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| Anatomy and Physiology Curriculum Overview | 2019-2020 |
| <http://science.dmschools.org> <http://grading.dmschools.org>  |  |



Proficiency Scale

**Standards-Referenced Grading Basics**

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| Evidence shows the student can... | Topic Score |
| Demonstrate all learning targets from Level 3 and Level 4 | 4.0 |
| Demonstrate all learning targets from Level 3 with partial success at Level 4 | 3.5 |
| Demonstrate all learning targets from Level 3 | 3.0 |
| Demonstrate at least half of the Level 3 learning targets | 2.5 |
| Demonstrate all learning targets from Level 2 but fewer than half of the learning targets from Level 3 | 2.0 |
| Demonstrate at least half of the Level 2 learning targets and none of the Level 3 learning targets | 1.5 |
| Demonstrate fewer than half of the learning targets from Level 2 and none of the Level 3 learning targets | 1.0 |
| Produce no evidence appropriate to the learning targets at any level | 0 |

The teacher designs instructional activities that grow and measure a student’s skills in the elements identified on our topic scales. Each scale features many such skills and knowledges, also called **learning targets**. These are noted on the scale below with letters (A, B, C) and occur at Levels 2 and 3 of the scale. In the grade book, a specific learning activity could be marked as being 3A, meaning that the task measured the A item at Level 3.

When identifying a Topic Score, the teacher looks at all evidence for the topic. The table to the **right** shows which Topic Score is entered based on what the Body of Evidence shows.

Only scores of 4, 3.5, 3, 2.5, 2, 1.5, 1, and 0 can be entered as Topic Scores.

**Guiding Practices of Standards-Referenced Grading**

**1.** A consistent 4-point grading scale will be used.

**2.** Student achievement and behavior will be reported separately.

**3.** Scores will be based on a body of evidence.

**4.** Achievement will be organized by learning topic and converted to a grade at semester’s end.

**5.** Students will have multiple opportunities to demonstrate proficiency.

**6.** Accommodations and modifications will be provided for exceptional learners.

**Multiple Opportunities**

*It’s not about going back to do a retake, or back to redo something; it’s about going forward, continually scaffolding student learning through multiple opportunities, and noting that improved learning.* Our curriculum builds on itself. “Multiple opportunities” are about taking an assessment and connecting it to past topics. It’s about allowing students to demonstrate their learning multiple times in units subsequent to their current unit, or when learning is scaffolded into future units.

Multiple Opportunities will be noted in the guide to the right of the scales. Here you will see initial thinking of connections to other topics. This is also a place where teachers can add connections through their PLCs.

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| **Topic** | **NGSS Performance Expectation** | **Driving Questions** |
| Structure and Function | HS-LS1-2, HS-LS1-3 | How do feedback mechanisms work to maintain homeostasis? How are human body systems organized?What are the specific functions of the human organ systems?  |
| Nervous System | HS-LS1-2, HS-LS1-3 | How does the human receive, process, and respond to stimuli? How does the nervous system play a crucial role in maintaining homeostasis? How does the structure of the neuron enhance its ability to function as a transmitter?  |
| Skeletal/Muscular | HS-LS1-2, HS-LS1-3 | How does the structure of the skeletal and muscular systems assist in their function? What is the relationship between the skeletal and muscular systems? What effects can the environment have on these systems? |
| Digestive/Cardiovascular | HS-LS1-2, HS-LS1-3, HS-LS1-4, HS-LS1-6, HS-LS1-7 | What important chemical and mechanical processes take place in the digestive system? How does the cardiovascular system work with the digestive system to maintain homeostasis? How do these systems respond to negative impacts? |
| Respiratory/Urinary | HS-LS1-2, HS-LS1-3 | How does the human body get rid of cellular waste? How do kidneys regulate homeostasis of the blood? How do the respiratory and urinary systems work together? What environmental factors can damage these systems? |
| Reproductive | HS-LS1-2, HS-LS1-3 | How do the organs of the reproductive systems contribute to fertility? How are the male and female reproductive different? How are they similar? How do environmental factors affect gamete development? |

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| Topic: Structure and Function  |
| Driving Questions: How do feedback mechanisms work to maintain homeostasis? How are human body systems organized? What are the specific functions of the human organ systems? |
| Crosscutting Concept: Systems and System Models, Stability and Change |
| Science and Engineering Practices: Asking questions, Developing and using models,  |
| Performance Expectation: HS-LS1-2, HS-LS1-3 |
| Level 4 | Level 3 | Level 2 | Level 1 |
| In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | ***Students will:***1. Classify the human body systems by overall function.
2. Explain how the four major tissue types differ structurally and functionally.
3. Construct explanations for maintaining homeostasis based on evidence and examples using human body systems.
4. Create a biological situation where a negative feedback loop would be necessary to maintain homeostasis.
 | ***Students will:***1. Recognize the human body systems and describe their main function(s.)
2. List and describe the four different tissue types of the human body.
3. State the definition of homeostasis and describe its importance in the human body.
4. Define and give an example of a negative feedback loop.

Recognize or recall specific vocabulary such as: respiratory, cardiovascular, integumentary, endocrine, reproductive, digestive, nervous, skeletal, muscular, immune, lymphatic, homeostasis, feedback loops. | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |

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| Topic: Nervous System |
| Driving Questions: How does the human receive, process, and respond to stimuli? How does the nervous system play a crucial role in maintaining homeostasis? How does the structure of the neuron enhance its ability to function as a transmitter? |
| Crosscutting Concept: Systems and System Models, Stability and Change |
| Science and Engineering Practices: Structure and Function, Systems and System Models, Stability and Change |
| Performance Expectation: HS-LS1-2, HS-LS1-3 |
| Level 4 | Level 3 | Level 2 | Level 1 |
| In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | **Students who demonstrate understanding can:**1. Predict what would occur if a stimulus couldn’t be interpreted by the brain.
2. Create a model that depicts the relationship between the central nervous system and the peripheral nervous system.
3. Discuss the role of the neuron in the nervous system and what environmental changes could affect its function?
4. Explain how the nervous system maintains homeostasis with other organ systems.
 | ***Students will:***1. Identify the lobes of the brain the major function of each lobe.
2. 1. Explain the purpose of the central nervous system and identify its structures

2. Explain the purpose of the peripheral nervous system and identify its structures1. Identify the structure and function of the neuron.
2. Recognize the relationship between the neuron and muscles and glands.

Recognize or recall specific vocabulary such as: Neuron, axon, dendrites, cell body, synapse, myelin sheath, CNS, PNS, temporal, parietal, occipital, and frontal lobe.  | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |

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| Topic: Skeletal/Muscular System  |
| Driving Questions: How does the structure of the skeletal and muscular systems assist in their function? What is the relationship between the skeletal and muscular systems? What effects can the environment have on these systems? |
| Crosscutting Concept: Structure and Function, Systems and System Models, Stability and Change |
| Science and Engineering Practices: Develop and use a model to predict and show relationships between two systems. |
| Performance Expectation: HS-LS1-2, HS-LS1-3 |
| Level 4 | Level 3 | Level 2 | Level 1 |
| In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | ***Students will:***1. Compare and contrast the skeletal and muscular systems structurally and functionally.
2. Explain how antagonistic muscle groups work together.
3. Create a model demonstrating how the environment can disturb the internal balance of the skeletal and muscular systems and how these systems react to maintain homeostasis.
 | ***Students will:***1. 1. Identify the major parts and organelles of bone cells.

2. Identify the major parts and organelles of muscle cells.3. Name and describe the location of the major bones of the human skeletal system.4. Name and describe the location of the major muscle groups of the human muscular system.1. Define “antagonistic muscles.”
2. 1. List environmental changes that can affect the skeletal system.
3. Describe how environmental changes can affect the muscular system.

Recognize or recall specific vocabulary such as: Striated, smooth, and cardiac muscle. Voluntary, involuntary movement. Antagonistic, osteocyte. Long, short, irregular, and flat bones. Major bones of the body. | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |

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| Topic: Digestive and Cardiovascular System |
| Driving Questions: What important chemical and mechanical processes take place in the digestive system? How does the cardiovascular system work with the digestive system to maintain homeostasis? How do these systems respond to negative impacts? |
| Crosscutting Concept: Structure and Function, Systems and System Models, Stability and Change, Energy and Matter |
| Science and Engineering Practices: Developing models. Plan and conduct an investigation. Design solutions for system problems. |
| Performance Expectation: HS-LS1-2, HS-LS1-3, HS-LS1-4, HS-LS1-6, HS-LS1-7 |
| Level 4 | Level 3 | Level 2 | Level 1 |
| In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | ***Students will:***1. Develop a structural model of the digestive system and explain the major function of each organ and accessory organ.
2. Predict what the consequences would be, if the heart had a leaky valve.
3. Compare and contrast the functions of the digestive and cardiovascular systems and how they work together to maintain homeostasis
 | ***Students will:***1. 1. Describe the structure and function of the major organs and accessory organs of the digestive system.

2. Explain the difference between chemical and mechanical digestion.3. Describe the pathway of food as it is propelled throughout the alimentary canal.1. 1. Recognize the structure and function of the major organs of the cardiovascular system.
2. Describe the pathway of blood throughout the human body.
3. Summarize how the digestive system and the cardiovascular system maintain homeostasis.

Recognize or recall specific vocabulary such as: mouth, esophagus, stomach, sphincter, intestine, colon, rectum, anus, villi, heart, veins, arteries, capillaries, atrium, ventricle, aorta | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |

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| Topic: Respiratory and Urinary System |
| Driving Questions: How does the human body get rid of cellular waste? How do kidneys regulate homeostasis of the blood? How do the respiratory and urinary systems work together? What environmental factors can damage these systems? |
| Crosscutting Concept: Structure and Function, Systems and System Models, Stability and Change |
| Science and Engineering Practices: Analyzing data. Planning and carrying out an investigation. Engaging arguments for evidence. |
| Performance Expectation: HS-LS1-2, HS-LS1-3 |
| Level 4 | Level 3 | Level 2 | Level 1 |
| In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | ***Students will:***1. Analyze the input and output of the respiratory system and how changes can affect the human body.
2. Given data, formulate an explanation as to how urinary waste concentration and output volume can effect homeostasis.
3. Predict how a disease or a stress of the respiratory system could affect the urinary system.
 | ***Students will:***1. Identify the structures and functions of the lungs.
2. 1. Illustrate the structure of the kidney and state its purpose.

2. List and identify the main organs of the urinary system.1. Discuss possible ways that the respiratory system can be damaged, stressed, or inhibited.
2. List environmental factors that can disrupt normal urinary function.

Recognize or recall specific vocabulary such as: lungs, trachea, bronchioles, alveoli, oxygen, carbon dioxide, urinary bladder, kidney, nephron | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |

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| Topic: Reproductive System |
| Driving Questions: How do the organs of the reproductive systems contribute to fertility? How are the male and female reproductive different? How are they similar? How do environmental factors affect gamete development? |
| Crosscutting Concept: Structure and Function, Systems and System Models, Stability and Change |
| Science and Engineering Practices: Constructing explanations and designing solutions. Collaboratively collect evidence to produce data to serve as evidence. |
| Performance Expectation: HS-LS1-2, HS-LS1-3 |
| Level 4 | Level 3 | Level 2 | Level 1 |
| In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. | **Students who demonstrate understanding can:**1. Evaluate the form and function of human male and female reproductive organs and explain how they promote the development of healthy egg and sperm.
2. Develop an explanation with evidence that shows how environmental factors can affect fertility or gamete development and propose a solution.
3. Compare and contrast the human male and female reproductive systems.
 | Students will:1. 1. Match the human reproductive organs with their respective functions.

2. Describe how the contents found in semen lead to healthy sperm production.3. Describe the development and pathway of the ovum through the female reproductive system. 1. 1. List factors that can affect fertilization.

2. List factors that can affect gamete development.1. 1. Identify similarities between male and female reproductive organs.

2. Discuss differences between male and female reproductive organs.Recognize or recall specific vocabulary such as: sperm, ova, testicles, epididymis, vas deferens, penis, semen, ovaries, vagina, uterus, follicles | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |