Human Anatomy & Physiology Instructional Materials Scoring Rubric

Gateway: The publisher must provide a Tennessee standards alignment guide as a part of the scope and sequence for the material. If this gateway is not met, the materials will not be scored. All Tennessee standards must be addressed within the material. If this is not met, the material will not pass review by the Tennessee Textbook and Instructional Materials Quality Commission.

Introduction:

The following Instructional Materials Scoring Rubric for Science is designed to score materials in the following categories:

- Instructional Focus
- Attending to Multiple Dimensions of Science Instruction
- Accessibility Features
- Alignment of Content

Scoring:

Each section is to be scored using a 0, 1, or 2. Use the following scoring guideline.

Tables 1-2:

- Adhere to the provided rubric statements for scoring.

Tables 3-4:

- 0: The standard is not present within the material.
- 1: The standard is present within the material. The intent and/or frequency component of the standard is not fully met.
- 2: A rating of 2 indicates the standard is present and all aspects of the standard are fully met.

Table 1: Instructional Focus **Directions:** **Adhere to the provided rubric statements for scoring.**					
Indicator	**0**	**1**	**2**	**Score**	**Evidence**
Central Phenomenon	Unit has **no phenomenon, or only a "hook"** to capture student interest at the beginning of the unit.	All units include one or more **smaller phenomenon or design challenge(s) and/or not all lessons connect to the phenomenon** or design challenge.	All units have a central phenomenon or design challenge that **develops throughout every lesson** of the unit.		
Activity Purpose	Material contains hands-on activities **do not serve** to grade-level scientific ideas	Hands-on activities **reinforce** scientific ideas aligned with grade-level standards.	All hands-on activities serve to **uncover** scientific ideas aligned with grade level standards.		
Use of Science Engineering Practices (SEPs)	Some units **do not provide students opportunities** to use the SEPs.	SEPs are present in all units, but **loosely or not connected to central phenomenon**.	In every unit, the **primary use** of the SEPs ties directly to explaining the central phenomenon or solving the design challenge.		
Student Engagement	**Neither of the given features** are present.	**One of the given features** is present.	Materials give students opportunities to: • expressly connect the DCI content from each lesson to		

Table 1: Instructional Focus **Directions:** **Adhere to the provided rubric statements for scoring.**					
			relevant crosscutting concepts. • practice with the SEP that is relevant to that day's lesson.		
Concepts before vocabulary.	Materials **pre-teach vocabulary.**	In **some instances**, materials develop conceptual meaning first.	In **all instances**, materials provide experiences (e.g., investigations, data analysis, discussions) where students develop conceptual meaning of a scientific idea before introducing technical vocabulary.		
Connections across component ideas.	Materials **describe** connections for students, or connections are absent.	Some units include **standalone questions** in place of activities, where students communicate their understanding of connections between component ideas.	All units include **activities** where students communicate their understanding of connections between science ideas from *two or more component ideas* within the grade (e.g., LS1.A and LS2.C, ESS2.A and PS1.A).		
Connections across disciplines.	Materials **describe** connections for students,	Some units include **standalone questions** in place of activities, where	All units include activities where students communicate their		

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	or connections are absent.	students communicate their understanding of connections between component ideas.	understanding of connections between science ideas from *two or more disciplines* within the grade (e.g., LS and PS).		
Review opportunities	End of unit review is **not anchored to a phenomenon**.	End of unit review assesses learning of the **central phenomenon for the unit** only.	Materials provide opportunities for students to transfer new learning to **analogous phenomenon** in a review at the end of every unit.		
				Total	

Table 2: Attending to Multiple Dimensions of Science Learning **Directions:** **Adhere to the provided rubric statements for scoring.**					
Indicator	**0**	**1**	**2**	**Score**	**Evidence**
Distribution of SEPs as required by the standards	Materials **do not include** a focal SEP for one or more units.	One or more SEPs are **disproportionately** featured as the focal SEP.	Materials identify one or more focal science and engineering practices (SEPs) for every unit(s) with a **balanced** distribution of all SEPs as a focal SEP throughout the units.		

Table 2: Attending to Multiple Dimensions of Science Learning **Directions:** **Adhere to the provided rubric statements for scoring.**					
Support for a focal SEP	**No** student facing or teacher facing supports for the SEPs.	Relevant **support strategies are absent** from teacher materials.	Every unit contains a focal SEP is featured in **student-facing materials and teacher materials** including instructional strategies for the particular unit and focal SEP.		
Connections across to crosscutting concepts as required by the standards.	Materials **describe connections with CCCs** or do not specifically address CCCs.	In every unit students make connection between the CCCs and **either** the SEPs or DCIs.	In every unit, students make connections between the crosscutting concepts (CCCs) and **both** the SEPs and disciplinary core ideas (DCIs).		
Developing crosscutting concepts (CCCs)	Materials **provide examples** of other instances of the CCCs or CCCs absent.	Students make connections between CCCs and **content not addressed in other units.**	In every unit, the materials lead students to **make connections between the CCCs in that unit and appearances of the CCCs in other units**.		
				Total	

Table 3: Accessibility Features				
Directions: • **0: The standard is not present within the material.** • **1: The standard is present within the material. The intent and/or frequency component of the standard is not fully met.** • **2: A rating of 2 indicates the standard is present and all aspects of the standard are fully met.**				
Digital Materials	**0**	**1**	**2**	**Evidence**
All lessons within the materials are available in digital form and include a printable option.				
In every lesson, materials include recommended supports, accommodations, and modifications for Students with Disabilities and English language learners that will support their regular and active participation in accessing on grade level material (e.g., modifying vocabulary words within word problems, sentence starters, etc.).				
			Total	

Table 4: Alignment of Content				
Directions: • **0: The standard is not present within the material.** • **1: The standard is present within the material. The intent and/or frequency component of the standard is not fully met.** • **2: A rating of 2 indicates the standard is present and all aspects of the standard are fully met.**				
Conceptual Understanding: The materials support the intentional development of students' conceptual understanding of key science ideas, practice, and concepts.	**0**	**1**	**2**	**Evidence**
HAP.LS1.1) Investigate the organization of the human body in relation to its ability to accomplish life functions and construct an explanation for the relationship between anatomy and physiology.				
HAP.LS1.2) Differentiate the major organ systems of the human body by their anatomy and physiology and engage in argument about defined boundaries due to their functional connectivity.				

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HAP.LS1.3) Describe the organizational levels of the human body and observe patterns in cell types and tissue types across organ systems.				
HAP.LS1.4) Use a human model to differentiate the major body cavities and organs located within them. Describe the model using proper anatomical and directional terminology for body regions, planes, and cavities.				
HAP.LS1.5) Explain homeostasis and describe how it is accomplished through feedback mechanisms that utilize receptors and effectors.				
HAP.LS1.6) Describe the anatomical structures of the integumentary system and explain their role in the physiological processes of protection, temperature homeostasis, and sensation.				
HAP.LS1.7) Diagram a cross-sectional image of skin layers identifying the microscopic components and describe the life cycle of cells that maintain these layers.				
HAP.LS1.8) Identify major bones within the axial and appendicular divisions, describing their physiological roles in creating a body scaffold, internal organ protection, and anchor points for skeletal muscles participating in movement.				
HAP.LS1.9) Diagram microscopic bone structures, identifying regions that participate in hematopoiesis and storage of minerals and fat.				
HAP.LS1.10) Explain the processes of bone formation, growth, and repair.				
HAP.LS1.11) Differentiate visceral, cardiac, and skeletal muscle tissues based on anatomical criteria and their physiological role in the movement of body parts and/or substances.				

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HAP.LS1.12) Model the gross and microscopic anatomy of skeletal muscle and a muscle fiber and use the model to identify and explain the roles of subcellular structures that participate in the events of muscle fiber contraction and heat generation.				
HAP.LS1.13) Model the anatomical connections between the skeletal system and muscular system and explain how they generate movement through antagonistic muscle groups.				
HAP.LS1.14) Describe, in terms of structure and function, the systemic and pulmonary paths of the cardiovascular system.				
HAP.LS1.15) Prepare and/or use a model of a human heart to explain systole and diastole and the heart's internal and external control mechanisms involved in producing the heartbeat.				
HAP.LS1.16) Explain blood pressure in terms of systole and diastole. Describe the factors affecting blood pressure and blood pressure's role in homeostasis.				
HAP.LS1.17) Examine the structure (molecular and cellular) of blood constituents and describe their function.				
HAP.LS1.18) Explain how the anatomy of the respiratory system functions to provide oxygen and carbon dioxide transport mechanisms between the lungs and the circulatory system, considering capillary structures, red				
HAP.LS1.19) Explain the relationship between the integumentary, muscular, and circulatory systems in temperature homeostasis.				
HAP.LS1.20) Describe the relationship between the structure and function of the lymphatic system.				

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HAP.LS1.21) Differentiate between innate and adaptive immunity, identifying immune cells that play a role in each.				
HAP.LS1.22) Analyze ABO and Rh blood groups as a basis for blood transfusion and infant incompatibility reactions.				
HAP.LS1.23) Diagram the progression of lipid transport from the digestive system, through the lymphatic system, and into the cardiovascular circulation.				
HAP.LS1.24) Model the sequential organization of the alimentary canal and its accessory organs in order to describe the physiological role of each.				
HAP.LS1.25) Analyze gastrointestinal wall histology and explain the anatomical architecture that supports efficient absorption and transport of molecules into cardiovascular or lymphatic circulation.				
HAP.LS1.26) Investigate the actions of major digestive enzymes and hormones and identify their sources.				
HAP.LS1.27) Describe the role of the hepatic portal system in coupling the digestive and cardiovascular systems.				
HAP.LS1.28) Model the sequential organization of the male and female urinary tracts in order to describe the physiological role of blood filtration and waste excretion from the body.				
HAP.LS1.29) Identify the parts of a nephron and describe how they assist in homeostatic mechanisms through urine formation.				
HAP.LS1.30) Using a model, name and locate the major endocrine glands and identify additional organ tissues in the human body that produce				

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hormones. Describe the hormones produced and their physiological effects on other body targets.				
HAP.LS1.31) Describe the relationship between receptors and ligands and differentiate between steroid and nonsteroid hormones as ligands.				
HAP.LS1.32) Explain, using examples, the mechanism of negative feedback in hormonal production and control.				
HAP.LS1.33) Anatomically distinguish between the central nervous system and the peripheral nervous system. Explain how their structures and locations are related to their physiological roles.				
HAP.LS1.34) Model the cellular and subcellular structures of neurons and explain the molecular neurophysiology of membrane potentials and the conduction of information through synaptic transmission.				
HAP.LS1.35) Identify and describe the types of sensory receptors found in the human body.				
HAP.LS1.36) Compare and contrast the structures and functions of the somatic nervous system and the autonomic nervous system.				
HAP.LS1.37) Model the major parts of the brain and spinal cord, relating each part to its source of sensory information and/or its primary target of regulation.				
HAP.LS1.38) Explain the structures, functions, and limitations of the human sensory systems (senses): hearing, balance/proprioception, sight, touch, smell, and taste.				

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HAP.LS1.39) Identify and describe the organs of the human male and female reproductive systems that provide the physiological functions of gametogenesis, fertilization, and embryogenesis.				
HAP.LS1.40) Examine the microscopic structures of the human egg and sperm and explain how their structures relate to their functions.				
HAP.LS1.41) Based on the secretion of hormones, identify the endocrine tissues of the reproductive system and describe their roles in regulation of secondary sex characteristics, the female menstrual cycle, pregnancy, fetal development, and parturition.				
HAP.LS1.42) Trace the major events of human development from fertilization to birth, with a focus on the development of organs and functional organ systems.				
HAP.ETS2.1) Research system disorders to communicate information on the known facts about the disorders and identify technology that has been developed to diagnose and/or treat the disorders.				
HAP.LS1.21) Differentiate between innate and adaptive immunity, identifying immune cells that play a role in each.				