Colorado CTE

Basic Anatomy and Physiology

Human Body Organization I

1 Identify the six levels of structural organization of the human body. I.1

Students can:

- a Distinguish between the levels of structural organization (chemical, cellular, tissue, organ, system, organism). I.1.A
- b Illustrate the interdependency of each level of structural organization. I.1.B

2 Identify directional terminology. I.2

Students can:

- a Explain directional terms used when referring to the human body (superior/inferior, proximal/distal, medial/lateral, anterior/posterior, superficial/deep). I.2.A
- b Identify planes used to divide the human body (sagittal, midsagittal, transverse, frontal). I.2.B
- c Distinguish between the body cavities and the organs located within each cavity (dorsal, cranial, vertebral, ventral, thoracic, pleural, pericardial, mediastinum, abdominopelvic, abdominal, pelvic). I.2.C
- d Identify the body quadrants and the main organs in each quadrant (right upper quadrant- RUQ, left upper quadrant-LUQ, right lower quadrant-RLQ, left lower quadrant-LLQ). I.2.D

3 Discuss the importance of homeostasis in the human body. I.3

Students can:

- a Explain what is occurring in the body during a homeostatic imbalance. I.3.A
- b Identify variables that may cause homeostatic imbalances. I.3.B
- c Compare and contrast negative and positive feedback mechanisms. I.3.C

Human Body Chemistry II

1 Examine the basic principles of chemical elements. II.1

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Students can:

a Discuss the Periodic Table of Elements and describe its role. II.1.A

b Identify the organic elements in the human body and list their basic functions (carbon, hydrogen, oxygen, nitrogen). II.1.B

c Compare and contrast organic and inorganic compounds. II.1.C

d Identify the function of common electrolytes in the human body (sodium, potassium, chloride). II.1.D

2 Identify the basic components of atoms and describe the characteristics of ions, molecules, compounds, and bonds. II.2

Students can:

a Diagram and discuss the basic components of an atom (nucleus, electron, proton, and neutron). II.2.A

b Differentiate between ions, cations and anions. II.2.B

c Compare and contrast molecules and compounds. II.2.C

d Recognize the characteristics of ionic, covalent and hydrogen bonds. II.2.D

3 Show the relationship between water, acids, bases, and pH. II.3

Students can:

a Discuss the properties of water and illustrate how it is utilized in the human body. II.3.A

b Categorize acidic, basic and neutral solutions and identify pH values of each using the pH scale. II.3.B

c Identify the normal pH of common body fluids (blood, intracellular fluid, gastric juice, urine). II.3.C

Cell Biology III

1 Identify the basic structures and functions of an animal cell. III.1

Students can:

a Explain the structure and function of the cell membrane. III.1.A

b Discuss the structure and function of the nucleus including the nuclear membrane. .B

c Describe the structure and function of the cytoplasm. .C

d Recognize the structure and function of the organelles (centrosome, Golgi body, lysosome, mitochondria, ribosome, rough endoplasmic reticulum, smooth endoplasmic reticulum, vacuole). .D

2 Describe the cellular transport processes and classify as active or passive. III.2

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Students can:

a Discuss selectively permeable membranes and determine factors which influence permeability. III.2.A

b Compare and contrast active transport, phagocytosis, and pinocytosis. III.2.B

c Compare and contrast diffusion, facilitated diffusion and osmosis. III.2.C

d Determine the osmotic effects that occur when a cell is placed in an isotonic, hypotonic, and a hypertonic solution. III.2.D

3 Describe animal cell reproduction. III.3

Students can:

a Examine the process of mitosis. III.3.A

b Examine the process of meiosis. III.3.B

Histology IV

1 Identify the characteristics and functions of the four principle types of tissue. IV.1

Students can:

a Describe the structure and function of epithelial tissue. IV.1.A

b Describe the structure and function of connective tissue. IV.1.B

c Describe the structure and function of nervous tissue. IV.1.C

d Describe the structure and function of muscle tissue. IV.1.D

2 Differentiate between the four basic types of membranes. IV.2

Students can:

a Identify the location, structure, and function of cutaneous membranes. IV.2.A

b Identify the location, structure, and function of serous membranes. IV.2.B

c Identify the location, structure, and function of mucous membranes. IV.2.C

d Identify the location, structure, and function of synovial membranes. IV.2.D

3 ompare and contrast exocrine and endocrine glands. IV.3

Students can:

a Identify and give examples of exocrine glands. IV.3.A

b Identify and give examples of endocrine glands. IV.3.B

c Describe the functions and locations of sudorfierous, sebaceous, and ceruminous glands. IV.3.C

4 Describe the basic structures, functions, and diseases and disorders of the integumentary system. IV.4

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Students can:

a Identify the three layers of the skin (epidermis, dermis, subcutaneous) with respect to tissue type, function, and substructures (glands, hair, nails). IV.4.A

b Estimate the body surface area of an adult using the Rule of Nines. IV.4.B

c Classify burns based on depth of skin penetration. IV.4.C

d Describe the diseases and disorders associated with the integumentary system (skin cancer (ABCDE's of skin cancer identification), herpes, boils, warts, impetigo). IV.4.D

Skeletal System V

1 Identify the five functions of the skeletal system. V.1

Students can:

a Discuss how the skeleton gives shape and support to the body. V.1.A

b Identify how bones protect internal organs. V.1.B

c Describe muscle attachment to bones. V.1.C

d Identify where red blood cell formed (hematopoiesis). V.1.D

e Discuss the storage of calcium and phosphorous in the bones and the purpose of storing minerals. V.1.E

2 Compare and contrast compact and spongy bone and the location and function of each. V.2

Students can:

a Identify the location and function of compact bone. V.2.A

b Describe the location and function of spongy bone. V.2.B

c Explain the role of osteoblasts, osteocytes, and osteoclasts in bone growth and ossification and examine where these processes occur in the bone. V.2.C

3 Differentiate the axial and appendicular skeletons. V.3

Students can:

a Identify the bones of the axial skeleton. V.3.A

b Identify the bones of the appendicular skeleton. V.3.B

c Locate the following skull bones and identify their function: mandible, maxilla, zygomatic, frontal, parietal, occipital, sphenoid, ethmoid, hyoid, temporal, mastoid process. V.3.C

d Illustrate the number, location and function of each of the five groups of vertebrae. V.3.D

4 Describe bone markings, features, location, and names of long, short, flat, and irregular bones of the human body. V.4

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Students can:

a Identify the bone markings, features, location, and names of long bones. V.4.A

b Identify the bone markings, features, location, and names of short bones. V.4.B

c Identify the bone markings, features, location, and names of flat bones. V.4.C

d Identify the bone markings, features, location, and names of irregular bones. V.4.D

5 Identify the types of joints, describe the movement of each, and classify as fibrous, synovial, or cartilaginous. V.5

Students can:

a Describe a ball-and-socket joint, the movement of this joint, and examples of this type of joint. V.5.A

b Describe a condyloid joint, the movement of this joint, and examples of this type of joint. V.5.B

c Describe a gliding joint, the movement of this joint, and examples of this type of joint. V.5.C

d Describe a hinge joint, the movement of this joint, and examples of this type of joint. V.5.D

e Describe a pivot joint, the movement of this joint, and examples of this type of joint. V.5.E

f Describe a saddle joint, the movement of this joint, and examples of this type of joint. V.5.F

g Describe sutures and identify where they are located. V.5.G

6 Compare and contrast tendons and ligaments. V.6

Students can:

a Describe the characteristics of tendons. V.6.A

b Describe the characteristics of ligaments. V.6.B

7 Describe the diseases and disorders of the skeletal system and the homeostatic imbalance involved with each. V.7

Students can:

a Explain the disease process of osteoporosis and discuss diagnostic tests, treatment options and long-term prognosis. V.7.A

b Explain rheumatoid arthritis and discuss diagnostic tests, treatment options and long-term prognosis. V.7.B

c Explain rickets and discuss diagnostic tests, treatment options and long-term prognosis. V.7.C

d Explain gout and discuss diagnostic tests, treatment options and long-term prognosis. V.7.D

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Muscular System VI

1. **Identify the general functions of the muscular system.** VI.1

   Students can:

   a. Describe how the muscles combine with the skeleton in providing motion and identify the terms related to muscle movement (origin, insertion, prime mover, antagonist, synergist, fixator). VI.1.A

   b. Identify how substances move though the body due to contractions of involuntary muscle. VI.1.B

   c. Summarize how muscle contractions produce and regulate heat (thermogenesis, shivering). VI.1.C

   d. Describe how sensory receptors monitor tension and length of muscle to maintain posture. VI.1.D

2. **Compare and contrast the functional characteristics of muscle tissue.** VI.2

   Students can:

   a. Illustrate muscle excitability. VI.2.A

   b. Describe muscle contractibility. VI.2.B

   c. Discuss muscle extensibility. VI.2.C

   d. Explain muscle elasticity. VI.2.D

3. **Compare and contrast the location, microscopic appearance, type of control (voluntary/involuntary), and functions of the three types of muscle** VI.3

   Students can:

   a. Identify the location, microscopic appearance, and type of control of striated muscle. VI.3.A

   b. Describe the location, microscopic appearance, and type of control of cardiac muscle. VI.3.B

   c. Explain the location, microscopic appearance, and type of control of smooth muscle. VI.3.C

4. **Analyze the anatomy and physiology of muscle fibers and describe muscle fiber stimulation.** VI.4

   Students can:

   a. Identify the microscopic anatomy of a muscle fiber (sarcomere, myofibril proteins – actin and myosin). VI.4.A

   b. Describe the Sliding Filament Theory of muscle contraction. VI.4.B

   c. Identify the anatomy and physiology of a neuromuscular junction and describe how neurotransmitters (acetylcholine) aid in muscle contraction. VI.4.C

5. **Name, locate, and describe the function of major muscles.** VI.5

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Students can:

a Identify and locate muscles whose action is voluntary controlled (biceps brachii, triceps brachii, sternocleidomastoid, trapezius, deltoid, diaphragm, pectoralis major, latissimus dorsi, gastrocnemius, hamstrings, quadriceps, gluteus maximus, gastrocnemius). VI.5.A

b Distinguish muscles whose action is involuntary controlled (walls of blood vessels, walls of stomach, intestines, iris of the eye, bladder, trachea). VI.5.B

6 Describe the diseases and disorders of the muscular system and the homeostatic imbalance involved with each. VI.6

Students can:

a Explain the disease process of tetanus and discuss long-term prognosis. VI.6.A

b Describe muscle cramps and identify causes and treatment options. VI.6.B

c Describe a muscle strain and identify causes and treatment options. VI.6.C

d Describe tendinitis and identify common locations, causes, and treatment options. VI.6.D

Nervous System VII

1 Identify the major functions of the nervous system. VII.1

Students can:

a Explain the process of sensory input. VII.1.A

b Define integration. VII.1.B

c Explain the process of motor output. VII.1.C

2 Compare and contrast the general organization of the nervous system. VII.2

Students can:

a Identify the divisions of the Peripheral Nervous System (PNS) including sensory, motor (somatic/autonomic and parasympathetic/sympathic). VII.2.A

b Identify the sections of the Central Nervous System (CNS). VII.2.B

3 Describe the structure and function of the two main types of nervous tissue. VII.3

Students can:

a Identify and describe the major parts of a neuron and the nerve processes. VII.3.A

b Recognize the types of neuroglial cells, the function of each and indicate if they are located in the CNS or PNS. c- Compare and contrast white and gray matter. VII.3.B

4 Analyze and sequence the events involved when a nerve impulse is initiated. VII.4

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Students can:

a Describe what is occurring in the neuron during the Resting Potential including the transportation of ions and voltage. VII.4.A

b Describe what is occurring in the neuron during the Action Potential including the transportation of ions, and voltage. VII.4.B

5 Describe the reflex arc and give examples of reflexes. VII.5

Students can:

a Identify the five steps in a reflex arc. VII.5.A

b Describe the process of a knee jerk reflex arc. VII.5.B

c Describe the process of the salivary reflex arc. VII.5.C

d Describe the process of the blinking reflex arc. VII.5.D

6 Identify the structures of the brain and explain the function of each. VII.6

Students can:

a Name, locate, and describe the function of the meninges. VII.6.A

b Identify the four major areas of the brain, the location and function of each (cerebrum, cerebellum, brain stem (medulla oblongata, pons, midbrain), diencephalon. VII.6.B

c Describe the components of cerebral Spinal fluid where it is located and where it is produced (choroid plexus). VII.6.C

7 Describe the diseases and disorders of the nervous system and the homeostatic imbalance involved with each. VII.7

Students can:

a Describe epilepsy, causes and treatment options. VII.7.A

b Explain the symptoms of Parkinson's disease, treatment options and long-term prognosis. VII.7.B

c Describe Alzheimer's disease and the long-term prognosis of someone with the disease. VII.7.C

d Identify the symptoms of a concussion; describe how concussions are graded, treatment options for each grade, and long-term prognosis. VII.7.D

Special Senses VIII

1 Compare and contrast general and special senses. VIII.1

Students can:

a Identify the receptors responsible for each of the general sense sensations (pain, temperature, touch, pressure, vibration, proprioception). VIII.1.A

b Identify the special structures responsible for each of the special senses (vision, hearing, taste, smell, balance). VIII.1.B

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2 **Identify the anatomical structures of the eye and the physiological function of each structure in regards to the sense of sight.** VIII.2

Students can:

a Label the anatomical structures of the eye (lacrimal gland and duct, extrinsic muscles, conjunctiva, sclera, cornea, choroid, iris, lens, retina, aqueous and vitreous humor). VIII.2.A

b Describe the process of vision and identify the pathway of light as it enters through the eye. VIII.2.B

3 **Describe the anatomy of the nose and the physiological function of each structure in regards to the sense of smell.** VIII.3

Students can:

a Label the anatomical structures of the nose (external nares, nasal vestibule, nasal cavity, internal nares, sinuses, hard palate, soft palate, olfactory bulb). VIII.3.A

b Describe the process of olfaction (olfactory epithelium, olfactory receptor cells, olfactory bulb, trigeminal nerve). VIII.3.B

4 **Discuss the anatomy of the tongue and the physiological function of each structure in regards to the sense of taste.** VIII.4

Students can:

a Label the anatomical structures of the tongue (taste buds, papillae, gustatory hair, taste pore, gustatory receptor cell). VIII.4.A

b Describe the physiological process of taste. VIII.4.B

5 **Discuss the anatomy of the ear and the physiological function of each structure in regards to the sense of hearing.** VIII.5

Students can:

a Label the anatomical structures of the ear (auricle/pinna, external auditory canal, tympanic membrane, tympanic cavity, malleus, incus, stapes, round window, semicircular canals, vestibular nerve, cochlea, cochlear nerve). VIII.5.A

b Discuss the physiological process of hearing. VIII.5.B

6 **Describe the diseases and disorders of the special senses and the homeostatic imbalance involved with each.** VIII.6

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Students can:

a Discuss glaucoma and identify causes and treatment options. VIII.6.A

b Describe cataracts and identify causes and treatment options. VIII.6.B

c Identify the signs of color blindness and discuss the causes of the condition. VIII.6.C

d Describe hyposmia and identify the causes. VIII.6.D

e Identify dysguesia and explain the causes. VIII.6.E

f Explain tinnitus and identify the causes. VIII.6.F

Endocrine System IX

1 Distinguish between endocrine glands and exocrine glands. IX.1

Students can:

a Describe, list the functions, and give examples of endocrine glands. IX.1.A

b Identify, list the functions, and give examples of exocrine glands. IX.1.B

2 Identify the general functions of the endocrine system. IX.2

Students can:

a Explain how the endocrine system and the nervous system work together to maintain homeostasis. IX.2.A

b Describe how the endocrine system regulates metabolism and body processes. IX.2.B

3 Define the term hormone and identify the location of endocrine glands, the hormones secreted, the target organ of each hormone, and the effect of the hormone. IX.3

Students can:

a Define the term hormone. IX.3.A

b Identify the location of the following endocrine glands, the hormones secreted, the target organ of each hormone, and the effect of the hormone: pituitary gland, thyroid gland, adrenal glands, pancreas, testes, and ovaries. IX.3.B

4 Describe the diseases and disorders of the endocrine system and the homeostatic imbalance involved with each. IX.4

Students can:

a Discuss Addison's disease and identify treatment and long-term prognosis. IX.4.A

b Identify thyroid cancer, causes, and treatments. IX.4.B

c Determine the causes of Diabetes insipidus, treatment, and long-term prognosis. IX.4.C

d Explain cretinism and treatment options. IX.4.D

e Identify the cause of exophthalmoses and long-term prognosis. IX.4.E

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Blood, Lymphatic, & Cardiovascular Systems X

1 **Identify the components of blood, the structure of each component, and the function of each.** X.1

Students can:

a Describe the structure and function of erythrocytes. X.1.A

b Identify the structure and function of leukocytes and list the two major groups (granulocytes (neutrophils, basophils, eosinophils) and agranulocytes (monocytes, lymphocytes). X.1.B

c Explain the structure and function of thrombocytes. X.1.C

2 **Explain the phases of hemostasis.** X.2

Students can:

a Identify the vascular phase of hemostasis. X.2.A

b Explain the platelet phase of hemostasis. X.2.B

c Discuss the coagulation phase of hemostasis. X.2.C

d Describe the clot retraction phase of hemostasis. X.2.D

e Identify the fibrinolysis phase of hemostasis. X.2.E

3 **ABO blood types and Rh factor** X.3

Students can:

a Identify the antigen located on the erythrocyte to determine ABO blood type. X.3.A

b Describe the Rh factor and how it can affect pregnancy. X.3.B

4 **Describe the structures and functions of the lymphatic organs and explain how lymph moves through the body.** X.4

Students can:

a Identify the structure and function of the lymph organs (thymus, bone marrow, spleen, lymph nodes, tonsils, appendix Peyer's patches). X.4.A

b Describe how lymph moves through the body. X.4.B

5 **Compare and contrast antibodies and antigens.** X.5

Students can:

a Discuss antigens and describe how they elicit an immune response. X.5.A

b Explain how antibodies bind to antigens and signal other cells of the immune system to respond to the invading microbe. X.5.B

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6 **Identify the roles of T-cells and B-cells in the immune response.** X.6

Students can:

a Discuss the general role of T-cells in an immune response. X.6.A

b Describe the general role of B-cells in an immune response. X.6.B

7 **Distinguish between active and passive immunity and natural and artificial immunity.** X.7

Students can:

a Compare and contrast active and passive immunity. X.7.A

b Compare and contrast natural and artificial immunity. X.7.B

8 **Identify the general functions of the cardiovascular system.** X.8

Students can:

a Describe how the cardiovascular system transports nutrients, oxygen, and hormones though out the body and removes metabolic wastes. X.8.A

b Discuss how the cardiovascular system protects the body by circulating lymphocytes, antibodies, and platelets. X.8.B

c Identify how the cardiovascular system regulates body temperature, pH, and water content of cells. X.8.C

9 **Describe the structures and functions of the cardiovascular system organs.** X.9

Students can:

a Identify the structures of the cardiovascular system (heart, arteries, veins, capillaries, blood). X.9.A

b Discuss the functions of the structures of the cardiovascular system. X.9.B

10 **Identify and label the anatomical structures of the heart and trace blood flow through the heart.** X.10

Students can:

a Label the anatomical structures of the heart. X.10.A

b Trace blood flow through the heart. X.10.B

11 **Explain the structures and functions of the conduction system of the heart and trace the pathway.** X.11

Students can:

a Label the structures of the conduction system of the heart. X.11.A

b Describe the function of the conduction system of the heart. X.11.B

c Trace the pathway of the conduction system of the heart. X.11.C

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Sequence the events of the cardiac cycle, define the term cardiac output, and identify factors that influence it. X.12

Students can:

a Sequence the events of the cardiac cycle. X.12.A

b Define the term cardiac output. X.12.B

c Discuss factors that influence cardiac output. X.12.C

13 Describe blood pressure, identify the common locations where a pulse is felt, and assess how to take how to measure blood pressure. X.13

Students can:

a Identify systolic and diastolic blood pressure. X.13.A

b Locate common places a pulse is felt. X.13.B

c Demonstrate how to measure blood pressure. X.13.C

14 Describe the diseases and disorders of the blood, lymph, and cardiovascular systems and describe the homeostatic imbalance involved with each. X.14

Students can:

a Compare and contrast the types of anemia and the causes of each. X.14.A

b Describe lymphoma and identify treatment options. X.14.B

c Describe lymphedema and identify causes and treatment options. X.14.C

d Identify causes of coronary artery disease and describe treatment options. X.14.D

e Compare and contrast the types of arrhythmias and the causes of each. X.14.E

f Identify the causes of heart failure and describe the treatment options. X.14.F

Respiratory System XI

1 Sequence the general structures of the respiratory system and identify their functions. XI.1

Students can:

a Label the anatomical structures of the respiratory system and sequence airflow from the nose/mouth to the alveoli. XI.1.A

b Identify the functions of the respiratory system structures. XI.1.B

2 Identify specific anatomical features of the respiratory organs. XI.2

Students can:

a Identify the structure and function of the pharynx. XI.2.A

b Describe the structure and function of the larynx. XI.2.B

c Discuss the structure and function of the trachea. XI.2.C

d Identify the anatomical structures of the lungs and discuss the function of each. XI.2.D

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)escribe the physiology of respiration. XI.3

Students can:

a Compare and contrast ventilation, external respiration, and internal respiration. XI.3.A

b Describe gas exchange. XI.3.B

c Compare and contrast tidal volume and vital capacity. XI.3.C

d Identify how carbon dioxide affects respiration and blood pH. XI.3.D

4 Describe the diseases and disorders of the respiratory system and describe the homeostatic imbalance involved with each. XI.4

Students can:

a Identify the causes, symptoms, and long-term prognosis of lung cancer. XI.4.A

b Describe the symptoms of COPD and identify treatment options. XI.4.B

c Discuss influenza and describe treatment options. XI.4.C

d Identify the cause of tuberculosis and describe symptoms and treatment. XI.4.D

Digestive System XII

1 Examine the organs of the alimentary canal, accessory structures, and the general functions of the digestive system. XII.1

Students can:

a Describe the functions of the mouth and tongue. XII.1.A

b Identify the function of the pharynx. XII.1.B

c Describe the function of the esophagus. XII.1.C

d Identify the functions of the stomach. XII.1.D

e Describe the divisions and the functions of the small intestines. XII.1.E

f Identify the divisions and the functions of the large intestines. XII.1.F

g Discuss the structure and functions of the accessory organs: salivary glands, pancreas, gallbladder, and liver. XII.1.G

2 Compare and contrast chemical and mechanical digestion and give examples of where each occurs. XII.2

Students can:

a Describe chemical digestion and identify where it occurs in the digestive process. XII.2.A

b Discuss mechanical digestion and identify where it occurs in the digestive process. XII.2.B

3 Define common medical terms used in digestive processes. XII.3

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Students can:

a Define deglutition and identify where it occurs. XII.3.A

b Define mastication and identify where it occurs. XII.3.B

c Define maceration and identify where it occurs. XII.3.C

d Define segmentation and identify where it occurs. XII.3.D

e Define peristalsis and identify where it occurs. XII.3.E

f Define haustral churning and identify where it occurs. XII.3.F

4 Describe the diseases and disorders of the digestive system and describe the homeostatic imbalance involved with each. XII.4

Students can:

a Compare and contrast the types of hepatitis and identify the long-term prognosis of each. XII.4.A

b Identify the causes of obesity and describe the relationship of associated disorders (stroke, coronary artery disease, and type 2 diabetes mellitus). XII.4.B

c Describe the signs and symptoms of colorectal cancer and identify procedures for early detection and treatment options. XII.4.C

d Identify the causes, symptoms, and treatment of GERD. XII.4.D

e Describe gallstones, causes, and treatment options. XII.4.E

Urinary System XIII

1 Examine organs and the general functions of the urinary system. XIII.1

Students can:

a Identify the location and the general structure and functions of the kidneys. XIII.1.A

b Describe the location and the function of the ureters. XIII.1.B

c Identify the location and the general structure and functions of the bladder. XIII.1.C

d Identify the location and the function of the urethra. XIII.1.D

2 Identify the gross and microscopic anatomy of the kidneys. XIII.2

Students can:

a Label and describe the gross anatomical features of the kidneys. XIII.2.A

b Label and discuss the microscopic anatomical features of the kidneys. XIII.2.B

3 Describe the process of urine formation. XIII.3

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Students can:

a Describe the process of filtration and identify the structures involved in the process. XIII.3.A

b Discuss the process of reabsorption and identify the structures involved in the process. XIII.3.B

c Describe the process of secretion and identify the structures involved in the process. XIII.3.C

4 Compare and contrast normal and abnormal constituents of urine. XIII.4

Students can:

a Describe the normal constituents of urine. XIII.4.A

b Identify the abnormal constituents of urine. XIII.4.B

5 Examine the methods of fluid intake and output in regards to fluid balance (homeostatic balance). XIII.5

Students can:

a Describe normal fluid intake and identify examples of fluid ingestion. XIII.5.A

b Identify the normal and abnormal means of fluid output. XIII.5.B

6 Describe the diseases and disorders of the urinary system and describe the homeostatic imbalance involved with each. XIII.6

Students can:

a Describe incontinence and identify the causes and treatment options. XIII.6.A

b Identify the signs, symptoms and causes of renal failure and describe treatment options. XIII.6.B

c Explain Glomerulonephritis and identify treatment and long-term prognosis. XIII.6.C

d Identify the signs and symptoms of bladder cancer and describe treatment options. XIII.6.D

Reproductive System XIV

1 Examine the general functions of the reproductive system. XIV.1

Students can:

a production of male and female gametes XIV.1.A

b hormone production XIV.1.B

2 Describe the anatomy and physiology of the male genitalia. XIV.2

Students can:

a Identify and label the structures of the male reproductive system and recognize the function of each. XIV.2.A

b Describe the role of testosterone. XIV.2.B

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3 **Describe the anatomy and physiology of the female reproductive structures.** XIV.3

Students can:

a Identify and label the structures of the female reproductive system and recognize the function of each. XIV.3.A

b Describe the role of estrogen, progesterone, and relaxin. XIV.3.B

4 **Examine the menstrual cycle.** XIV.4

Students can:

a Sequence the menstrual cycle and describe what occurs in each stage. XIV.4.A

b Describe the changes that occur in the female during menopause. XIV.4.B

5 **Compare and contrast the processes of spermatogenesis and oogenesis.** XIV.5

Students can:

a Describe the process of oogenesis and the outcome of meiosis. XIV.5.A

b Detail the process of spermatogenesis and the outcome of meiosis. XIV.5.B

6 **Identify the stages of fetal development and birth.** XIV.6

Students can:

a Describe the stages of fetal development from fertilization to birth. XIV.6.A

b Identify the events associated with the three stages of labor. XIV.6.B

7 **Describe the diseases and disorders of the male and female reproductive systems.** XIV.7

Students can:

a Identify reproductive cancers (breast, cervical, ovarian, uterine, penile, prostate and testicular), describe signs and symptoms of each and treatment options. XIV.7.A

b Describe vaginal yeast infections and identify causes and treatments. XIV.7.B

c Explain mastitis and describe the most common cause and treatment. XIV.7.C

d Describe an ectopic pregnancy, signs and symptoms, treatment, and complications. XIV.7.D

e Identify the signs and symptoms of epididymitis causes, and treatments. XIV.7.E

f Describe male hypogonadism, causes, treatment, and long-term prognosis if not treated. XIV.7.F

g Explain the signs and symptoms of orchitis, causes, risk factors, complications, and treatment. XIV.7.G