 - 4.4.2. Synapses activity.
- 4.5. Reflexes.
 - 4.5.1. Component of Neural Reflexes.
 - 4.5.2. Type of Reflexes.
 - 4.5.3. Example of Reflexes.

Part V: Physiology of The Cardiovascular System Part1:

- 5.1. Study the functional properties of the heart.
- 5.2. Action potential of the cardiac muscle.
- 5.3. Conductivity and conducting system.
- 5.4. Rhythmicity.
- 5.5. Cardiac pacemaker.
- 5.6. Heart rate, factor effecting heart rate.
- 5.7. Cardiac cycle.
- 5.8. Heart sound.
- 5.9. Electrocardiogram.

Part VI: Physiology of The Cardiovascular System Part II:

- 6.1. Study the General function of the Blood Vessels
- 6.2. Hemodynamic
- 6.3. Factor effecting of blood flow

- 6.4. Types of blood flow
- 6.5. Types of blood pressure
- 6.6. Regulation of blood pressure
 - 6.6.1. Neuronal
 - 6.6.2. Hormonal

Part VII: Physiology of The Urinary System:

- 7.1. Study the general function of the urinary system
- 7.2. The blood and nerve supply of the kidney
- 7.3. The function of the kidney
- 7.4. Urine formation
 - 7.4.1. Glomerular filtration
 - 7.4.2. Tubular reabsorption and secretion.
- 7.5. The hormones that influence selective reabsorption.
- 7.6. Control of blood pressure.
- 7.7. Micturition

Part VIII: Blood physiology:

- 8.1. Overview of Blood
- 8.2. Gaseous Exchange
- 8.3. Blood composition
 - 8.3.1. Plasma
 - 8.3.2. Red Blood Cells
 - 8.3.3. White Blood Cells
 - 8.3.4. Platelets
- 8.4. Hemostasis (Coagulation or Clotting)
- 8.5. ABO Group System
- 8.6. Surface Antigens, Inheritance, Compatibility in Blood/Plasma Transfusions
- 8.7. Hemolytic Disease of the Newborn

Part IX: Physiology of The lymphatic system:

9,1, Lymph flow

9.1.1, Lymph flow in the lymphatic vessels

9.1,2. Lymph flow in the lymph nodes,

9.2. Function of lymph nodes

9,3, Function of spleen and thymus

9.4. The Defense Mechanisms and Immunity

9.4.1. Non Specific Defense Mechanisms (Innate Immunity =Native Immunity

9.4.1.1. First line

9.4.1.2. Second line

9.5. Specific Defense Mechanisms (Acquired immunity = Adaptive immunity)

9.6. Humeral Immunity (Antibody Mediated Immunity)

Part X: Physiology of The Endocrine System:

10,1. Types of Glands

10.2. Function of endocrine system

10.3. Hormones:

10,3,1 Characteristics of Hormones

10,3,2, Functions of hormones

10,3,3, Classification of hormones

10,4, Mechanism of Hormone Action

10,4,1, Internal receptors

10,4, 2, External receptors

10,5, Endocrine Glands & functions (Hypothalamus, Pituitary Gland, Thyroid Gland, pancreas, Adrenal Glands, Parathyroid Glands, Pineal glands, Gonads
Male gonads are known as the testes, and ovaries in case of females. Testes, The placenta.

Part xI: Physiology of female reproductive System

11.1. The functions of the female reproductive system

11.2. Oogenesis

11,3, Hormonal control of ♀ secondary sex characteristic

11,4, Ovarian cycle

11,5, Uterine Cycle (Menstrual Cycle) and Menstruation

11,6, Fertilization

11,7, Pregnancy

11,8, labor process

11,9, lactation

Part XII: Physiology of Male Reproductive System

12.1. Testicular Function

12.1.1, Spermatogenesis Formation of sperm

12.1.2. Hormonal factors that stimulate spermatogenesis

12,2, Maturation of sperm in the epididymis

12.3. Storage of sperms

12,4, Secretion and function of Male glands

12,4, 1. Function of the seminal vesicles

12,4, 2, Function of the prostate gland

12,5, Semen – the fluid & sperm from the vas deferens

12,6, Capacitation of the spermatozoa

12,7, Testosterone and other male sex hormones

Part XIII: Physiology of Respiratory system

13.1. Types of respiration

13,2. Pulmonary ventilation or respiratory cycle

13.3 Factors Control Gases Pressure

13.4. Respiratory Muscles

13,5, Volume of pulmonary air space

13.6, Calculation of pulmonary ventilation in health and disease

13.7. Gases transport

13.8. Factors Affecting the Affinity of Hemoglobin to Oxygen

13.9. control of respiration

Practical Content

Part I: Body fluids- Body fluid compartment, fluid transportation, 1- osmosis 2- diffusion 3- active transport 4- filtration Types of Solutions, Fluid volume loss (hypovolemia), nursing innervation

Part II: The electrocardiography (ECG): Definition, medical uses, Electrodes and leads, Electrode placement, Amplitudes and intervals.

Part III: Muscular System Definition, medical uses, Electrodes and leads, Electrode placement, Amplitudes and intervals.

Part IV: Respiratory System: Lung Volumes and capacities, What are the 4 lung volumes? What are normal lung volumes? What does low lung volumes mean? How do you measure lung volume? spirometer

Part V: Hemoglobin concentration and P.C.V:

Part VI: Morphological classification of anemia

Part VII: Blood smear

Part VIII: Differential count of WBCs White and RBCs cell count

Part IX: Platelets count

Part X: -blood group test

Part XI: Clotting and bleeding time

Part XII: E.S.R. Test

Part XIII: Urine analysis