

See attached for list of goals and learning targets

Approximate calendar

# of weeks	Topic	Chapter
1 ½ - 2	Foundations of Human Anatomy & Physiology	1
3 - 4	Cells and Tissues	2
2	Membranes and the Integumentary System	3
2 ½ - 3	The Skeletal System	4
2 ½ - 3	The Muscular System	5
3 ½ - 4	The Nervous System; The Sensory Systems	6 & 7
1 ½ - 2	The Endocrine System	8
2	The Respiratory System	9
3 - 4	The Blood; The Cardiovascular System	10 & 11
1 ½ - 2	The Lymphatic and Immune Systems	12
2	The Digestive System and Nutrition	13
2 ½	The Urinary System	14
1	The Male and Female Reproductive Systems	15
Additional Projects, etc.		
2 – 3	Course Review: 1 st Semester Test; Movie about becoming a doctor; Fetal pig dissection; Project presentation and Jeopardy	

Assessments:

Daily work

- note-taking (address the learning targets), class discussions, POGIL activities, develop/use models, coloring plates, worksheets/handouts, small-group interactions
- Lab and other hands-on Activities

Formative assessments

- most will be diagram quizzes
- small-group interactions

Summative assessments

- most will be single chapter

Essential Question: How is the human body like a machine?**LEARNING TARGETS:**The Language of Anatomy and Physiology

1. Differentiate between anatomy and physiology. Explain the relationship between them. Differentiate between gross and microscopic anatomy.
2. Describe anatomical position and explain why it is useful. Apply common directional terms (figure 1.2)
3. List and describe the three planes of the body. Identify (on a diagram).
4. List the major body cavities. Identify the main organs that are housed within each cavity. Identify (on a diagram).
5. Use the metric system to make measurements. List the four base units used in the metric system.

Basic Physiological Processes

6. List the hierarchy of structure from the smallest living thing to the largest; provide a brief definition of each.
7. List the four basic types of tissues.
8. Define homeostasis.
9. Name the two body systems which initiate the majority of the body's homeostatic responses. State the three elements all homeostatic control mechanisms have in common.
10. Define negative feedback and describe its role in maintaining homeostasis and normal body function. Contrast with positive feedback. Give an example of each.
11. Explain homeostatic imbalance. Include at least one example in your explanation.
12. Define metabolism. Describe the two general processes associated with metabolism.
13. Describe metabolic rate and factors that can influence metabolic rate.
14. Describe two conditions that can result from inadequate water intake.

How Forces Affect the Body

15. Define/explain basic terminology: *kinetics, force, net force, pressure, and torque*
16. Describe the three types of directional force distributions that act on the body.
17. Differentiate between plastic and elastic responses.

18. Differentiate between an acute and a chronic injury. Provide an example of each.

Understanding Science

19. Differentiate between descriptive and comparative research.
20. Describe the relationship between statistical significance and statistical inference.
21. Contrast scientific hypothesis and scientific theory.
22. Identify the role each of the following has played in the development of scientific research
- | | |
|----------------------|-------------------|
| a. Aristotle | e. William Harvey |
| b. Galen | f. Robert Hooke |
| c. Leonardo da Vinci | g. Antonie van |
| d. Andreas Vesalius | Leeuwenhoek |
23. Scientific discoveries made by NASA have contributed to the development of many products related to anatomy and physiology, as well as the environment. Name four of these products.
24. (Apply methods of scientific research).

Know all key terms.

Essential Question: What will be the next breakthrough as scientists study human cells?

LEARNING TARGETS:

2.1 Molecules of Life

I will give you some notes on basic chemistry that is not in your chapter

1. For **each** of the four types of organic compounds (proteins, carbohydrates, lipids, and nucleic acids):
 - a. Describe its structure (what elements, what subunits)
 - b. What is the main function?
 - c. Give example(s)
 - d. Other defining characteristics, as needed
 - e. Add additional information for each as described below:
 - i. Proteins
 1. What three components form the backbone of all 20 amino acids?
 2. How do enzymes function?
 - ii. Carbohydrates
 1. Discuss the advantages and disadvantages of glycogen and glycerides with regard to energy storage
 - iii. Lipids
 1. Contrast saturated and unsaturated fatty acids
 2. Describe the structure of phospholipids
 3. Define hydrophilic and hydrophobic
 - iv. Nucleic Acids
 1. Name and describe the four types of RNA
 2. Describe the structure of ATP; what is the importance of this molecule?
2. Define polar molecule
3. Describe hydrogen bonding in water; name 3 properties of water that result from this type of bonding
4. Differentiate between an acid and a base; how is acidity measured? State the pH of blood

2.2 Cells

5. Given a diagram, locate major parts of a cell
*Know the basic function of the following cell parts:
 - a. Centriole
 - b. *Cytoplasm/cytosol
 - c. *Cytoskeleton
 - d. Endoplasmic Reticulum (*smooth vs. *rough)
 - e. *Golgi apparatus
 - f. Lysosome
 - g. *Mitochondrion
 - h. Nuclear envelope (membrane)
 - i. *Nucleus
 - j. *Plasma (cell) membrane
 - k. *Ribosomes
6. Describe the structure of the plasma membrane
7. Differentiate between passive and active transport
 - a. **We will also talk about these processes and terms:**
 - i. hypotonic, hypertonic, and isotonic solutions
 - ii. Simple diffusion, facilitated diffusion, osmosis, exocytosis, solute pumps
8. Explain the relationship between DNA, RNA, and proteins
9. Briefly explain the life cycle of a cell; recognize the main stages when provided a diagram

2.3 Tissues

10. Describe the functions of epithelial tissue
11. Describe the functions of connective tissue; name the 4 classes of connective tissue
12. Differentiate between exocrine and endocrine gland
13. Identify the three major types of muscle tissue; state the function of each
14. Describe the basic types and functions of nerve tissue
15. Use a microscope to draw and label 14 representative tissues. Given an unlabeled prepared slide, identify the type of tissue (you do not need to write out a response for this target)

Know all key terms.

CHAPTER THREE—Membranes and the Integumentary System ~14 days

GOAL: Differentiate Between Membrane Types: Cutaneous, Mucous, Serous, And Synovial

LEARNING TARGETS:

1. Create and fill in a chart to classify body membranes (leave room in case I give you more than you gathered from the chapter)

Membrane	Tissue type (epithelial/connective) Could be both	Common locations	Functions
Cutaneous			
Mucous			
Serous			
Synovial			

2. When provided with a diagram, recognize and name each membrane type (plate)
3. Explain the difference between
 - a. Visceral and parietal
 - b. Peritoneum, pleura and pericardium

GOAL: Demonstrate Understanding of the Structure and Function of the Integumentary System

4. List several important functions of the integumentary system and explain how these functions are accomplished
5. When provided with a diagram of the skin, identify the following skin structures (plates):

<ol style="list-style-type: none"> a. arrector pili muscle b. dermal papillae c. dermis d. epidermis e. hair follicle f. hair shaft g. hypodermis h. Meissner’s corpuscle 	<ol style="list-style-type: none"> i. Pacinian corpuscle j. reticular layer k. sebaceous gland l. stratum basale m. stratum corneum n. stratum granulosum o. sudoriferous (sweat) gland
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6. Give a brief description of each term above (a-o)

7. When provided with a diagram of fingerprints, identify each as loop, whorl, or arch (lab)

8. State the relationship between melanin and melanocytes; describe how tanning occurs. We will also discuss 2 other pigments: carotene and hemoglobin and how each contributes to skin color
9. Differentiate between apocrine and eccrine sweat glands
10. Differentiate between first-, second-, and third-degree burns; explain the "rule of nine" and its importance; provided a diagram, be able to calculate % affected
11. State the condition(s) under which a burn is considered critical

12. Summarize the characteristics of basal cell carcinoma, squamous cell carcinoma, and malignant melanoma
13. Describe how to use the ABCD rule for recognizing melanoma
14. Skin disorders (read; you will be given a worksheet)

Know all key terms.

GOAL: Demonstrate Understanding of the Structure and Function of the Skeletal System

LEARNING TARGETS:

1. List and explain the functions of the skeletal system
2. Define *osteocyte*. List and describe the two types of bone tissue; account for their structural differences
3. List the four types of bones on the basis of shape, give examples of each
4. When provided with a diagram of the long bone, identify the location of the following structures: (plate & f.a.)

a. Articular cartilage	f. Medullary cavity
b. Cortical (compact) bone	g. Periosteum
c. Diaphysis	h. Red marrow
d. Epiphyseal plate	i. Trabecular (spongy) bone
e. Epiphysis	j. Yellow marrow
5. Differentiate between
 - a. *red bone marrow* and *yellow bone marrow* (location and function)
 - b. *periosteum* and *endosteum* (location and function)
6. Identify the microscopic structure of bone (plate)
7. Describe the role of *osteoblasts* and *osteoclasts* in the process of ossification
8. Explain the processes through which bones grow in length and diameter during normal human development
9. State what happens to epiphyseal plates at the end of a person's growth period
10. What factors can cause bone to hypertrophy, increasing mass, density, and sometimes circumference? Provide examples
11. What factors can cause bone to atrophy, losing mass and mineralization? Provide examples
12. Differentiate between the *axial* and *appendicular* skeleton (structure and function)
13. When provided with the lateral view of the skull, identify the location of the following structures: (plate & f.a.)

a. Coronal suture	h. Occipital bone
b. Ethmoid bone	i. Parietal bone
c. External acoustic meatus	j. Sphenoid bone
d. Lacrimal bone	k. Squamous suture
e. Lamboidal suture	l. Styloid process
f. Mastoid process	m. Temporal bone
g. Nasal bone	n. Zygomatic bone
14. When provided with the anterior view diagram of the skull, identify the location of the following structures: (plate & f.a.)
 - a. Frontal bone
 - b. Mandible
 - c. Maxilla
 - d. Mental foramen
 - e. Supraorbital foramen
 - f. vomer
15. Describe how the skull of a newborn infant (or fetus) differs from that of an adult, and explain the function of *fontanelles*

16. When provided with posterior and anterior view diagrams of the skeleton, identify the location of the following structures: (plate & f.a.)

1=posterior view 2=posterior & anterior views

- | | |
|------------------------------------|-------------------------------------|
| a. Calcaneus ¹ | q. Metacarpals |
| b. Carpals | r. Metatarsals |
| c. Cervical vertebrae ¹ | s. Patella |
| d. Clavicle | t. Pedal phalanges |
| e. Coccyx ² | u. Pubic bone |
| f. Costal cartilage | v. Radius |
| g. Femur ² | w. Sacrum ² |
| h. Fibula ² | x. Scapula ¹ |
| i. Forelimb phalanges | y. Sternum |
| j. Humerus | z. Talus ¹ |
| k. Iliac crest | aa. Thoracic vertebrae ¹ |
| l. Ilium ² | bb. Tibia ² |
| m. Ischium ² | cc. Ulna |
| n. Lumbar vertebrae ¹ | dd. Vertebral column |
| o. Mandible | ee. Xiphoid process |
| p. Maxilla | |
17. How is the mandible different from other bones in the skull?
18. Describe, using the terms concave and convex, the primary and secondary curvatures of the S-shaped spine; describe the developmental aspects of these curvatures (also plate)
19. Explain how the abnormal curvatures, *scoliosis*, *lordosis*, and *kyphosis* differ from one another
20. Discuss the functional importance of the intervertebral discs, including which practices can help keep them healthy
21. Compare and contrast *true ribs*, *false ribs*, and *floating ribs* (also plate)
22. Name the skeletal bone capability that is shared only by humans and other primates
23. Contrast the structure of a male and female pelvis; give reason(s) for the differences
24. Describe the general structures and functions of the three major categories of joints. List examples of each.
25. Identify the six types of diarthroses found in the body. Explain the motion(s) associated with each of these joints (also lab and f.a.)
26. Describe and explain the functions of bursae, articular fibrocartilage, tendons, and ligaments (also plate)

For section 4.5, answer the section review questions

Know all key terms.

GOAL: Demonstrate Understanding of the Structure and Function of the Muscular System Gain working knowledge of the structures and functions of the muscular system**LEARNING TARGETS:**

1. Describe/define the following types of body movements; identify the plane of movement for each:
 - a. Abduction
 - b. Adduction
 - c. Flexion
 - d. Extension
 - e. Rotation
 - f. Hyperextension
 - g. Circumduction
 - h. Inversion
 - i. Eversion
 - j. Plantar flexion
 - k. Dorsiflexion
 - l. Pronation
 - m. Supination
2. Differentiate between the origin end and the insertion end of a skeletal muscle
3. When provided with anterior and posterior diagrams of the body, identify 26 muscles by location, origin, insertion, and action (refer to handout of muscles and chart created in class)
4. Compare/contrast skeletal, smooth, and cardiac muscle (copy figure 5.3); add information about the function of each type
5. Define and/or explain the relationship of the following terms (leave plenty of room for extra notes as this will be discussed in some detail using a plate for reference)
 - a. Endomysium
 - b. Perimysium
 - c. Epimysium
 - d. Tendon
 - e. Sarcolemma
 - f. Fascicle
 - g. Fiber
 - h. Myofibril
 - i. Myofilament
 - j. Actin
 - k. Myosin
6. Define the following terms in relation to muscle activity; provide examples of each contraction type
 - a. Agonist (prime mover)
 - b. Antagonist
 - c. Contractility
 - d. Elasticity
 - e. Extensibility
 - f. Irritability
 - g. Concentration contraction
 - h. Eccentric contraction
 - i. Isometric contraction

7. Define the following terms in relation to muscle contraction
 - a. Motor neuron
 - b. Motor unit
 - c. Neuromuscular junction
 - d. Synaptic cleft
 - e. Neurotransmitter
 - f. Sarcomere
 - g. Sliding filament theory
 - h. All-or-none law
8. Describe how an action potential is initiated in a muscle cell
9. Describe the events of muscle cell contraction
10. Explain the relationship between strength of stimulus and strength of contraction; define tetanus
11. Differentiate between slow-twitch and fast-twitch muscle fibers; read "What Research Tells Us" page 166
12. Discuss the concepts of muscular strength, power, and endurance
13. Explain the difference between a muscle strain, a contusion, and a cramp
14. Describe the causes and symptoms of whiplash injuries and hernias
15. Describe the risk factors for low back pain and explain what strategies can be used to avoid it

Know all key terms.

CHAPTER SIX Learning Targets—The Nervous System

This chapter will be split across semesters

with chapter 7: ~18 days

GOAL: Gain working knowledge of the functions of the nervous system

LEARNING TARGETS:

1. List the general functions of the nervous system
2. Differentiate between the central nervous system and the peripheral nervous system, and explain the function of each
3. Describe the functions of the somatic and autonomic branches of the nervous system
4. Differentiate between neurons and neuroglia
5. Describe the anatomical structure of a typical neuron
6. Describe the composition of gray matter and white matter
7. Describe the three functional categories of neurons; give both names for each type of neuron
8. Define action potential and explain how action potentials are generated
9. Explain the factors that influence the speed of neural impulse transmission
10. Describe how impulses are transmitted across the synapse
11. Discuss the roles played by neurotransmitters
12. Describe the two types of reflexes and explain how they work
13. Describe the location and function of the cerebrum; Identify the four lobes of the brain and their functions
14. Describe the relationship between gyri and sulci
15. Describe the location, structures, and functions of the diencephalon (interbrain)
16. Describe the location, structures, and functions of the brain stem
17. Explain the role of the cerebellum
18. Identify the membranes that comprise the meninges and explain their purposes
19. Describe how the capillaries in the brain are different from other capillaries and explain why this is important
20. Identify the location and functions of the spinal cord
21. Describe the basic structure of a nerve
22. How many pairs of cranial nerves does the body have? How many pairs of spinal nerves does the body have?
23. Describe the location, structure, and function of ganglions

24. Differentiate between the functions of the sympathetic and parasympathetic nervous systems
25. Describe the symptoms and recovery strategies for someone who has suffered a traumatic brain injury
26. Describe some of the common diseases and disorders of the nervous system

Know all key terms.

GOAL: Gain working knowledge of the functions of the endocrine system**LEARNING TARGETS:**

1. Explain how the endocrine and nervous systems work together to regulate bodily functions. Name the glands that are also a part of the nervous system.
2. Differentiate between endocrine glands and exocrine glands. Which gland functions as both types? Explain. (see 8.1 and 8.2)
3. Define hormone; describe the functions of hormones
4. List the major processes controlled by hormones
5. Identify the two classifications of hormones. How are the receptors for the two types different? (Be sure to relate to cell structure)
6. Describe neural, hormonal, and humoral control over hormone secretion. Review role of negative feedback in regulating homeostasis
7. Provided with a diagram identify the major endocrine glands and tissues
 - a. Adrenal glands
 - b. Gonads (ovaries, testes)
 - c. Pancreas (islets of Langerhans)
 - d. Parathyroid glands
 - e. Pineal gland
 - f. Pituitary gland
 - g. Thymus gland
 - h. Thyroid gland
8. Which two endocrine glands exercise the most control over the others? (Be familiar with figure 8.2). Describe the functional relationship between the hypothalamus and the pituitary gland
9. How are hormones secreted by the pituitary gland classified in relation to their targets?
10. Why is the posterior pituitary gland not a true gland? What is it?
11. Match major endocrine organs with the hormone(s) each secretes, and the function of these hormones (this will be accomplished through a chart, study guide, and/or activity)
12. Describe the following disorders of the pituitary gland: acromegaly, dwarfism, and diabetes insipidus
13. Discuss the difference between hypothyroidism and hyperthyroidism. Name the disorders associated with each.
14. Identify disorders and diseases of the parathyroid and adrenal glands
15. Explain the difference between type I and type II diabetes mellitus

Know all key terms.

GOAL: Demonstrate Understanding of the Structure and Function of the Respiratory System

LEARNING TARGETS:

1. State the main purpose of the respiratory system; state the other functions performed by the upper respiratory tract
2. Describe the function of each of the main organs forming the respiratory passageway; when provided with a diagram(s), identify location of the structures
 - a. Nose
 - i. External nares
 - ii. Nasal cavity
 - iii. Hard & soft palates
 - iv. Paranasal sinuses
 - b. Pharynx
 - i. Nasopharynx
 - ii. Oropharynx
 - iii. Laryngopharynx
 - iv. Tonsils
 - c. Larynx
 - d. Trachea
 - e. Lungs
 - i. Review visceral and parietal pleura
3. Differentiate between the conducting zone and respiratory zone structures
 - a. Primary bronchi
 - b. Secondary bronchi
 - c. Tertiary bronchi
 - d. Bronchioles
 - e. Terminal bronchioles
 - f. Respiratory bronchioles
 - g. Alveolar ducts
 - h. Alveolar sacs
 - i. Alveoli
 - j. Respiratory membrane
4. List the 3 reasons that gas exchange occurs rapidly

GOAL: Demonstrate Understanding of the Physiology of the Respiratory System

LEARNING TARGETS:

5. Describe the events of respiration
 - a. Pulmonary ventilation
 - i. Describe the mechanics of pulmonary ventilation using pressure and volume differences, and a description of the muscles involved
 - b. External respiration
 - c. Respiratory gas transport
 - d. Internal respiration
6. List non-respiratory air movements
7. Name the two factors that control breathing
8. Explain the effects of central chemoreceptors, peripheral chemoreceptors, and mechanoreceptors on respiration
9. Define/explain respiratory volumes and capacities (plate)
 - a. Tidal volume (TV)
 - b. Residual volume (RV)
 - c. Inspiratory reserve volume (IRV)
 - d. Expiratory reserve volume (ERV)
 - e. Vital capacity (VC)
 - f. Dead space volume
 - g. Functional residual volume
 - h. State the equation for total lung capacity (TLC). What is the average volume for TLC?
10. Differentiate between static and dynamic lung volumes. How can each be measured?
11. Describe respiratory sounds and how they are monitored
 - a. Bronchial sounds
 - b. Vesicular sounds
12. Describe normal changes that occur in respiratory system functioning from infancy to old age

GOAL: Demonstrate Understanding of the Homeostatic imbalances of the Respiratory System

READ section 9.3; this section will not be discussed but it will be on the test.

Know all key terms.

GOAL: Gain working knowledge of the functions of the blood

LEARNING TARGETS:

1. State the three functions of the blood; give two specific examples for each category
2. Describe the physical characteristics of the blood
3. State the function of plasma. Describe the composition of plasma, including plasma proteins.
4. Describe the characteristics and major functions of each type of formed element found in the blood. Also, be able to identify each when provided a diagram.
 - a. Erythrocytes
 - b. Leukocytes
 - i. Agranulocytes
 1. Monocytes
 2. Lymphocytes
 - ii. Granulocytes
 1. Neutrophils
 2. Eosinophils
 3. Basophils
 - c. Platelets (thrombocytes)
5. Describe the process of hematopoiesis. Where does hematopoiesis occur?
6. Define erythropoiesis. Explain how the process is controlled.
7. Describe the steps of hemostasis
8. Differentiate between an embolus and a thrombus
9. Define the following terms
 - a. Antigen (agglutinogen)
 - b. Antibody (agglutinin)
 - c. Agglutination
10. Describe the process of blood typing. (POGIL)
11. Define erythroblastosis fetalis. How does it occur? How can it be prevented?
12. Explain the basis of physiological jaundice seen in some newborn babies.
13. Complete worksheet for section 10.3: Blood Disorders and Diseases

Know all key terms.

CHAPTER ELEVEN Learning Targets – The Cardiovascular System

GOAL: Gain working knowledge of the functions of the cardiovascular system

LEARNING TARGETS:

14. State the components of the cardiovascular system; state its function
15. Describe the location of the heart in the body
16. Trace the pathway of blood through the heart; include chambers, vessels, and valves. Also, be able to identify each when provided a diagram.
17. Describe the three muscular layers of the heart
18. Describe how heart valves function; relate valves to heart sounds (lub dup)
19. Relate the terms *systole*, *diastole*, *stroke volume*, and *cardiac cycle* to heart contractions
20. Define *cardiac output*; state the equation for cardiac output & explain each part of the equation
21. Name, in order, the parts of the internal (intrinsic) conduction system
22. Describe a typical ECG (electrocardiogram); recognize and explain arrhythmias (worksheet)
23. Briefly describe external control of the heart
24. Compare and contrast the structure and function (including how blood flows through the vessel):
 - a. Arteries
 - b. Veins
 - c. Capillaries
25. Briefly describe circulation pathways
 - a. Systemic
 - b. Pulmonary
 - c. Cardiac
 - d. Hepatic portal
 - e. Fetal
26. Define blood pressure. What instrument is used? Define pulse. Name several pulse points
27. What factors should you monitor to help ensure your health?
28. Name three common types of valve abnormalities
29. Of the three *-itis* diseases which is potentially the most dangerous?
30. Describe possible causes of atherosclerosis
31. What disease is known as the *silent killer*, why?
32. Define stroke; name possible signs of a stroke; list possible side effects

Know all key terms.

CHAPTER TWELVE Learning Targets—The Lymphatic and Immune Systems
~7 days

GOAL: Gain general working knowledge of the lymphatic system

LEARNING TARGETS:

1. Explain the two primary functions of the lymphatic system. Describe the ways in which these two processes work together to help keep the body healthy.
2. Compare/contrast lymphatic vessels with the cardiovascular system
3. Define lymph. How is it formed?
4. When is the fluid flowing through the lymphatic system called *blood plasma*, *interstitial fluid*, or *lymph*?
5. Name and briefly describe the types of lymphatic cells. Where in the body do all lymphocytes first develop?
6. What are lymphatic tissues and where is lymphatic tissue found?
7. Briefly describe three organs of the lymphatic system
8. Define "*nonspecific defense*" against disease and then address the following:
 - a. Give three examples of physical barriers
 - b. Differentiate between the two main types of cellular defenses.
 - c. What is the complement system?
 - d. How do interferons differ from other chemical defenses?
 - e. What is the purpose of the inflammatory response? What are the four signs of inflammation?
 - f. In what part of the brain do neurons work to regulate body temperature?
9. What are additional names for the immune system?
10. What does SCID stand for? What do patients born with this disease need in order to have a chance to survive?

11. Describe the following components of the specific defense system (I will help with this section; but you need to read section 12-3 to be able to grasp my presentation)
 - a. Antibody-mediated immunity (humoral)
 - i. Naturally acquired
 1. Active
 2. Passive
 - ii. Artificially acquired
 1. Active
 2. Passive
 - b. Cell-mediated immunity (cellular)
12. Explain the difference between primary and secondary immune responses (describe what the difference is and why there is a difference)
13. Explain what cancer is and what happens during metastasis
14. Define allergy; why do allergies occur?
15. Explain what an autoimmune disorder is and give some examples
16. Explain how HIV is related to AIDS
17. Is AIDS a cause of death? Explain.

Know all key terms.

GOAL: Demonstrate Understanding of the Structure and Function of the Digestive System

LEARNING TARGETS:

1. State the functions of the digestive system.
2. List and define the four types of energy found in the human body.
3. Define metabolism. Differentiate between catabolism and anabolism.
4. What is a Calorie (kilocalorie)? What is a healthy amount of daily Calories for moderately active teenage boys and teenage girls?
5. Describe basal metabolic rate (BMR). List factors that affect BMR
6. Define nutrient. Define macronutrient.
7. Address the following for each of the 6 categories of nutrients:
 - a. Role of nutrient
 - b. If applicable, building block(s)
 - c. Example(s)
 - d. If applicable, Calories per gram
 - e. If applicable, percent of energy that you should get from the nutrient
8. Differentiate between essential and nonessential amino acids. How can vegetarians obtain the proper mix of all 20 amino acids?
9. Compare/contrast saturated/unsaturated fats; what are trans-unsaturated fats
10. Explain the difference between the organs of the alimentary canal and accessory organs.
11. **Provided with a diagram**, locate organs of the alimentary canal and accessory organs (plate & quiz)

<ol style="list-style-type: none"> a. Mouth b. Pharynx c. Esophagus d. Stomach <ol style="list-style-type: none"> i. Cardioesophageal sphincter ii. Pyloric sphincter e. Small intestine <ol style="list-style-type: none"> i. Duodenum ii. Jejunum iii. Ileum iv. Ileocecal valve f. Large intestine <ol style="list-style-type: none"> i. Cecum ii. Appendix iii. Ascending colon iv. Transverse colon v. Descending colon vi. Sigmoid colon vii. Rectum viii. Anal canal ix. anus 	<ol style="list-style-type: none"> g. Salivary glands <ol style="list-style-type: none"> i. Parotid ii. Sublingual iii. submandibular h. Pancreas i. Liver j. Gall bladder
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12. Describe the relationship of the six processes of the digestive system to the structure(s) associated with the process (this target will have information from throughout section 13.2; this is where the above structures will be discussed)
 - a. Ingestion
 - b. Propulsion
 - i. Peristalsis
 - c. Mechanical digestion
 - i. Mixing & churning
 - ii. Segmentation
 - d. Chemical digestion – describe what nutrient(s) is acted upon in which organ(s), the enzyme(s) used, and the end products of the digestion
 - e. Absorption
 - f. Defecation
13. Discuss the roles of the liver
14. Describe the relationship between the liver and the gallbladder in producing and using bile
15. Briefly describe the following (including symptoms & treatment)
 - a. Gingivitis
 - b. Gastroesophageal reflux disease
 - c. Gastroenteritis
 - d. Pancreatitis
16. What is an ulcer? Which bacterium causes most peptic ulcers?
17. Define gallstones. Describe the procedure to remove the gallbladder
18. Describe a method for screening the intestines for cancer

Know all key terms.

GOAL: Demonstrate Understanding of the Structure and Function of the Urinary System

LEARNING TARGETS:

1. State the main functions of the urinary system
2. Describe the location of the kidneys in the body
3. Locate the following structures on a diagram of the urinary system;
***describe functions**
 - a. Adrenal gland
 - b. Aorta
 - c. Diaphragm
 - d. Inferior vena cava
 - e. Kidney
 - f. Renal vein & artery
 - g. Ureter***
 - h. **Urethra*** (state gender differences)
 - i. Urinary bladder***
4. Locate the following structures on a diagram of the kidney
 - a. Calyx
 - b. Cortex
 - c. Medulla
 - d. Medullary papilla
 - e. Renal artery & vein
 - f. Renal capsule (*know for plate only*)
 - g. column
 - h. Renal pelvis
 - i. Renal pyramid
 - j. Ureter
5. Locate the following structures on a diagram of a nephron – the structural & functional unit of the kidney
 - a. afferent arteriole
 - b. arcuate artery
 - c. arcuate vein
 - d. ascending loop of Henle
 - e. collecting duct
 - f. descending loop of Henle
 - g. distal convoluted tubule
 - h. efferent arteriole
 - i. glomerular capsule
 - j. glomerulus
 - k. interlobular artery & vein
 - l. peritubular capillaries
 - m. proximal convoluted tubule

GOAL: Demonstrate Understanding of the Function of the Urinary System

LEARNING TARGETS:

6. Describe the three urine formation processes; identify where each step occurs
7. Describe hydrostatic pressure and osmotic pressure; how does each affect filtration?
8. Explain the role of antidiuretic hormone (ADH) in the regulation of water balance by the kidney
9. Explain the role of aldosterone in sodium and potassium balance of the blood
10. Describe how urine is stored and excreted from the body. (may have been covered with target 3)
11. Describe normal and abnormal physical characteristics and composition of urine
12. What are the two forms of diabetes, and how does each affect the urinary system?
13. Describe the two types of renal dialysis. What substances does dialysis remove from the blood?
14. What does the term "paired kidney transplants" refer to?

Know all key terms.