Western Technical College

10806120 Body Structure and Function

Course Outcome Summary

Course Information

Description	This course is designed to provide the students with a basic study of the structure and function of the human body.
Instructional Level	Associate Degree Courses
Total Credits	3
Total Hours	72

Textbooks

Open Educational Resource: *Anatomy and Physiology*. 2nd Edition. Copyright 2022. Publisher: Open Stax. **ISBN-13**: 978-1-951693-42-8. https://openstax.org/details/books/anatomy-and-physiology-2e Required.

Success Abilities

1. Refine Professionalism: Act Ethically
2. Refine Professionalism: Improve Critical Thinking
3. Refine Professionalism: Participate Collaboratively
4. Refine Professionalism: Practice Effective Communication

Course Competencies

1. Apply descriptive anatomical terminology to the human body and its organization.

Assessment Strategies

1.1. Through a graphic, written, or oral product or process

Criteria

You will know you are successful when

1.1. you define the vocabulary of the unit.

1.2. you discuss the relationships of the levels of body structural organization.
1.3. you describe anatomical position.
1.4. you locate the major body cavities, organs within and the membranes lining each.
1.5. you list and describe the function of each organ system.
1.6. you explain the importance of homeostasis in body maintenance.
1.7. you define, summarize and discuss the importance of the components of a feedback system.

Learning Objectives

1.a. Recognize and describe anatomical terminology
1.b. Differentiate between the body's different levels of structural organization.
1.c. Describe the correct anatomical position
1.d. Compare the different body cavities and the organs and membranes found within each cavity
1.e. Identify and explain the function of each body organ system
1.f. Describe homeostasis and explain its importance within the human body
1.g. Describe the different components (receptor, control center, effector, negative and positive feedback) of homeostasis.

2. Differentiate the basic anatomy and physiology of cells and tissues.

Assessment Strategies

2.1. Through a graphic, written, or oral product or process

Criteria

You will know you are successful when

2.1. you define the vocabulary of the unit.
2.2. you describe the structure and function of the cell membrane.
2.3. you match cell organelles to their functions.
2.4. you describe the structural and functional differences between DNA and RNA and how they apply to protein synthesis.
2.5. you describe the phases of mitosis.
2.6. you describe the four classifications of tissues

Learning Objectives

2.a. Recognize and describe anatomical terminology.
2.b. Describe the structure and function of the cell membrane
2.c. Match the cell organelles to their functions
2.d. Describe the structure of DNA and RNA
2.e. Identify and describe each phase of mitosis.
2.f. Examine the four classifications of tissues

3. Relate the structures of the integumentary system to their physiology in the body.

Assessment Strategies

3.1. Through a graphic, written, or oral product or process

Criteria

You will know you are successful when

3.1. you define the vocabulary of the unit.
3.2. you describe the layers of the skin.
3.3. you describe the role of proteins within the skin.
3.4. you describe the accessory structures (appendages) found in the skin.

Learning Objectives

3.a. Recognize and describe anatomical terminology
3.b. List and differentiate the layers of skin
3.c. Describe the subcutaneous region and how it differs from the skin
3.d. List and describe the different accessory structure found within the skin
3.e. Identify and describe the role of proteins (melanin, keratin) within the skin

4. Relate the structures of the blood and cardiovascular system to their physiology in the body.

Assessment Strategies

4.1. Through a graphic, written, or oral product or process

Criteria

You will know you are successful when

4.1. you define the vocabulary of the unit.
4.2. you describe the anatomy of the heart (chambers, valves, layers, great blood vessels).
4.3. you trace the pathway of blood through the heart.
4.4. you describe the normal structure of a blood vessel.
4.5. you describe the differences between the systemic and pulmonary circulation.
4.6. you explain the difference between systolic and diastolic pressures.
4.7. you describe the differences between formed and unformed elements within the blood.
4.8. you compare the differences in ABO blood types.
4.9. you characterize the structural and functional properties of the cellular components of blood

Learning Objectives

4.a. Identify the anatomy of the heart including, chambers, valves, layers and great blood vessels.
4.b. Draw the correct pathway of blood through the heart.
4.c. Identify and describe the layers of the blood vessel walls (intima, media, adventitia).
4.d. Describe the differences between systemic and pulmonary circulation.
4.e. Describe the differences between systolic and diastolic blood pressure
4.f. Differentiate between formed and unformed elements within the blood.
4.g. Compare the differences between the different ABO blood types. Give examples of a bad blood transfusion and the possible result.

5. Relate the structures of the lymphatic/immune system to their physiology in the body.

Assessment Strategies

5.1. Through a graphic, written, or oral product or process

Criteria

You will know you are successful when

5.1. you define the vocabulary of the unit.
5.2. you list the functions of the lymphatic system.
5.3. you identify the three main lines of body defenses.
5.4. you explain the roles of antigens and antibodies in immunity.

Learning Objectives

5.a. Recognize and describe the correct anatomical terminology
5.b. Describe the functions of the lymph and immune system
5.c. Explain how lymph fluid is formed.
5.d. List and describe specifically the three (first, second and third) main lines of body defense and their role within the body.
5.e. Describe the functional differences between an antigen and an antibody.

6. Relate the structures of the respiratory system to their physiology in the body.

Assessment Strategies

6.1. Through a graphic, written, or oral product or process

Criteria

You will know you are successful when

6.1. you define the vocabulary of the unit.
6.2. you describe the structures of the respiratory system.
6.3. you explain the major functions of the respiratory system.
6.4. you lists in order, the structures associated with ventilation.
6.5. you explain the roles of serous fluid and surfactant in the lungs.
6.6. you describe how oxygen and carbon dioxide are carried in the blood.

Learning Objectives

6.a. Recognize and describe anatomical terminology
6.b. List the structures of the respiratory system (oral cavity, larynx, trachea, bronchus, bronchioles, alveolar duct, alveolus, and alveolar sacs).
6.c. List the major functions of the respiratory system (pH regulation, gas exchange, olfaction, first lines of

defense for the immune system).
6.d. List, in order, the structures associated with ventilation.
6.e. Explain the role of serous fluid and surfactant in regards to the respiratory system.
6.f. Compare the differences in how oxygen and carbon dioxide are carried within the blood.

7. Relate the structures of the urinary system to their physiology in the body.

Assessment Strategies

7.1. Through a graphic, written, or oral product or process

Criteria

You will know you are successful when

7.1. you define the vocabulary of the unit.
7.2. you describe the functions of the urinary system.
7.3. you identify the anatomical structures of the urinary system.
7.4. you list the normal and abnormal characteristics of urine.

Learning Objectives

7.a. Recognize and describe the anatomical terminology
7.b. Describe the functions of the urinary system
7.c. List the anatomy of the urinary system including, kidneys and specific structures, ureters, bladder, and urethra.
7.d. List and compare normal urine composition from that of abnormal.

8. Relate the structures of the digestive system to their physiology in the body.

Assessment Strategies

8.1. Through a graphic, written, or oral product or process

Criteria

You will know you are successful when

8.1. you define the vocabulary of the unit.
8.2. you list, in order, the organs the bolus passes as it moves through the digestive system.
8.3. you list the accessory structures of the system.
8.4. you describe the functions of each organ of the digestive system.
8.5. you describe the structure of the wall of the alimentary canal.
8.6. you describe the action of bile.
8.7. you list and explain the stomach's digestive properties.

Learning Objectives

8.a. Recognize and describe the anatomical terminology
8.b. List in order the organs the bolus must pass as it moves through the digestive system.
8.c. List and describe the functions of the accessory structures (salivary glans, appendix, pancreas, gallbladder, and liver).
8.d. Describe the functions of the digestive organs (esophagus, stomach, small and large intestinal tract, anus).
8.e. List and compare the differences of the layers of the alimentary canal (mucosa, submucosa, muscularis, and adventitia).
8.f. Explain where bile is created and stored and the role it plays in the digestive process.
8.g. Describe the stomachs digestive properties (pepsin, pepsinogen, hydrochloric acid, and mucous) and how they aid in digestion.

9. Relate the structures of the skeletal system to their physiology in the body.

Assessment Strategies

9.1. Through a graphic, written, or oral product or process

Criteria

You will know you are successful when

9.1. you identify selected bones and landmarks of the axial and appendicular skeletal system.
9.2. you define the vocabulary of the unit.
9.3. you describe the two types of ossification.

9.4. you list the functions of the skeletal system.
9.5. you identify the parts of a long bone.
9.6. you compare the differences between compact and cancellous bone.

Learning Objectives

9.a. Recognize and describe anatomical terminology
9.b. Identify selected bone and landmarks of the axial and appendicular skeletal system
9.c. Differentiate and explain the two types of ossification processes: endochondral ossification and intramembranous ossification.
9.d. Describe the functions of the skeletal system
9.e. Identify the parts of the long bone
9.f. Distinguish between compact and cancellous bone.

10. Relate the structures of the nervous system to their physiology in the body.

Assessment Strategies

10.1. Through a graphic, written, or oral product or process

Criteria

You will know you are successful when

10.1. you define the vocabulary of the unit.
10.2. you explain the functions of the nervous system.
10.3. you identify the anatomical parts of a neuron.
10.4. you explain how the electrical impulse (action potential) is transmitted
10.5. you list, in order, the pathway of the impulse through a neuron.
10.6. you explain the functions of the structures of the nervous system - including the brain, cerebellum, brain stem, diencephalon, ventricles, spinal cord.
10.7. you trace the pathway of the impulse through a reflex arc.
10.8. you contrast the functions of the sympathetic system with the parasympathetic system.
10.9. you contrast the autonomic system with the somatic nervous system.
10.10. you identify various cranial nerves.

Learning Objectives

10.a. Recognize and describe the anatomical terminology
10.b. List the functions of the nervous system
10.c. List and differentiate between the central and peripheral nervous system and the respective sub categories.
10.d. Identify the various parts of a neuron (dendrites, cell body, axon, axon terminals).
10.e. Describe an action potential.
10.f. Identify the pathway an impulse takes through a neuron.
10.g. Describe the functions of the brain, cerebellum, brain stem, diencephalon, ventricles, cranial nerves and spinal cord.
10.h. List the pathway of a reflex arc and describe the specific anatomy involved (sensory receptors, sensory neuron, spinal cord, motor neuron, effector organ) and the end result.
10.i. Compare the differences between the autonomic (sympathetic vs. parasympathetic) and somatic nervous division.

11. Relate the structures of the special senses to their physiology in the body.

Assessment Strategies

11.1. Through a graphic, written, or oral product or process

Criteria

You will know you are successful when

11.1. you define the vocabulary of the unit.
11.2. you identify the structures of the eye.
11.3. you identify the structures of the ear.
11.4. you describe the functions of the ear and eye structures.

Learning Objectives

11.a. Recognize and describe the anatomical terminology
11.b. Categorize special senses from general senses.

11.c. Identify the structures of the eye associated with the sense of sight.
11.d. Identify the structures of the ear associated with hearing

12. Relate the structures of the muscular system to their physiology in the body.

Assessment Strategies

12.1. Through a graphic, written, or oral product or process

Criteria

You will know you are successful when

12.1. you define the vocabulary of the unit.
12.2. you describe the characteristics of the types of muscle tissues.
12.3. you describe the anatomy of a skeletal muscle organ.
12.4. you explain the relationships between a motor unit, motor neuron, and muscle fibers.
12.5. you identify, when given the description of a movement, what the movement is called.
12.6. you identify the names of selected muscles.

Learning Objectives

12.a. Recognize and describe anatomical terminology
12.b. Identify and describe the three types of muscle tissue (cardiac, smooth and skeletal).
12.c. Identify and describe the anatomy of a whole muscle including, muscle fiber, myofibril, sarcomere, and myofilaments.
12.d. Describe the relationship between a motor neuron, muscle fibers and a motor unit.
12.e. Identify the names of muscles.
12.f. Explain the actions (flexion, extension, abduction, adduction, plantar flexion, dorsi flexion, etc..) of muscles and how they influence movement.

13. Relate the structures of the reproductive system to their physiology in the body.

Assessment Strategies

13.1. Through a graphic, written, or oral product or process

Criteria

You will know you are successful when

13.1. you define the vocabulary of the unit.
13.2. you identify the structures of the male and female reproductive system.
13.3. you trace the pathway of the sperm through the system.
13.4. you explain the functions of the hormones to the systems.
13.5. you describe the functions of each structure in the reproductive system.

Learning Objectives

13.a. Recognize and describe anatomical terminology
13.b. Identify and describe the structures of the reproductive system (testis, vas deference, seminal vesicle, prostate gland, cowpers gland, penis, erectile tissue, glans penis, ovary, fallopian tubes, uterus, vagina, etc..).
13.c. Describe the functions of the reproductive system
13.d. List the correct pathway of sperm.
13.e. Explain the role hormones have on the male and female reproductive system.
13.f. Describe the formation and maturation of the ova.

14. Relate the glands and hormones of the endocrine system to their physiology in the body.

Assessment Strategies

14.1. Through a graphic, written, or oral product or process

Criteria

You will know you are successful when

14.1. you distinguish between endocrine and exocrine glands.
14.2. you define the vocabulary of the unit.
14.3. you discuss how hormones are regulated by feedback mechanisms and promote homeostasis.
14.4. you identify the hormone glands.
14.5. you describe the functions of the individual hormones.

Learning Objectives

14.a. Recognize and describe the anatomical terminology
14.b. Differentiate between endocrine and exocrine glands
14.c. Describe the importance of hormones on homeostasis and whether or not they provide a negative or positive feedback within the body
14.d. Identify endocrine glands
14.e. Identify and describe specific hormones and their effect(s) on the body