Arkansas CTE

Human Anatomy and Physiology: Grades 9, 10, 11, 12

Adopted 2006

Structure of the Human Body

1.1 Define terminology related to the structure of the human body

1. Use terms appropriately in context 1.1.1

1.2 Identify the structure of a typical cell

1. Label parts of a cell 1.2.1
2. View prepared slides of various cells using a microscope 1.2.2

1.3 Identify the functions of each cell structure

1. List the functions of each cell structure 1.3.1
2. Match functions to each cell structure 1.3.2

1.4 Discuss the stages of cell division

1. List and describe the stages of mitosis and meiosis 1.4.1
2. Illustrate the stages of mitosis and meiosis 1.4.2

1.5 Explore the processes that move materials in and out of cells

1. Describe the process of endocytosis 1.5.1
2. Describe the process of exocytosis 1.5.2
3. Differentiate between pinocytosis and phagocytosis 1.5.3

1.6 Discuss the relationship of cells, tissue, organs, and systems

1. Differentiate among cells, tissue, organs, and systems 1.6.1
2. Develop a flow chart showing the relationship of cells, tissue, organs, and systems 1.6.2

1.7 Identify the body parts

1. Label the body parts 1.7.1

1.8 Match directional terms with correct descriptions

1. List and define terms 1.8.1

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1.9 Identify body cavities and the main organs found in each cavity

1. Demonstrate the ability to label body cavities and the organs on an anatomical model (torso) 1.9.1

1.10 Name the abdominal regions

1. Label the abdominal regions 1.10.1

Integumentary System

2.1 Define terminology related to the integumentary system

1. Use terms appropriately in context 2.1.1

2.2 Identify the functions of the skin

1. List and describe the functions of the skin 2.2.1

2.3 Describe the layers of the skin

1. Label the layers of the skin on a diagram 2.3.1
2. Differentiate among the layers of the skin 2.3.2

2.4 Identify the appendages of the skin

1. Label the appendages of the skin, using a diagram 2.4.1
2. Describe the functions of each of the skin appendages 2.4.2

2.5 Explore causes of abnormal skin colors

1. Research an assigned skin disorder affecting skin pigmentation 2.5.1

2.6 Explore skin eruptions

1. Match skin eruptions to the correct description 2.6.1

2.7 Describe common disorders of the skin

1. Research a disorder of the skin 2.7.1
2. Discuss the diagnostic procedures of the skin 2.7.2
3. List preventive measures against skin cancer 2.7.3
4. List signs and symptoms of skin cancer 2.7.4

2.8 Explore care of skin, nails, and hair

1. Analyze the structure and function of skin, hair, and nail care products 2.8.1

Skeletal System

3.1 Define terminology related to the skeletal system

1. Use terms appropriately in context 3.1.1

3.2 List the functions of the skeletal system

1. List and describe the functions of the skeletal system 3.2.1
2. List the major parts of the skeletal system 3.2.2

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3.3 Describe the structure and formation of bone

1. Label the structure of bone, using a diagram 3.3.1
2. Discuss the formation of bone beginning with infancy and ending with adulthood 3.3.2
3. Discuss bone loss in the elderly 3.3.3
4. List factors that contribute to bone loss 3.3.4

3.4 Identify types of bones

1. Label the parts of a long bone 3.4.1
2. Differentiate between long and short bones 3.4.2

3.5 Explore axial and appendicular skeletons

1. Label bones of the axial and appendicular skeletons 3.5.1

3.6 Identify the different types of joints

1. List and describe the different types of joints 3.6.1
2. Label the different types of joints, using a skeleton 3.6.2

3.7 Differentiate among types of bone fractures

1. Illustrate the different types of bone fractures 3.7.1
2. Describe the approach to repairing the different types of fractures 3.7.2

3.8 Explore bone and joint injuries and disorders

1. List and describe the more common bone and joint injuries 3.8.1
2. Research an assigned bone disorder 3.8.2
3. Describe the standard treatments of bone and joint injuries 3.8.3

Muscular System

4.1 Define terminology related to the muscular system

1. Use terms appropriately in context 4.1.1

4.2 Identify the functions of muscles

1. List and describe the functions of muscles 4.2.1

4.3 Describe the types of muscles

1. List and describe the different types of muscles 4.3.1
2. Give examples of each type of muscle 4.3.2

4.4 Identify the characteristics of muscles

1. Describe the characteristics of muscles 4.4.1
2. Label and illustrate the components that make up muscle 4.4.2

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3. Discuss striated and nonstriated muscles 4.4.3

4.5 Discuss voluntary and involuntary muscles

1. Differentiate between voluntary and involuntary muscles 4.5.1
2. Give examples of voluntary and involuntary muscles 4.5.2

4.6 Explain the attachment of muscle to bone

1. Describe a tendon 4.6.1
2. Label various tendons, using a diagram 4.6.2

4.7 Explain the arrangement and movement of muscles in pairs

1. Demonstrate the movement of pairs of muscles 4.7.1

4.8 Describe movements performed by muscles

1. Demonstrate muscle movements 4.8.1
2. Practice active and passive range of motion exercises 4.8.2

4.9 Identify the principal muscles of the body

1. Label the principal muscles 4.9.1
2. Research different sports to determine which muscles are used 4.9.2
3. Explore the effect of exercise and sport training on muscles 4.9.3

4.10 Explore muscle disorders and injuries

1. Research an assigned muscle disorder 4.10.1
2. List and describe the more common muscle injuries 4.10.2
3. Describe standard treatments for muscle injuries 4.10.3

Circulatory System

5.1 Define terminology related to the circulatory system

1. Use terms appropriately in context 5.1.1

5.2 Identify the functions of the circulatory system

1. List and describe the functions of the circulatory system 5.2.1

5.3 Describe the parts of the circulatory system

1. Label a diagram of the circulatory system 5.3.1

5.4 Identify the functions of heart structures

1. Examine an animal heart or model of the human heart 5.4.1
2. Match heart structures to their function 5.4.2
3. Discuss common disorders of the heart 5.4.3

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5.5 Describe the physiology of blood circulation

1. Trace the path of blood circulation through the body 5.5.1
2. Distinguish between high blood pressure and low blood pressure 5.5.2
3. Compare and contrast hydrostatic and osmotic pressure 5.5.3

5.6 List types of blood vessels

1. Label the main arteries and veins 5.6.1
2. Differentiate among an artery, vein, and capillary 5.6.2
3. Label the parts of a capillary bed 5.6.3

5.7 Describe the composition of blood

1. List the main components of blood 5.7.1
2. List the components of plasma 5.7.2
3. Differentiate between plasma and serum 5.7.3

5.8 Discuss blood types

1. List the different blood types 5.8.1
2. Discuss antigen and antibody differences among the different blood types 5.8.2
3. Discuss universal donor and universal recipient 5.8.3
4. Describe the process of blood transfusion 5.8.4
5. Discuss how the Rh factor relates to blood types 5.8.5

5.9 Describe the blood-clotting process

1. List the components involved in blood clotting 5.9.1
2. Describe the blood-clotting process 5.9.2
3. List factors that promote or prevent blood clotting 5.9.3

5.10 Explore disorders of the circulatory system

1. Explore diagnostic procedures of the circulatory system 5.10.1
2. Research an assigned disorder of the circulatory system 5.10.2
3. List and describe common disorders of the circulatory system 5.10.3

Lymphatic System

6.1 Define terminology related to the lymphatic system

1. Use terms appropriately in context 6.1.1

6.2 Identify the functions of the lymphatic system

1. List and describe the functions of the lymphatic system 6.2.1

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6.3 Describe the structures of the lymphatic system and their functions

1. Label a diagram of the lymphatic system 6.3.1
2. Match structures to their functions 6.3.2

6.4 List the different types of immunity

1. Describe the different types of immunity 6.4.1
2. Give examples of the different types of immunity 6.4.2
3. Describe the purpose of vaccinations 6.4.3
4. Describe the initial immune response 6.4.4

6.5 Discuss Acquired Immunodeficiency Syndrome

1. Discuss measures to prevent transmission and acquisition of the human immunodeficiency virus [HIV] for public and health care professionals 6.5.1

6.6 Explore disorders of the lymphatic system

1. Research an assigned disorder of the lymphatic system 6.6.1
2. List and describe common disorders of the lymphatic system 6.6.2

Nervous System

7.1 Define terminology related to the nervous system

1. Use terms appropriately in context 7.1.1

7.2 Describe the functions of the nervous system

1. List and describe the functions of the nervous system 7.2.1

7.3 Outline the parts and functions of neurons

1. Identify the parts of a neuron 7.3.1
2. Match the parts of a neuron to their functions 7.3.2
3. Differentiate between sensory and motor neurons 7.3.3
4. Discuss Na/K pump in impulse transmission 7.3.4
5. Illustrate the conduction of a nerve impulse between two neurons 7.3.5

7.4 Discuss the main divisions of the nervous system

1. Contrast the actions of the divisions of the nervous system 7.4.1
2. Develop a flow chart showing the divisions of the nervous system 7.4.2

7.5 Outline the parts of the brain and their functions

1. Label a diagram of the brain 7.5.1
2. Match the parts of the brain to their functions 7.5.2
3. Discuss how handedness is related to brain functions 7.5.3

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7.6 Outline the structures and functions of the spinal cord

1. Label the parts of the spinal cord 7.6.1
2. Match the parts of the spinal cord to their functions 7.6.2
3. Differentiate among regions of the spinal column 7.6.3

7.7 Discuss cerebrospinal fluid

1. Describe the functions of cerebrospinal fluid 7.7.1
2. Discuss the diagnostic procedures utilizing cerebrospinal fluid 7.7.2

7.8 Describe the functions of the cranial and spinal nerves

1. Differentiate between functions of cranial and spinal nerves 7.8.1

7.9 Explain reflex arc

1. Demonstrate reflex action 7.9.1

7.10 Explore disorders and injuries of the nervous system

1. Investigate ways to prevent injuries to the nervous system 7.10.1
2. Research an assigned disorder of the nervous system 7.10.2
3. Research current advancements in the treatment of spinal cord injuries 7.10.3

Sensory System

8.1 Define terminology related to the sensory system

1. Use terms appropriately in context 8.1.1

8.2 Identify the functions of the sensory system

1. List and describe the functions of the sensory system 8.2.1
2. List the organs associated with the sensory system 8.2.2

8.3 Identify the five main senses

1. List the five main senses 8.3.1
2. Match the senses to the parts of the brain responsible for interpreting their signals 8.3.2

8.4 Discuss why stimulation of a sense organ results in sensation

2. Describe the process of sensation 8.4.2

8.5 Identify the parts of the eye and their functions

1. Label the parts of the eye 8.5.1
2. Trace the path of light as it moves through the eye 8.5.2
3. Describe common disorders of the eye 8.5.3
4. Match the parts of the eye to their corresponding functions 8.5.4

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8.6 Outline the parts of the ear and their functions

1. Label the parts of the ear 8.6.1
2. Trace the path of sound as it moves through the ear 8.6.2
3. Match the parts of the ear to their corresponding functions 8.6.3
4. Describe common disorders of the ear 8.6.4

8.7 Discuss the senses of smell, taste, and touch

1. List and describe the senses of smell, taste, and touch 8.7.1

8.8 Explore disorders of the sensory system

1. Simulate the loss of a sense 8.8.1
2. Research an assigned sensory system disorder 8.8.2

Respiratory System

9.1 Define terminology related to the respiratory system

1. Use terms appropriately in context 9.1.1

9.2 Outline the functions of the respiratory system

1. List and describe the functions of the respiratory system 9.2.1

9.3 Identify the structures of the respiratory system and their functions

1. Label the parts of the respiratory system 9.3.1
2. Match the structures to their corresponding functions 9.3.2

9.4 Discuss the process of breathing and respiration

1. List and describe the two types of respiration 9.4.1
2. Illustrate the path of oxygen intake and carbon dioxide release through the respiratory system 9.4.2
3. List the factors affecting the respiratory rate 9.4.3
4. Discuss the role of the respiratory rate in maintaining homeostasis 9.4.4

9.5 Outline abnormal breathing conditions

1. Explore the effects of abnormal breathing conditions on the human body 9.5.1

9.6 Explore common disorders of the respiratory system

1. Explore ways to care for the respiratory system and improve its functioning 9.6.1
2. Research an assigned disorder of the respiratory system 9.6.2
3. Discuss lifestyle and environmental factors that contribute to the loss of respiratory function 9.6.3

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Dig

1 Define terminology related to the digestive system

1. Use terms appropriately in context `10.1.1`

10.2 Outline the functions of the digestive system

1. List and describe the functions of the digestive system `10.2.1`

10.3 Identify the structures of the digestive system and their functions

1. Label the parts of the digestive system `10.3.1`
2. Match structures to their corresponding functions `10.3.2`
3. List the digestive enzymes `10.3.3`
4. List the digestive hormones `10.3.4`

10.4 Name the accessory organs of digestion

1. List the digestive accessory organs, and explain their corresponding functions `10.4.1`

10.5 Outline the process of digestion

1. Trace the path of food in the digestive process `10.5.1`
2. Illustrate the path of digestion for nutrient-fats, carbohydrates, and proteins `10.5.2`
3. Match digestive enzymes to the nutrients upon which they act `10.5.3`

10.6 Explore disorders of the digestive system

1. Research an assigned digestive disorder `10.6.1`
2. List environmental and lifestyle factors that affect digestion `10.6.2`

Urinary System

11.1 Define terminology related to the urinary system

1. Use terms appropriately in context `11.1.1`

11.2 Outline the functions of the urinary system

1. Describe the functions of the urinary system `11.2.1`
2. Discuss the urinary system's role in maintaining homeostasis `11.2.2`

11.3 Identify the structures of the urinary system and their functions

1. Label the parts of the urinary system `11.3.1`
2. Match structures to their corresponding functions `11.3.2`

11.4 Outline the functions of the parts of a nephron unit

1. Label the parts of a nephron unit `11.4.1`
2. Match the parts of the nephron unit to their corresponding functions `11.4.2`

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11.5 Discuss the process of urine formation

1. Trace the path of blood through the nephron `11.5.1`

2. List the hormones that affect the concentration of urine 11.5.2
3. Describe the renin-angiotensin system 11.5.3

11.6 Explain the process of micturition

1. Label the parts of the urinary system directly involved with micturition 11.6.1

11.7 Explore disorders of the urinary system

1. Research an assigned disorder of the urinary system 11.7.1

Endocrine System

12.1 Define terminology related to the endocrine system

1. Use terms appropriately in context 12.1.1

12.2 Outline the functions of the endocrine system

1. Describe the functions of the endocrine system 12.2.1
2. Differentiate between the endocrine and exocrine systems 12.2.2
3. Give examples of organs and hormones associated with the endocrine system 12.2.3

12.3 Identify the structures of the endocrine system and their functions

1. Label the endocrine glands 12.3.1
2. Match structures to their corresponding hormones 12.3.2

12.4 Identify the hormones of the endocrine system and their functions

1. Match hormones to their corresponding functions 12.4.1
2. Develop a flow chart depicting the effects of hormones on other endocrine structures 12.4.2

12.5 Outline the process of hormone regulation

1. Discuss negative and positive feedback mechanisms for various hormones 12.5.1
2. Describe negative and positive feedback mechanisms for various hormones 12.5.2

12.6 Describe the response of the endocrine system to stress

1. List the hormones involved during times of stress and their effects on the body 12.6.1
2. Discuss ill effects of prolonged stress 12.6.2

12.7 Outline the uses of hormones as medical treatments

1. Research the pros and cons of hormone/steroid treatments 12.7.1

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3 Explore disorders of the endocrine system

1. Explore the factors that can cause disorders of the endocrine system 12.8.1
2. Research an assigned endocrine disorder 12.8.2

Reproductive System

13.1 Define terminology related to the reproductive system

1. Use terms appropriately in context 13.1.1

13.2 Identify the structures of the male reproductive system and their functions

1. Label a diagram of the male reproductive system 13.2.1
2. Trace the path of sperm in the male body 13.2.2
3. Match structures of the male reproductive system to their corresponding functions 13.2.3
4. List secretions of the male reproductive system, and specify their origin 13.2.4

13.3 Identify the structures of the female reproductive system and their functions

1. Label a diagram of the female reproductive system 13.3.1
2. Match structures of the female reproductive system to their corresponding functions 13.3.2

13.4 Explain the phases of the menstrual cycle

1. Develop a chart depicting the menstrual cycle; include the different phases of the menstrual cycle and the changes occurring within the ovary, uterus, and pituitary gland 13.4.1
2. List the hormones involved in the menstrua cycle, and describe their effects on the uterus and ovarian follicle 13.4.2

13.5 Discuss the physiology of reproduction

1. Explain the process of fertilization 13.5.1
2. Illustrate the process of reproduction from ovulation to implantation of the blastocyst 13.5.2
3. Discuss the development of identical and fraternal twins 13.5.3

13.6 Outline the changes that occur during menopause

1. List the changes that occur to the following organs, systems, and traits in postmenopausal women: menstrual cycle, uterus, vagina, skin, cardiovascular system, vasomotor system, libido, fertility, and pituitary function 13.6.1
2. Discuss the pros and cons of hormone replacement therapy 13.6.2

13.7 Discuss sexually transmitted diseases [STDs]

1. Research ways to prevent the transmission of STDs 13.7.1
2. List signs and symptoms of STDs 13.7.2
3. Discuss health risks associated with STDs 13.7.3

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13.8 Explore disorders of the reproductive system

1. Discuss causes of infertility 13.8.1
2. Debate the use of infertility drugs and treatments 13.8.2
3. Research an assigned reproductive disorder 13.8.3

Career and Technical Student Organizations (SkillsUSA/HOSA)

14.1 Define terminology related to student organizations

1. Use terms appropriately in context 14.1.1

14.2 Outline a self-assessment, and identify individual learning styles

1. Show individual strengths 14.2.1
2. Show areas in need of improvement 14.2.2

14.3 Describe self-motivation techniques, and establish short-term goals

1. Prepare a list of short-term goals 14.3.1
2. Discuss ways to change or improve lifestyle, appearance, and behavior 14.3.2

14.4 Give examples of individual time-management skills

1. Prepare and maintain a time journal 14.4.1
2. Outline ways to improve time-management skills 14.4.2

14.5 Predict future occupations

1. Research the Internet to explore career opportunities in specified fields of study 14.5.1
2. Prepare a presentation on a specified career area 14.5.2

14.6 Identify the customer

1. Differentiate between external and internal customers 14.6.1
2. Identify factors that contribute to poor customer relationships 14.6.2

14.7 Identify the benefits of doing a community service project

1. Outline ways to become involved in the community 14.7.1
2. Develop a community service project 14.7.2

14.8 Describe effective communication with others

1. Note personal barriers to listening 14.8.1
2. Relate a personal plan to overcome barriers to listening 14.8.2

14.9 Give locations for a shadowing activity

1. Summarize and relate an experience of job shadowing 14.9.1

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10 Identify the components of an employment portfolio

1. Present parts of a portfolio 14.10.1
2. Compile a personal employment portfolio for an interview 14.10.2

14.11 List proficiency in program competencies

1. Construct an interpersonal competency assessment 14.11.1

14.12 Describe how to measure/modify short-term goals

1. Discuss how to pursue short-term goals 14.12.1

14.13 Identify stress sources

1. Prepare a list of personal stress sources 14.13.1
2. Outline techniques to cope with individual sources of stress 14.13.2

14.14 Identify characteristics of a positive image

1. List behaviors and traits that lead to a positive image 14.14.1
2. Note behaviors and traits that lead to a negative image 14.14.2

14.15 Describe how team skills can be applied to a group project

1. Form a team to develop a class project 14.15.1

14.16 Outline how to observe and critique a meeting

1. Attend a formal meeting held in the community 14.16.1
2. Prepare a critique of the meeting attended 14.16.2

14.17 List business meeting skills

1. Relate the basic rules required to ensure an orderly and business-like meeting 14.17.1
2. Demonstrate with role-playing appropriate meeting skills 14.17.2

14.18 Outline a survey for employment opportunities

1. Compile information on a particular employment opportunity of interest 14.18.1
2. Perform an Internet search of a specific career area 14.18.2

14.19 Select a professional journal for review and develop a three- to five-minute presentation

1. Prepare a presentation on the content, purpose, and distribution of a particular professional journal 14.19.1

14.20 Identify customer expectations

1. List customer expectations 14.20.1
2. Discover the consequences of unmet customer expectations 14.20.2

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14.21 List parts of a job application

1. Prepare a job application from various businesses in the community `14.21.1`
2. Demonstrate a mock job interview `14.21.2`

14.22 Outline your employment portfolio

1. Construct a personal employment portfolio `14.22.1`

14.23 Identify supervisory and management roles in an organization

1. Prepare an organizational chart `14.23.1`
2. Outline the responsibilities of managers and supervisors `14.23.2`

14.24 Outline safety issues

1. Research safety issues in a given career area `14.24.1`