BIO-SCIENCE

Placement- FIRST YEAR **Time: Theory- 120 hours**

Anatomy and Physiology-90 hours

Microbiology- 30 hours

ANATOMY AND PHYSIOLOGY

Course Description

This course is designed to help students gain knowledge of the structure and function of the human body and recognize any deviation from normal health in order to render effective nursing services.

General Objective

Upon completion of the course, the student shall be able to:

1. Describe in general the structure and functions of the human body.
2. Describe in detail the structure and functions of the different organs and systems in the human body.
3. Apply the anatomical and physiological principles in the practice of nursing.

Total Hours – 90

Unit No.	Learning Objectives	Content	Hr.	Teaching learning activities	Assessment methods
I	Define and spell various anatomical terms.	**Introduction to anatomical terms organization of the human body** a) Anatomical terms b) Systems and cavities of the human body	4	Lecture cum Discussions. Explain using charts Record book	Short answer questions Objective type
II.	Describe different organs of the body, systemic function and their inter-relationship.	**Introduction to the detailed structure of the body** a) The cell: Structure, reproduction and function b) Tissues including membranes and glands : types, structure and functions c) Body cavities and their contents	6	Lecture cum Discussions. Explain using microscopic slides, Skeleton and torso	Short answer questions Objective type
III	Describe the composition of blood and its functions.	**Blood** a) Composition and formation of blood b) Functions of blood c) Blood clotting, blood grouping and cross matching d) Blood products and their use.	6	Lecture cum Discussions. Explain using microscopic slides	Short answer questions Objective type Essay type

Unit No.	Learning Objectives	Content	Hr.	Teaching learning activities	Assessment methods
				Demonstration of blood grouping and cross-matching, Hb estimation	
IV.	Describe the structure and functions of heart and blood vessels	**The Circulatory System** a) Heart : Structure, functions including conduction system and cardiac cycle b) Blood vessels : Types, Structure and position c) Circulation of blood d) Blood pressure and pulse	6	Lecture cum discussions. Explain using charts, models and specimen	Short answer questions Objective type Essay type
V.	Describe structure and functions of lymphatic system	**The Lymphatic system** - Structure and function of lymph vessels, Lymph nodes and lymph circulation, lymphatic tissue - spleen and thymus	6	Lecture cum discussions. Explain using charts and models	Short answer Objective type Essay type
VI.	Describe the structure and functions of respiratory system	**The Respiratory system** a) The structure and functions of respiratory organs b) The physiology of respiration c) Characteristics of normal respiration and deviation.	6	Lecture cum discussions. Explain using charts and models, specimens Demonstration of spirometry	Short answer Objective type Essay type
VII.	Describe the structure and function of digestive system	**The Digestive system** a) Structure and functions of the alimentary tract and is accessory organs. b) The process of digestion, absorption and metabolism of food constituents.	6	Lecture cum discussions. Explain using charts, models and videos	Short answer Objective type Essay type
VIII.	Describe the structure and functions of organs of Excretory system.	**The Excretory system** a) Structure and functions of the kidney, ureters, urinary bladder, and urethra b) Formation and composition of urine. c) Fluid and electrolyte balance d) Structure and functions of the skin. e) Regulation of the body temperature.	6	Lecture cum discussions. Explain using charts, slides models and videos	Short answer Objective type Essay type

Unit No.	Learning Objectives	Content	Hr.	Teaching learning activities	Assessment methods
IX.	Describe the structure and functions of endocrine glands.	**The Endocrine system** - The structure and functions of the pituitary, thyroid, parathyroid and adrenal glands, pancreas (islets of Langerhans), ovaries and testes	6	Lecture cum discussions. Explain using charts and models	Short answer Objective type Essay type
X.	Describe the structure and functions of male and female reproductive system and accessory organs	**The Reproductive system** a) Structure and functions of the female reproductive system b) Process of menstrual cycle, reproduction and menopause c) Structure and functions of breasts d) Structure and functions of the male reproductive system e) Reproductive health	8	Lecture cum discussions. Explain using charts, videos, models and specimens	Short answer Objective type Essay type
XI.	Describe the structure and functions of Nervous system.	**The nervous system** a) Types of nerves- structure and functions b) Brain and cranial nerves. c) Spinal cord and motor and sensory pathways of the spinal cord, autonomic nervous system.	10	Lecture cum discussions. Explain using charts and models	Short answer Objective type Essay type
XII.	Describe the structure and function of sensory organs	**The sense organs** a) Skin, eye, ear, nose and tongue b) Physiology of vision, hearing, smell, touch, taste and equilibrium.	6	Lecture cum discussions. Explain using charts, videos and models	Short answer Objective type Essay type
XIII.	Describe the structure and functions of skeletal system.	**The Skeleton** a) Formation and growth of bones b) Tendons, ligaments and cartilages c) Classification of bones, joints d) Joint movement e) Axial and appendicular skeleton	8	Lecture cum discussions. Explain using charts, models and skeleton	Short answer Objective type Essay type
XIV	Describe structure and functions of Muscular system.	**The Muscular System** a) Type, structure and functions of muscle b) Origin, Insertion, and action of muscles	6	Lecture cum discussions. Explain using charts, slides and models	Short answer Objective type Essay type

MICROBIOLOGY

Course Description

This course is designed to help students gain knowledge and understanding of the characteristics and activities of micro- organisms, how they react under different conditions and how they cause different disorders and diseases. Knowledge of these principles will enable student to understand and adopt practices associated with preventive and promotive health care.

General Objectives

Upon completion of the course, the students shall be able to:

1. Describe the classifications and characteristics of micro-organisms
2. List the common disease producing micro-organisms
3. Explain the activities of micro-organism in relation to the environment and the human body.
4. Enumerate the basic principles of control and destruction of micro-organisms.
5. Apply the principles of microbiology in nursing practice.

Total Hours – 30

Unit. No.	Learning Objectives	Content	Hr.	Teaching learning activities	Assessment methods
I	Describe evolution of microbiology and its relevance in nursing.	**Introduction** a) History of bacteriology and micro-biology. b) Scope of microbiology in Nursing	3	Lecture cum discussions.	Objective type Short answers
II	Classify the different types of micro organism. Describe the normal flora and the common diseases caused by pathogens Explain the methods to study microbes	**Micro Organisms** a) Classification, characteristics, (Structure, size, method and rate of reproduction) b) Normal flora of the body. c) Pathogenesis & common diseases. d) Methods for study of microbes, culture & isolation of microbes.	8	Lecture cum discussions. Explain using slides, films, videos, exhibits, models Staining and fixation of slides.	Short answer Objective type Essay type
III	Describe the sources of infection and growth of microbes. Explain the transmission of infection and the principles in collecting specimens	**Infection and its transmission** a) Sources and types of infection, nosocomial infection. b) Factors affecting growth of microbes. c) Cycle of transmission of infection portals of entry, exit, modes of transfer. d) Reaction of body to infection, mechanism of resistance. e) Collection of specimens.	4	Lecture Demonstrations Specimens Explain using charts	Short answer Objective type Essay type

IV	Describe various types of immunity, hypersensitivity autoimmunity and immunizing agents	**Immunity** a) Types of immunity – innate and acquired. b) Immunization schedule. Immunoprophylaxis (vaccines, sera etc.) c) Hypersensitivity and autoimmunity. d) Principles and uses of serological tests	5	Lecture cum discussions. Demonstration Exhibits	Short answer Objective type Essay type
V	Describe the various methods of control and destruction of microbes	**Control and destruction of Microbes** a) Principles and methods of microbial control -Sterilization -Disinfection -Chemotherapy and antibiotics -Pasteurization b) Medical and surgical asepsis c) Bio-safety and waste management	5	Lecture, Demonstration Videos Visit to the CSSD	Short answer Objective type Essay type
VI.	Demonstrate skill in handling & care of microscopes Identify common microbes under the microscope	**Practical Microbiology** a) Microscope – Parts, uses, handling and care of microscope b) Observation of staining procedure, preparation and examination of slides and smears c) Identification of common microbes under the microscope for morphology of different microbes.	5	Lecture, Demonstrations Specimens Slides	