Trade: Medical Technology
BASIC MEDICAL SCIENCES I (ANATOMY) Grade 11

Domain A: Introduction/Fundamentals to Anatomy

Standard Students acquire knowledge and skills to explore the intricate aspects of the structure of living organisms.

Grade 11
***Benchmark I**:Students will be able to:* ● *Explain basic cell components, and describe mitosis and meiosis processes.* ● *Describe the structure of the DNA double helix and RNA.* ● *Describe the stages of the cell cycle.*
Student Learning Outcomes
Students will be able to: SLO:MSA-11-A-01: Define anatomical terms used to describe body directions, regions, and structures. SLO:MSA-11-A-02: Identify and describe the organelles in a eukaryotic cell. SLO:MSA-11-A-03: Describe nucleus and its role as the central organelle in eukaryotic cells. SLO:MSA-11-A-04: Describe the structure of the DNA double helix, including the role of nucleotides, base pairing, and the sugar-phosphate backbone SLO:MSA-11-A-05: Describe the structure of RNA and its types. SLO:MSA-11-A-06: Describe the structure of chromosomes. SLO:MSA-11-A-07: Define the process of mitosis and meiosis. SLO:MSA-11-A-08:

Describe the stages of the cell cycle. SLO:MSA-11-A-09: Describe the significance of cell division in growth, development, and tissue repair.

Domain B: Basic Tissues

Standard Students will be acquiring knowledge and skills to explore the intricate aspects of the structure and function of basic body tissues.

Grade 11
Benchmark I*:Student will be able to:* ● Describe the basic characteristics and functions of each tissue type. ● Identify the various types of epithelial cells and their locations in the body. ● Describe the characteristics of different tissues of the body.
Student Learning Outcomes

Student will be able to:
SLO:MSA-11-B-01: Define the term tissue and explain the significance of tissues in structure and formation of organs. SLO:MSA-11-B-02: Describe the basic characteristics and functions of each tissue type. SLO:MSA-11-B-03: Distinguish between epithelial, connective, muscle, and nervous tissues. SLO:MSA-11-B-04: Identify the various types of epithelial cells and their locations in the body. SLO:MSA-11-B-05: Define connective tissues and their functions. SLO:MSA-11-B-06: Identify common examples of connective tissues (e.g., bone, cartilage, blood). SLO:MSA-11-B-07: Describe the characteristics of muscle tissues. SLO:MSA-11-B-08: Differentiate between skeletal, smooth, and cardiac muscles. SLO:MSA-11-B-08: Describe the characteristics of nervous tissues.

Domain C: Digestive system

Standard Students will be acquiring knowledge and skills to explore the intricate aspects of the structure of digestive system.

Grade 11
Benchmark I:Student will be able to: ● Identify the main and accessory organs of digestive system with their functions ● Explain the histological layers of the digestive tract ● Describe the basic structure of digestive organ

Student Learning Outcomes
Student will be able to: Identify the main and accessory organs of the digestive system. SLO:MSA-11-C-01: Identify and describe the histological layers (such as mucosa, sub mucosa, muscular is externa, and serosa) of the digestive tract SLO:MSA-11-C-02: Describe the structure of the oral cavity. SLO:MSA-11-C-03: Describe the anatomical features of the oropharynx, nasopharynx and laryngopharynx. SLO:MSA-11-C-04: **D**escribe the distribution of the peritoneum outlining its anatomy, layers, and connections within the abdominal cavity SLO:MSA-11-C-05: Identify the regions of the stomach (cardia, fundus, body, and pylorus). SLO:MSA-11-C-06: Describe the small intestine and its subdivisions (duodenum, jejunum, and ileum). SLO:MSA-11-C-07: Describe the structure of the large intestine (cecum, colon, rectum, anal canal). SLO:MSA-11-C-08: Explain the arterial and venous blood supply to the gastrointestinal organs.

Domain D: Circulatory system

Standard: Students will be acquiring knowledge and skills to explore the intricate aspects of the structure of the circulatory system.

Grade 11
***Benchmark I**:Student will be able to:*

• *Identify major components of the circulatory system,* • *Describe the anatomical position and structure of the heart.* • *Describe the main vessels of human body*
Student Learning Outcomes
Students will be able to: SLO:MSA-11-D-01: Identify the major components of the circulatory system, including the heart, blood vessels (arteries, veins, and capillaries), and blood. SLO:MSA-11-D-02: Identify the major branches arising from the arch of the aorta the body. SLO:MSA-11-D-03: Describe the anatomical position and structural features of the heart, including its chambers (atria and ventricles), valves, major blood vessels connected to the heart, and its overall location in the thoracic cavity. SLO:MSA-11-D-04: Identify the branches of the thoracic aorta, including intercostal arteries and bronchial arteries. SLO:MSA-11-D-05: Identify the major branches of the abdominal aorta, including the celiac trunk, superior mesenteric artery, and inferior mesenteric artery. SLO:MSA-11-D-06: Learn the main vessels of the upper limb and lower limb.

DOMAIN E: Respiratory System

Standard: Students will be acquiring knowledge and skills to explore the intricate aspects of the structure of the respiratory system.

Grade 11
Benchmark I*:Students will be able to describe the structures of the respiratory system.*
Student Learning Outcomes

Students will be able to: SLO:MSA-11-E-01: Describe the organs of the respiratory system including the nose, pharynx, larynx, trachea, bronchi, and lungs. SLO:MSA-11-E-02: Explain the structural adaptations of respiratory organs that enable efficient gas exchange. SLO:MSA-11-E-03: Identify the components of the upper respiratory tract, including the nose, nasal cavity, pharynx, and larynx. SLO:MSA-11-E-04: Explain how the larynx is involved in sound production and the protection of the lower respiratory tract. SLO:MSA-11-E-05: Explain the role of pulmonary arteries and veins in oxygenating blood.

DOMAIN F: Urinary System

Standard: Students will be acquiring knowledge and skills to explore the intricate aspects of structure of the urinary system.

Grade 11
Benchmark I*:Students will be able to:* ● Describe the structure of the urinary system and its placement in the abdomen. ● Describe the structure of nephron ● Explain the vascular supply to the right and left kidneys.
Student Learning Outcomes
Student will be able to: SLO:MSA-11-F-01: Identify the components of the kidney, including the renal cortex, renal medulla, renal pelvis, and renal pyramids. SLO:MSA-11-F-02: Describe the anatomy of the urethra, including its structure, length, and location.

SLO:MSA-11-F-03: Identify the layers of the urinary bladder wall. SLO:MSA-11-F-04: Describe the location and structure of the prostate gland in males. SLO:MSA-11-F-05: Explore the anatomy of the ureter, connecting the kidney to the urinary bladder. SLO:MSA-11-F-06: Explain the structure of nephron and its blood supply. SLO:MSA-11-F-07: Explain the vascular supply to the right and left kidneys.

DOMAIN G: Endocrine system

Standard: Students will acquire knowledge and skills to explore the intricate aspects of structure of the endocrine system.

Grade 11
Benchmark I*:Student will be able to:* ● *Explain the endocrine glands and hormones.* ● *Enlist the endocrine glands and describe their locations.* ● *Learn the roles of endocrine hormones*
Student Learning Outcomes
Student will be able to: SLO:MSA-11-G-01: Describe the basic concept of endocrine glands and hormones, and differentiate between endocrine and exocrine glands. SLO:MSA-11-G-02: Describe the anatomical locations and primary functions of the pituitary, thyroid, pancreas, and adrenal glands SLO:MSA-11-G-03:

Identify and describe the anatomical structures within the testes responsible for hormone production. SLO:MSA-11-G-04: Identify and describe the anatomical structures within the ovaries responsible for hormone production. SLO:MSA-11-G-05: Explain the structure of the pancreas and its brief histology to differentiate between its endocrine and exocrine role.

Domain H: Musculoskeletal system

Standard: Students will be acquiring knowledge and skills to explore the intricate aspects of the structure of the musculoskeletal system.

Grade 11
***Benchmark I**: Student will be able to:* ● Identify and define the components of the musculoskeletal system and its roles in bodily movement and support ● Describe the bones and joints in the axial and appendicular skeleton.
Student Learning Outcomes
Student will be able to: SLO:MSA-11-H-01: Identify and define the components of the musculoskeletal system (bones, muscles, joints, tendons, and ligaments), and their roles in bodily movement and support. SLO:MSA-11-H-02: Describe the bones in the upper and lower limbs, as well as the skull and sternum, detailing the location, shape, and functions of each bone in relation to bodily movement and protection.

SLO:MSA-11-H-03: Identify and describe the anatomical features of the scapula, humerus, radius, ulna, femur, tibia and hip bones, hands, foot, ribs, sternum, clavicle, sacrum, thyroid, hyoid SLO:MSA-11-H-04: Explain the movements of ball and socket, hinge, pivot, and condyloid joints. SLO:MSA-11-H-05: Enlist the types and describe the characteristics of muscles of the body.

DOMAIN H: Reproductive system

Standard: Students will be acquiring knowledge and skills to explore the intricate aspects of the structure of the reproductive system.

Grade 11
***Benchmark I**: Student will be able to* ● *List and label the major components of the male reproductive system.* ● *Describe the main components of the female reproductive system*
Student Learning Outcomes
Student will be able to: SLO:MSA-11-H-06: Describe the structures of the male reproductive system, including the testis, scrotum, seminal vesicles, prostate gland, penis, and urethra. SLO:MSA-11-H-07: Identify and outline the components of the female reproductive system, including the uterus, ovaries, fallopian tubes, cervix, and vagina.

DOMAIN I: The Skin

Standard: Students will be acquiring knowledge and skills to explore the intricate aspects of the structure of the skin.

Grade 11
***Benchmark I**:Students will be able to describe the basic structure of skin and its components.*
Student Learning Outcomes
Student will be able to: SLO:MSA-11-I-01: Define the skin as the largest organ in the human body. SLO:MSA-11-I-02: Describe the layers of the epidermis (stratum corneum, stratum lucidum, stratum granulosum, stratum spinosum, stratum basale). SLO:MSA-11-I-03: Identify the main cell types found in the epidermis (keratinocytes, melanocytes, Langerhans cells, Merkel cells). SLO:MSA-11-I-04: Identify the two main layers of the dermis. SLO:MSA-11-I-05: Define sebaceous glands, their locations and role in skin health. SLO:MSA-11-I-06: Describe the structure of the nail, including the nail plate, nail bed, and nail matrix.

DOMAIN J: The special senses

Standard Students will be acquiring knowledge and skills to explore the intricate aspects of structure of special senses.

Grade 11
***Benchmark I**:Student will be able to* ● *Describe the structure of ear, eye, nose and salivary glands.*
Student Learning Outcomes
Student will be able to: SLO:MSA-11-J-01: Identify the external structures of the eye, including the cornea, sclera, and conjunctiva. SLO:MSA-11-J-02: Describe the structure of the three coats of the eyeball: sclera, choroid, and retina. SLO:MSA-11-J-03: Describe the anatomy of outer, middle and inner ear. SLO:MSA-11-J-04: Describe the structures of the nose including the nasal cavity. SLO:MSA-11-J-05: Describe the structure of salivary glands, including the parotid, submandibular, and sublingual glands.