AES Anatomy and Physiology Pacing Guide: Year-Long Course

With over 200 hours of content available, you're likely wondering the best way to use the AES Anatomy and Physiology curriculum in your classes.

After all, with such comprehensive content, it may feel tough for you to gain your bearings.

To help you meet your standards and more easily plan, this guide provides a recommended sequence for a year-long Anatomy and Physiology course.

In the guide, you'll find a week-by-week breakdown of which units to use, approximate hours of instruction, and learning objectives for each unit.

By the end of this guide, you should be well equipped to use the AES curriculum in your classroom.

Tips to Help You With Planning:

- The hours listed for each AES Unit refer to the approximate class time it will take students to complete the eLearning lessons.
- The weekly pacing allows time for projects, teacher instruction, student skills practice, and other activities not included in the AES curriculum.
- This guide doesn't account for holidays, school functions, school testing, or other events that may affect your class schedule.

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WEEKS	AES MODULE	UNIT	OBJECTIVES
1-3	A&P Introduction	Unit 1: Intro to A&P (1 hour)	- Identify the role of the healthcare professional in patient care. - Explain the importance of healthcare workers understanding anatomy and physiology. - Define quality patient care. - Define and identify anatomy. - Define and identify physiology.
1-3		Unit 2: Building Blocks of the Human Body (2 hours)	- Identify and define the various components of structural organization. - Organize the levels of the body's structure. - Identify the four different types of tissue. - Explain the function of each type of tissue. - Identify major organs of the body. - Name and define the 12 organ systems.
1-3		Unit 3: Everything Begins with Cells (2.5 hours)	- Define the cell. - List the functions of a cell. - Identify and explain the parts of a cell.
1-3		Unit 4: Cell Reproduction (1.5 hours)	- Define and explain mitosis. - Identify the stages of mitosis. - Define and explain meiosis. - Identify the types of sex cells. - Differentiate between mitosis and meiosis.

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WEEKS	AES MODULE	UNIT	OBJECTIVES
1-3	A&P Introduction Cont'd	Unit 5: Chemical Processes That Support Life (1.5 hours)	- Define homeostasis. - Explain the importance of homeostasis to the body. - Identify and explain the processes that support homeostasis within the body.
1-3		Unit 6: Anatomical Terminology (2.5 hours)	- Name and identify the anatomical positions of the body. - Use various directional terms to explain locations on the body. - Define and identify the planes of the body. - Define and identify body cavities. - Define and identify the abdominopelvic quadrants. - Define and identify the abdominopelvic regions.
1-3		Unit 7: The Body at Work (30 minutes)	- Explain the interdependence of body systems. - Identify which systems work directly together. - Explain how disease affects the body.

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4-6	Integumentary System	Unit 1: Structure and Function (1 hour)	- Describe the functions of the integumentary system. - Identify the parts of the integumentary system. - Name and describe the layers of skin, and explain skin pigmentation. - Identify the types of glands in the skin and their functions. - Explain the accessory parts of the integumentary system, including their structure and function.
4-6		Unit 2: Diseases and Disorders (30 minutes)	- Describe diseases and disorders of the integumentary system, including: Abnormal Pigmentation Acne Vulgaris Skin Lesions Contact Dermatitis Eczema Psoriasis
7-9	Skeletal System	Unit 1: Introduction (2 hours)	- Explain the functions of the skeletal system. - Identify bones of the skeletal system. - Discuss the interaction between the skeletal system and other body systems. - Review directional terms common to the skeletal system.

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WEEKS	AES MODULE	UNIT	OBJECTIVES
7-9	Skeletal System Cont'd	Unit 1: Structure and Function Cont'd	- Identify why calcium is essential to the body. - Explain how calcium enters the body. - Discuss where calcium is stored in the body, and describe the process the body uses to maintain calcium homeostasis.
7-9		Unit 2: Bones and the Skeletal System (1 hour)	- Identify the composition of bones, and explain the classification of bones by shape. - Describe the divisions of the skeletal system. - Define bones of the axial and appendicular skeleton. - Explain different ways to classify articulations.
7-9		Unit 3: Bone Anatomy (1 hour)	- Define gross anatomy. - Describe the structure of long, short, flat, and irregular bones. - Describe the primary types, functions, and origins of various bone cells. - Identify the types of bone tissue. - Describe the structures that compose compact and spongy bone. - Compare and contrast compact and spongy bone. - Describe subchondral bone tissue. - Explain the organization of woven and lamellar bone.

WEEKS	AES MODULE	UNIT	OBJECTIVES
7-9	Skeletal System Cont'd	Unit 4: Axial Skeleton (1 hour)	- Understand the subdivisions of the skull. - List and identify the cranial and facial bones of the skull. - Locate the suture lines in the skull. - List and identify the hyoid and auditory ossicle bone. - Define the functions of the vertebral column and thoracic cage. - Define the structure of a vertebra and intervertebral disc. - Identify each region of the vertebral column and the number of vertebrae in each region. - List and identify bones of the thoracic cage.
7-9		Unit 5: Appendicular Skeleton (1 hour)	- Understand the subdivisions of the appendicular skeleton. - List and identify the bones of the pectoral and pelvic girdles. - List and identify the bones of the upper and lower extremities.

WEEKS	AES MODULE	UNIT	OBJECTIVES
7-9	Skeletal System Cont'd	Unit 6: Articulations (1 hour)	- Describe the structural and functional classifications of joints. - Explain fibrous, cartilaginous, and synovial joints and give examples of each. - Define different types of body movement and provide examples. - Describe the bone structures that form each type of synovial joint. - Explain the movement available at each joint type. - Identify examples of each joint type. - Identify the common structures in a synovial joint, and explain how these structures work together with muscles and tendons to move the joint.
7-9		Unit 7: Bone Markings (1 hour)	- Describe groupings of bone markings. - Define specific types of projection and depression bone markings, and list examples. - Define specific types of articulation and opening bone markings, and list examples.
7-9		Unit 8: Bone Growth and Remodeling (1 hour)	- Describe fetal bone formation, including intramembranous and endochondral ossification. - Explain infant skull development. - Describe bone growth during adulthood. - Define and describe hematopoiesis across the lifespan.

WEEKS	AES MODULE	UNIT	OBJECTIVES
7-9	Skeletal System Cont'd	Unit 9: Diseases and Disorders (1 hour)	- Describe some diseases and disorders of the skeletal system, including: Arthritis Osteoporosis Sprain Dislocation Fracture Rickets Paget's Disease
10-13	Muscular System	Unit 1: Introduction (2 hours)	- Describe the functions of muscles. - Name the three major muscle types. - Name and define the four traits all muscles have in common.
10-13		Unit 2: Types of Muscles (1 hour)	- Describe the three types of muscle tissue. - Describe the similarities and differences between types of muscle tissue, and define the shared terminology among the types of muscle tissue. - Describe the function and appearance of skeletal muscles, and provide examples. - Describe the function and appearance of cardiac muscle, and provide examples. - Describe the function and appearance of smooth muscles, and provide examples.

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10-13	Muscular System Cont'd	Unit 3: Starting the Muscle Contraction (1 hour)	- Describe the role of adenosine triphosphate, or ATP, in providing energy to muscles. - Name the three systems responsible for creating ATP, and describe the energy limits of each. - Define a motor unit. - Describe the structure of the neuromuscular junction. - Understand how muscles contract through action potential, and identify the six steps for an action potential.
10-13		Unit 4: Muscle Movement at the Cellular Level (1 hour)	- Describe the cellular anatomy of a skeletal muscle. - Describe the sliding filament theory. - Define and give examples of graded responses. - Describe the different types of muscle movement.
10-13		Unit 5: Body Motions and Terminology (1 hour)	- Name and identify anatomical movements. - Describe body motions using muscle movement terminology.
10-13		Unit 6: Naming of the Skeletal Muscles (2 hours)	- Name and describe the seven criteria for naming muscles.
10-13		Unit 7: Muscle Groups (2 hours)	- Identify the names, functions, and locations of some of the major muscles in the body.

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10-13	Muscular System Cont'd	Unit 8: Resistance Training and Exercise (1 hour)	- Explore the effects of physical activity on the body's muscular system. - Describe the benefits of strength training, aerobic exercise, and stretching.
10-13		Unit 9: Diseases and Disorders (1 hour)	- Describe diseases and disorders of the muscular system, including: Loss of Muscle Tone Muscle Strain Tendonitis Spasticity Muscular Dystrophy Myasthenia Gravis
16-18	Nervous System	Unit 1: Structure and Function (2 hours)	- Identify terms related to the nervous system. - Describe the functions of the nervous system. - Explain the structure and function of neurons, and identify the types of neurons. - List the main divisions of the central nervous system. - Identify and describe the spinal cord and parts of the brain. - Explain how the central nervous system is protected. - Describe the purpose of the peripheral nervous system. - Define the somatic nervous system. - Explain the autonomic nervous system and its three divisions.

WEEKS	AES MODULE	UNIT	OBJECTIVES
16-18	Nervous System Cont'd	Unit 2: Diseases and Disorders (30 minutes)	- Describe diseases and disorders of the nervous system, including: Cerebrovascular Accident Multiple Sclerosis Autism Spectrum Disorder Alzheimer's Disease
19-20	Sensory System	Unit 1: Structure and Function (2 hours)	- Describe the function of the sensory system. - List the five basic senses and explain how there are more than those five. - Identify the two classifications of the senses. - Explain the general senses of touch, temperature, pain, and proprioception, and describe the types of receptors involved in these general senses. - Describe the parts of the eye, and trace the pathway of light from outside the eye to the brain. - Explain how the eye is protected. - Describe the parts of the ear, and understand the pathway of sound through the ear.
19-20		Unit 2: Diseases and Disorders (30 minutes)	- Describe some diseases and disorders of the sensory system, including: Eye: Conjunctivitis Eye: Cataract Ear: Conductive Hearing Loss Ear: Sensorineural Hearing Loss Ear: Otitis Media Nose: Common Cold

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21-23	Cardiovascular System	Unit 1: Introduction (1 hour)	- Describe the function and role of the cardiovascular system. - List the components of the cardiovascular system, and explain the cardiovascular system's relationship with other body systems. - Explain the importance of maintaining a healthy cardiovascular system. - Associate diet and exercise with their effects on cardiovascular health.
21-23		Unit 2: The Heart: Anatomy and Function (1 hour)	- Describe the location, size, and shape of the heart. - Identify structures that make up the anatomy of the heart. - Distinguish the functions of the atria and ventricles. - Locate the valves of the heart. - Explain the functions of the heart wall layers, and the function of the heart. - Differentiate between pulmonary and systemic circulation.
21-23		Unit 3: Cardiac Blood Vessels (1 hour)	- Describe the function of blood as it flows through the cardiovascular system. - Classify types of blood vessels and their functions. - Illustrate the major vessels of the cardiovascular system. - Explain the characteristics of vascular tissue.

WEEKS	AES MODULE	UNIT	OBJECTIVES
21-23	Cardiovascular System Cont'd	Unit 4: The Cardiac Cycle (1 hour)	- Explain the characteristics of cardiac tissue. - Describe the electrical pathway of the heart. - List the steps in the cardiac cycle.
21-23		Unit 5: Blood and Its Components (1 hour)	- Identify the function of blood. - Explain where blood is produced. - Identify how much blood is needed to survive. - Identify characteristics of blood. - Define hematopoiesis. - List the components of blood and their functions.
21-23		Unit 6: Blood Cells and Blood Types (1 hour)	- Recall the components of blood. - Explain the life cycle of a red blood cell, and distinguish the function of each type of blood cell. - List the four groups and eight types of blood. - Associate antigens with types of blood. - Explain the importance of Rh factor. - Describe reasons a person may need a blood transfusion. - Indicate which blood types are the universal donor and the universal recipient.

WEEKS	AES MODULE	UNIT	OBJECTIVES
21-23	Cardiovascular System Cont'd	Unit 7: Development of the Heart (1 hour)	- Order the key stages of fetal heart development. - Describe the placenta and its functions. - Explain the location and function of the umbilical cord. - Identify the major shunts in the fetal circulatory system. - Identify the physical changes to the heart due to age. - Describe how age-related changes to the heart may lead to certain medical conditions.
21-23		Unit 8: Diseases and Disorders (1 hour)	- Describe several diseases and disorders of the cardiovascular system. - Examine the causes and symptoms of cardiovascular diseases and disorders. - Identify treatments for cardiovascular diseases and disorders, including: Hypertension Congestive heart failure Myocardial infarction Anemia Leukemia Sickle cell disease Congenital heart disease Thrombocytopenia Cardiac arrest Atrial fibrillation

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24-25	Lymphatic System	Unit 1: Structure and Function (2 hours)	- Describe the functions of the lymphatic system. - Learn how the lymphatic system helps maintain fluid homeostasis, and describe the main structures of the lymphatic system involved in the collection and movement of lymph. - Explain the importance of other lymphoid organs and tissues. These organs and tissues include the: Spleen Thymus Mucosa-associated lymphoid tissue (MALT)
24-25		Unit 2: Diseases and Disorders (30 minutes)	- Describe some diseases and disorders of the lymphatic and immune systems, including: Allergy Autoimmune Disease Non-Hodgkin's Lymphoma Lymphedema Appendicitis
26-27	Respiratory System	Unit 1: Structure and Function (2 hours)	- Name the functions of the respiratory system. - Distinguish between pulmonary ventilation, respiration, and oxygenation, and explain external and internal respiration. - Distinguish between the upper and lower airways of the respiratory system. - Explain the major structures of the upper and lower respiratory tracts.

WEEKS	AES MODULE	UNIT	OBJECTIVES
26-27	Respiratory System Cont'd	Unit 2: Diseases and Disorders (1 hour)	- Describe diseases and disorders of the respiratory system. - Explain how respiratory function is measured.
28-29	Digestive System	Unit 1: Structure and Function (2 hours)	- Describe the functions of the digestive system. - Identify the parts of the digestive system. - Identify the parts of the upper gastrointestinal tract. - Trace food from the mouth through the upper gastrointestinal tract. - Identify the parts of the lower gastrointestinal tract. - Trace food from the upper gastrointestinal tract through the lower gastrointestinal tract.
28-29		Unit 2: Diseases and Disorders (30 minutes)	- Describe diseases and disorders of the digestive system, including: Chronic Diarrhea Peptic Ulcer Chronic Constipation Inflammatory Bowel Disease Gastroesophageal Reflux Disease

WEEKS	AES MODULE	UNIT	OBJECTIVES
30-31	Urinary System	Unit 1: Structure and Function (2 hours)	- Describe the functions of the urinary system. - Identify the parts of the urinary system, and describe how they vary between males and females. - Explain how urine is formed and removed from the body.
30-31		Unit 2: Diseases and Disorders (30 minutes)	- Describe diseases and disorders of the urinary system, including: Anuria Oliguria Polyuria Glycosuria Hematuria Pyuria Nocturia Dysuria Retention Incontinence

WEEKS	AES MODULE	UNIT	OBJECTIVES
32-33	Endocrine System	Unit 1: Structure and Function (2 hours)	- Describe the function of the endocrine system. - Define hormones and their role in the body. - Compare and contrast endocrine and exocrine glands. - Describe the structure and function of endocrine system glands found in the head and neck. - Describe the structure and function of endocrine system glands found in the torso. - Explain the role of various hormones secreted by these glands.
32-33		Unit 2: Diseases and Disorders (30 minutes)	- Describe diseases and disorders of the endocrine system, including: Diabetes Mellitus Type 1 and Type 2 Diabetes Gestational Diabetes Hypoglycemia Hyperthyroidism Hypothyroidism

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34-35	Reproductive System	Unit 1: Structure and Function (1.5 hours)	- Describe the similarities between the male and female reproductive systems. - Describe the functions of the male reproductive system. - Identify the parts of the male reproductive system, and explain how male sex cells are formed and travel to the female. - Describe the functions of the female reproductive system. - Identify the parts of the female reproductive system, and explain how female sex cells are formed and travel through the female body.
34-35		Unit 2: Diseases and Disorders (1 hour)	- Describe diseases and disorders of the reproductive system, including: Prostate Cancer Infertility Sexually Transmitted Diseases Human papillomavirus, or HPV Acquired Immunodeficiency Syndrome, or AIDS Chlamydia Gonorrhea Genital herpes Hepatitis Syphilis
35-36	Final Exam	Review and Exam	