

CCPS Science Unit Plan

Grade	10-12	Subject: Human Anatomy & Physiology	Science	Unit #	2
Unit Name	Support and Movement: Integumentary, Skeletal, and Muscular Systems		Timeline	3 weeks	
How to use the Framework	<p>This Framework should be used to implement daily science instruction. The resources and instructional strategies reflected in the Framework will provide a foundation for effective implementation and student mastery of standards.</p> <p>Please see the hyperlinked abbreviation document to ensure understanding all abbreviations used with this framework.</p>				
Unit Overview	<p>This unit introduces the learner to the general processes that support the integumentary, skeletal, and muscular systems and how these systems interact to carry out the functions of life. The integumentary, skeletal, and muscular systems are responsible for the support and movement of the body. Students will be introduced to how skin, bone, and muscle allow the human body to hold together and move.</p> <p>Prior to beginning this unit, check for the following equipment/supplies. Communicate with your department chair if you are unable to locate any necessary materials.</p>				
Lesson Plan guidance document and template	<p style="text-align: center;"> Department of Science Guidance Document Lesson Plan Template Week View GADOE Science Updates </p>				
3Dimensional Instruction	<u>GSE</u>	<u>Science and Engineering Practices</u>	<u>Crosscutting Concepts</u>		
	<p>SAP2. Obtain, evaluate, and communicate information to analyze the structure and function of the integumentary, skeletal, and muscular systems.</p> <p>a. Construct an explanation about the relationship between the structures of the integumentary system and their role in protection, eliminating waste products, and regulating body temperature.</p> <p>b. Develop and use models to relate the structure of the skeletal system to its functional role in movement, protection, and support.</p> <p>c. Develop and use models to determine the relationship between structures of the muscular system and their role in movement and support.</p> <p>d. Ask questions about how the interdependence of the integumentary, skeletal, and muscular</p>	<p>HS-LS1-2: Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.</p> <p>HS-LS1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.</p>	<p>Systems and System Models Models (e.g., physical, mathematical, computer models) can simulate systems and interactions—including energy, matter, and information flows—within and between systems at different scales. (HS-LS1-2)</p> <p>Structure and Function Investigating or designing new systems or structures requires a detailed examination of the properties of different materials, the structures of different components, and connections of components to reveal its function and/or solve a problem. (HS-LS1-1)</p> <p>Stability and Change Feedback (negative or positive) can stabilize or destabilize a system. (HS-LS1-3)</p>		

	<p>systems makes support, protection, and movement possible.</p> <p>(Clarification statement: Questions should address the homeostatic mechanisms, as well as the effects of and responses to aging, diseases, and disorders).</p>		
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NGSS Alignment	NGSS Alignment to Disciplinary Core Ideas
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Weekly Lesson Tasks

Week 1

<p>GSE: a. Construct an explanation about the relationship between the structures of the integumentary system and their role in protection, eliminating waste products, and regulating body temperature. (Clarification statement: Questions should address the homeostatic mechanisms, as well as the effects of and responses to aging, diseases, and disorders).</p>	<p>Focused Concept:</p> <ul style="list-style-type: none"> The major Integumentary structures (cellular, tissue, and organ composition) and their corresponding functional roles Pathologies that disrupt typical structural makeup and/or functional abilities of the Integumentary system Homeostasis
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<p>Phenomenon: *Daily phenomenon is included in the daily opening.</p>	<p>DQ:</p> <ol style="list-style-type: none"> 1. What are the major structures and functions of the Integumentary System? 2. What is homeostasis? 3. How does the Integumentary system work to maintain homeostasis within the body? 4. How do pathologies and senescence affect the anatomy and physiology of the Integumentary system?
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<p>SEP: Obtain, evaluate and communicate Construct an explanation</p>	<p>CCC: Systems and System Models, Structure and Function, Stability and Change</p>
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	Day 1	Day 2	Day 3	Day 4	Day 5
<p>Learning Targets</p> <p>The students will be able to:</p>	<p>1. Identify the major structures of the Integumentary system</p> <p>a. Skin: epidermis, dermis, hypodermis</p>	<p>1. Identify the major structures of the Integumentary system</p> <p>b. Glands: sweat (eccrine and apocrine), ceruminous, sebaceous</p>	<p>1. Identify and discuss the 5 major integumentary functions: protection, temperature regulation, sensation, excretion, and Vitamin D production.</p>	<p>1. Discuss how various pathologies affect the typical anatomy and physiology of the integumentary system.</p>	<p>1. Demonstrate mastery of the content through formative assessment.</p>

		<p>c. Hair: terminal, pubic, and vellus.</p> <p>d. Nails</p>	<p>2. Define homeostasis and explain its significance in regulating the body to create the ideal cellular environment.</p>		
<p>Opening (10-15 minutes)</p> <p>TTW: "the teacher will"</p> <p>TSW: "the student will"</p> <p>Show students the Phenomenon Unit 2 Ppt Daily</p>	<p>Intro to the Integumentary System and layers of the skin</p> <p>Phenomenon:</p> <ul style="list-style-type: none"> Show students the phenomenon See-Think-Wonder protocol to guide student thinking, emphasizing students' prior knowledge of: <ul style="list-style-type: none"> tissue types: epithelial and connective structures besides skin: hair, nails, glands. TTW Ask students: What do you see? What do you think about what you are seeing? What does it make you wonder? TTW provide students opportunities to share observations and develop questions. TTW record students' questions to direct instruction. <p>Vocabulary: TSW add terms to the Digital KIM Chart</p> <ul style="list-style-type: none"> keratin epidermis Dermis hypodermis Melanocytes 	<p>Accessory Integumentary Structures</p> <p>Phenomenon:</p> <ul style="list-style-type: none"> Show students the phenomenon TTW Use the See-Think-Wonder protocol to guide student thinking. TTW Ask students: What do you see? What do you think about what you are seeing? What does it make you wonder? What parts of the image are familiar and what are unfamiliar. TTW provide students opportunities to share observations and develop questions. TTW record students' questions to direct instruction. <p>Vocabulary: TSW add terms to the Digital KIM Chart</p> <ul style="list-style-type: none"> sudoriferous glands sebaceous glands Meissner's corpuscles dermal papillae eccrine glands apocrine glands Arrector pili muscle hair root hair follicle hair shaft Eponychium 	<p>Integumentary functions & Intro to Homeostasis</p> <p>Phenomenon:</p> <p>▶ Blood Flow & Vascul...</p> <ul style="list-style-type: none"> Show students the phenomenon TTW Use the See-Think-Wonder protocol to guide student thinking. If necessary, TTW show the video additional times to allow students to record their observations and formulate queries. TTW Ask students: What do you see? What do you think about what you are seeing? What does it make you wonder? TTW provide students opportunities to share observations and develop questions. TTW record students' questions to direct instruction. <p>Vocabulary: TSW add terms to the Digital KIM Chart</p> <ul style="list-style-type: none"> Vasodilation Vasoconstriction Sensation Excretion Synthesis Homeostasis <p>Hole's Essentials</p>	<p>Integumentary Pathologies & Senescence</p> <p>Phenomenon:</p> <ul style="list-style-type: none"> Show students the phenomenon TTW Use the See-Think-Wonder protocol to guide student thinking, emphasizing: <ul style="list-style-type: none"> possible cause of the condition ways the condition may affect Integumentary functions TTW Ask students: What do you see? What do you think about what you are seeing? What does it make you wonder? TTW provide students opportunities to share observations and develop questions. TTW record students' questions to direct instruction. <p>Vocabulary: TSW add terms to the Digital KIM Chart</p> <ul style="list-style-type: none"> athlete's foot cold sores contact dermatitis impetigo psoriasis 	<p>Formative Assessment Quiz 3: Integumentary Quiz</p> <p>TTW answer questions to prepare students for their formative assessment.</p>

	<ul style="list-style-type: none"> ● melanin <p><u>Hole's Essentials</u> <u>Reference Pages:</u> 164-170</p>	<ul style="list-style-type: none"> ● lunula ● nail matrix <p><u>Hole's Essentials</u> <u>Reference Pages:</u> 170-173</p>	<p><u>Reference Pages:</u> 174-178</p>	<ul style="list-style-type: none"> ● 1st degree burns ● 2nd degree burns ● 3rd degree burns ● basal cell carcinoma ● squamous cell carcinoma ● malignant melanoma 	
<p>Guided Practice/ Transition (20 minutes)</p>	<p>TTW provide explicit instruction over the Integumentary system and the layers of the skin: hypodermis, dermis, epidermis, stratum basale, stratum spinosum, stratum granulosum, stratum lucidum, stratum compactum, stratum corneum.</p> <p>TTW refer back to the tattoo phenomenon and guide students through a think-pair-share to answer the following DQ: Why are tattoos embedded into the dermis? TTW prompt students by asking: -What would happen if tattoos were placed in the epidermis? Or hypodermis? TSW:</p> <ul style="list-style-type: none"> ● independently brainstorm reasons as to why tattoos have to be held in place by the dermis ~2 minutes ● discuss their ideas in small groups and formulate one cohesive answer ~5 minutes ● share their explanation with the class, receiving immediate feedback 	<p>TTW provide explicit instruction over the accessory structures of the Integumentary system: skin, hair, and nails.</p> <p>TTW poll students to check for understanding by asking students to identify the numbered accessory structures. ~5-10 minutes depending on student need</p> <p>If students are struggling, TTW guide them with the following prompts</p> <p>TSW use paper, whiteboards, virtual response forms (ie. peardeck, polleverywhere, etc.), or verbal responses to answer the questions and identify the correct accessory structure.</p>	<p>TTW provide explicit instruction over the 5 major functions of the Integumentary System</p> <ol style="list-style-type: none"> 1. Protection 2. Temperature Regulation 3. Sensation 4. Excretion 5. Vitamin D synthesis <p>TTW lead students through an investigation of their own body's tendency to maintain homeostasis.</p> <ol style="list-style-type: none"> 1. TTW instruct students to record their resting heart rate on a live class data google form. 2. TTW lead students through 3 minutes of walking/dancing/moving . *If students are far from their desks in order to perform their physical activity, give them a 20 second warning to start making their way back to their seats. 3. TTW instruct students to measure and record their new, elevated heart rate before sitting back down. 4. TTW prompt students to describe other changes in their bodies during the 	<p>TTW provide explicit instruction over the pathologies and senescence of the Integumentary system.</p> <p>TSW perform a Close read on one of the featured articles in <u>Hole's Essentials</u>.</p> <ol style="list-style-type: none"> a. <u>Skin Cancer</u>: pg 169 b. <u>Burns</u>: pg 176 	<p>After completing the assessment, TSW complete guided notes that introduce them to the Skeletal system.</p>

	from both peers and teacher ~10 minutes		<p>3 minutes of activity in addition to their elevated heart rates. TTW record student responses somewhere visible to all.</p> <ol style="list-style-type: none"> After the students have been sitting for 3 minutes, TTW instruct them to take their heart rates one last time and record their data on the class form. TTW provide instruction over homeostasis and the negative feedback mechanisms the body uses to maintain the internal balance. <p>TSW follow teacher's prompts by measuring and recording their heart rates, moving, and sitting when instructed.</p>		
Independent Practice (45-50 minutes)	Skin Section Drawing TSW create a skin section drawing that displays an understanding of the required vocabulary as well as the histological composition of each skin layer.	TSW add the accessory organs to their skin section drawings that display an understanding of the required vocabulary as well as the location and makeup of the accessory organs.	TSW answer the following questions in reference to the class homeostasis activity. <ol style="list-style-type: none"> What trends can you see in the class data set? Provide an explanation for each trend. How does today's class activity relate to the concept of homeostasis? Besides change in heart rate, can you identify any other homeostatic mechanisms that your body used during or after the class activity? 	TSW complete the Tattoo CER With time remaining, TSW complete Hole's Essential Chapter Review Questions on pg. 181-183 in preparation for their quiz.	Formative assessment: Integumentary Quiz
Assessment Summary (5-10 minutes) <i>Show students the Exit ticket Unit 2 ppt</i>	Show students Exit ticket Unit 2 ppt	Show students Exit ticket Unit 2 ppt	Show students Exit ticket Unit 2 ppt	Hole's Essential Chapter Review Questions pg. 181-183.	Formative Assessment Quiz 3: Integumentary System

<i>daily</i> Formative Assessment should have between 15 to 20 questions					
Small Group Tasks (TBA)	Students will be given accommodations based on IEP requirements.	Students will be given accommodations based on IEP requirements.	Students will be given accommodations based on IEP requirements.	Students will be given accommodations based on IEP requirements.	Questions may be modified for students in small groups and/ or time in half should be provided to those students whose accommodations permits.

Week 2

GSE: b. Develop and use models to relate the structure of the skeletal system to its functional role in movement, protection, and support.
(Clarification statement: Questions should address the homeostatic mechanisms, as well as the effects of and responses to aging, diseases, and disorders).

Focused Concept:

- The major Skeletal structures (cellular, tissue, and organ composition) and their corresponding functional roles
- Pathologies that disrupt typical structural makeup and/or functional abilities of the Skeletal system
- Homeostatic mechanisms utilized and/or affected by the Skeletal system

Phenomenon: Why are we born with disjointed cartilage skeletons?

DQ:

1. What are the major structures and functions of the Skeletal System?
2. How does the Skeletal system work to maintain homeostasis within the body?
3. How do pathologies and senescence affect the anatomy and physiology of the Skeletal system?

SEP: Obtain, evaluate and communicate
Develop and use models

CCC: Systems and System Models, Structure and Function, Stability and Change

	Day 6	Day 7	Day 8	Day 9	Day 10
Learning Targets The students will be able to:	1. Name and discuss the significance of the 5 major components of bone: collagen, calcium triphosphate, osteoblasts, osteoclasts, and osteocytes.	1. Identify the major structures of the skeletal system e. Bones: long, short, flat, regular, and sesamoid f. Cartilage; hyaline, elastic, and fibro- g. Tendons h. Ligaments	1. Identify and discuss the 5 major skeletal functions: protection, structure/shape, movement, blood cell production, and storage.	1. Discuss how various pathologies affect the typical anatomy and physiology of the skeletal system.	1. Demonstrate mastery of the content through formative assessment.
Opening	<u>Intro to the Skeletal</u>	<u>Skeletal Structures</u>	<u>Skeletal Functions and</u>	<u>Skeletal Pathologies &</u>	TTW answer questions to

<p>(10-15 minutes)</p> <p>TTW: “the teacher will”</p> <p>TSW: “the student will”</p>	<p style="text-align: center;">System</p> <p>Phenomenon:</p> <ul style="list-style-type: none"> ● Show students the phenomenon ● TTW Use the See-Think-Wonder protocol to guide student thinking. ● TTW Ask students: What do you see? What do you think about what you are seeing? What does it make you wonder? ● TTW provide students opportunities to share observations and develop questions. ● TTW record students' questions to direct instruction. <p>Vocabulary: TSW add terms to the Digital KIM Chart</p> <ul style="list-style-type: none"> ● Osseous tissue ● Ossification ● Osteons ● collagen ● hydroxyapatite ● Osteocytes ● Osteoblasts ● Osteoclasts ● Compact bone <p>Hole’s Essentials Reference Pages: 185-189</p>	<p>Phenomenon:</p> <ul style="list-style-type: none"> ● Show students the phenomenon ● TTW Use the See-Think-Wonder protocol to guide student thinking. ● TTW Ask students: What do you see? What do you think about what you are seeing? What does it make you wonder? ● TTW provide students opportunities to share observations and develop questions. ● TTW record students' questions to direct instruction. <p>Vocabulary: TSW add terms to the Digital KIM Chart</p> <ul style="list-style-type: none"> ● Skeletal system ● Axial skeleton ● Long bones ● Short bones ● Flat bones ● Irregular ● Diaphysis ● Epiphyses ● Epiphyseal ● Periosteum ● Endosteum ● Articular cartilage ● Medullary cavity <p>Hole’s Essentials Reference Pages: 198-230</p>	<p style="text-align: center;">Remodeling</p> <p>Phenomenon:</p> <ul style="list-style-type: none"> ● Show students the phenomenon ● TTW Use the See-Think-Wonder protocol to guide student thinking. ● TTW Ask students: What do you see? What do you think about what you are seeing? What does it make you wonder? ● TTW provide students opportunities to share observations and develop questions. ● TTW record students' questions to direct instruction. <p>Vocabulary: TSW add terms to the Digital KIM Chart</p> <ul style="list-style-type: none"> ● Mineralization ● facilitation ● hemogenesis ● Bone marrow: red and yellow ● Remodeling ● Ossification ● Endochondral ossification <p>Hole’s Essentials Reference Pages: 190-196</p>	<p style="text-align: center;">Senescence</p> <p>Phenomenon:</p> <ul style="list-style-type: none"> ● Show students the phenomenon ● TTW Use the See-Think-Wonder protocol to guide student thinking. ● TTW Ask students: What do you see? What do you think about what you are seeing? What does it make you wonder? ● TTW provide students opportunities to share observations and develop questions. ● TTW record students' questions to direct instruction. <p>Vocabulary: TSW add terms to the Digital KIM Chart</p> <ul style="list-style-type: none"> ● Shin splints ● osteonecrosis ● osteoporosis ● gout ● osteomyelitis 	<p>prepare students for their formative assessment.</p>
<p style="text-align: center;">Guided Practice/Transition (20 minutes)</p>	<p>TTW provide explicit instruction over an introduction to the skeletal system, osseous tissue, and the structural composition of bone.</p>	<p>TTW provide explicit instruction over the classifications of bones and the arrangement of the skeleton as whole.</p>	<p>TTW provide explicit instruction over the functions of the skeletal system: structure/shape, support, facilitation of movement, production of</p>	<p>TTW provide explicit instruction over the pathologies and senescence of the Skeletal system.</p> <p>TSW perform a close read</p>	<p>After completing the assessment, TSW complete guided notes that introduce them to the Muscular system.</p>

	<p>TTW assign each student to one of the following groups: collagen, calcium triphosphate, osteoblasts, osteoclasts, or osteocytes. Each group will generate support for the argument that their assigned group is the most important component of bone.</p> <p>TSW engage in academic discourse, presenting support for their arguments as well as responding to the arguments made by their peers.</p> <p>TTW facilitate class discussion and provide prompts and/or redirections if necessary.</p>	<ol style="list-style-type: none"> TTW distribute boxes of 4 bone models to each group of ~4 students. (If you do not have bone models readily available, you can always provide printed images to the same effect). Each box should contain bones that are all the same type (long, short, irregular, flat). TTW instruct students to trade bones with other groups until they have one of each type: short, long, flat, and irregular. Once a group has collected all 4 bones, TSW use the resources available (ie. textbook, instructional slides, models, etc.) to determine the name and location of each bone. TSW then determine the function of each bone based on its identified classification and location. TSW present their findings to the teacher. TTW provide immediate individualized feedback. 	<p>blood, and storage and how these functions play a role in maintaining the body's homeostasis. TTW also instruct over the types of bone fractures and the process of bone remodeling: reactive phase, reparative phase, and restorative phase.</p> <p>TTW provide the students with cards that each contain one step of the bone remodeling process.</p> <p>TSW work in pairs to put the cards in the correct chronological order.</p> <p>TTW walk around to monitor student progress and provide reteaching and feedback when necessary.</p>	<p>of the “Stem Cells to Treat Disease” article on page 197 of Hole’s Essentials.</p> <p>TSW engage in academic discourse about their opinions on stem cell research.</p> <p>TTW facilitate class discussion and provide prompts and/or redirections if necessary.</p>	
<p>Independent Practice (45-50 minutes)</p>	<p>1st Assignment from Skeletal Tic Tac Toe Choice Board</p>	<p>2nd Assignment from Skeletal Tic Tac Toe Choice Board</p>	<p>3rd Assignment from Skeletal Tic Tac Toe Choice Board</p>	<p>TSW complete the Hole’s Essential Chapter Review Questions on pg. 231-233 in preparation for their quiz.</p>	<p>Formative Assessment Quiz 4: Skeletal System</p>
<p>Assessment/Summary (5-10 minutes)</p>	<p>Show students Exit ticket Unit 2 ppt</p>	<p>Show students Exit ticket Unit 2 ppt</p>	<p>Show students Exit ticket Unit 2 ppt</p>	<p>Hole’s Essential Chapter Review Questions on pg.</p>	<p>Formative Assessment Quiz 4: Skeletal System</p>

Formative Assessment should have between 15 to 20 questions				231-233	
Small Group Tasks (TBA)	Students will be given accommodations based on IEP requirements.	Students will be given accommodations based on IEP requirements.	Students will be given accommodations based on IEP requirements.	Students will be given accommodations based on IEP requirements.	Questions may be modified for students in small groups and/ or time in half should be provided to those students whose accommodations permits.

Week 3

<p>GSE: c. Develop and use models to determine the relationship between structures of the muscular system and their role in movement and support.</p> <p>d. Ask questions about how the interdependence of the integumentary, skeletal, and muscular systems makes support, protection, and movement possible.</p> <p>(Clarification statement: Questions should address the homeostatic mechanisms, as well as the effects of and responses to aging, diseases, and disorders).</p>	<p>Focused Concept:</p> <ul style="list-style-type: none"> • The major muscular structures (cellular, tissue, and organ composition) and their corresponding functional roles • Pathologies that disrupt typical structural makeup and/or functional abilities of the muscular system • Muscle’s role in both movement and posture/counteracting gravity
<p>Phenomenon: Why do muscles grow and shrink?</p>	<p>DQ:</p> <ol style="list-style-type: none"> 1. What are the major structures and functions of the Muscular System? 2. How does sarcomere anatomy allow for gross muscle contraction? 3. How do pathologies and senescence affect the anatomy and physiology of the muscular system?
<p>SEP: Obtain, evaluate and communicate Develop and use models Ask questions</p>	<p>CCC: Systems and System Models, Structure and Function, Stability and Change</p>

	Day 11	Day 12	Day 13	Day 14	Day 15
<p>Learning Targets</p> <p>The students will be able to:</p>	<ol style="list-style-type: none"> 1. Identify the major structures of the muscular system: smooth, cardiac, and skeletal muscle. .. 	<ol style="list-style-type: none"> 1. Determine origin, insertion, and shape classifications of a muscle. 	<ol style="list-style-type: none"> 1. Identify and discuss the major muscular function: movement. 2. Discuss the process of sarcomere contractions and elucidate how those contractions translate 	<ol style="list-style-type: none"> 1. Discuss how various pathologies affect the typical anatomy and physiology of the skeletal system. 2. Discern the ways in which the muscular 	<ol style="list-style-type: none"> 1. Demonstrate mastery of the content through formative assessment.

			into gross muscle movements.	system works to maintain homeostasis.	
Opening (10-15 minutes)	<p>Intro to muscular system Phenomenon:</p> <ul style="list-style-type: none"> • Show students the phenomenon • TTW Use the See-Think-Wonder protocol to guide student thinking. • TTW Ask students: What do you see? What do you think about what you are seeing? What does it make you wonder? • TTW provide students opportunities to share observations and develop questions. • TTW record students' questions to direct instruction. <p>Vocabulary: TSW add terms to the Digital KIM Chart</p> <ul style="list-style-type: none"> • Muscle Fibers • Skeletal Muscle • Smooth Muscle • Cardiac Muscle • cytoskeleton • sarcomere <p>Hole's Essentials Reference Pages:</p> <ul style="list-style-type: none"> • Intro: pg.240-245 • Histology review: pg.258-260 	<p>Musculature Phenomenon:</p> <ul style="list-style-type: none"> • Show students the phenomenon • TTW Use the See-Think-Wonder protocol to guide student thinking. • TTW Ask students: What do you see? What do you think about what you are seeing? What does it make you wonder? • TTW provide students opportunities to share observations and develop questions. • TTW record students' questions to direct instruction. <p>Vocabulary: TSW add terms to the Digital KIM Chart</p> <ul style="list-style-type: none"> • Musculature • Origin • Insertion • Muscle Fatigue • Isotonic Contractions • Isometric Contractions <p>Hole's Essentials Reference Pages: 260-279</p>	<p>Muscular functions Phenomenon:</p> <ul style="list-style-type: none"> • Show students the phenomenon • TTW Use the See-Think-Wonder protocol to guide student thinking. • TTW Ask students: What do you see? What do you think about what you are seeing? What does it make you wonder? • TTW provide students opportunities to share observations and develop questions. • TTW record students' questions to direct instruction. <p>Vocabulary: TSW add terms to the Digital KIM Chart</p> <ul style="list-style-type: none"> • Myofibrils • Myofilaments • Sarcomeres • Myosin • Actin • Acetylcholine ATP • Aerobic (Cellular)Respiration • Anaerobic Respiration (Fermentation) <p>Hole's Essentials Reference Pages: 245-257</p>	<p>Muscular pathologies Phenomenon:</p> <ul style="list-style-type: none"> • Show students the phenomenon • TTW Use the See-Think-Wonder protocol to guide student thinking. • TTW Ask students: What do you see? What do you think about what you are seeing? What does it make you wonder? • TTW provide students opportunities to share observations and develop questions. • TTW record students' questions to direct instruction. <p>Vocabulary: TSW add terms to the Digital KIM Chart</p> <ul style="list-style-type: none"> • cramp • spasm • dystrophy • sclerosis • paralysis; rigid and flaccid • stiff-man syndrome 	Summative Assessment Unit 2 Exam
Guided Practice/Transition (20 minutes)	TTW provide explicit instruction over an introduction to the muscular system, using the	TTW provide explicit instruction covering the musculature of the body, emphasizing:	TTW provide explicit instruction about muscle action, emphasizing: <ul style="list-style-type: none"> • The sliding filament 	TTW provide explicit instruction over the pathologies and senescence of the Muscular system,	TTW answer questions to prepare students for their formative assessment.

	<p>Muscular System ppt emphasizing: -the recall of prior knowledge about muscle tissue -the structural components of skeletal muscles that allow it to contract</p>	<ul style="list-style-type: none"> • Reiterations of important vocabulary from previous lesson: sarcomere, myofilaments, actin, myosin • Attachment points: origins and insertions • Muscle classifications: longus, brevis, medius, minimus, maximus, bicep, tricep, quadricep, rhomboideus, trapezius, rectus, etc. • Muscle synergy and antagonism 	<p>theory: how sarcomere anatomy (actin and myosin) facilitate muscle cell contraction</p> <ul style="list-style-type: none"> • cellular respiration • hypertrophy vs, atrophy • muscle recovery • types of muscle contractions: isotonic vs isometric 	<p>including, but not limited to:</p> <ul style="list-style-type: none"> • Cramps • Spasms • Paralysis: flaccid vs. rigid • Muscular Dystrophy • Myositis ossificans • Stiff-man syndrome • Charcot-Marie-Tooth Disease • Hereditary Idiopathic Cardiomyopathy 	
<p>Independent Practice (45-50 minutes)</p>	<p>TSW complete the first 2 steps of the Hole's Essential case study on page 239. TSW read the case study, make their initial Claim, and then begin collecting Evidence from the textbook.</p>	<p>TTW assign a muscle to each group or pair. It is advised that students are provided with an image of their muscle that is laminated or placed in a protective sheet. TTW also provide students with different colored dry erase or washable markers.</p> <p>TSW locate and outline their assigned muscle in red marker.</p> <p>TSW identify the origin(s) of their muscle and mark them in green marker.</p> <p>TSW identify the insertion of their muscle and mark it in purple marker.</p> <p>TSW list as many appropriate muscle classifications as they can for their given muscle.</p>	<p>TTW provide students with straws, pipe cleaners, cardstock, paper, markers, scissors, glue, yarn, and any other craft supplies available.</p> <p>TSW create functional sarcomere models using the supplies given.</p> <p>Students must include the following structures with appropriate labels:</p> <ul style="list-style-type: none"> • Actin • Myosin • H zone • M line • Dark Band • Light Band • Z-disk 	<p>TSW complete the final step of the Hole's Essential case study on page 239. TSW explain the Reasoning behind how their gathered evidence supports/does not support their original claim (made previously when introduced to the chapter)</p>	<ol style="list-style-type: none"> 1. Summative assessment: Unit 2 Exam 2. After completing the assessment, TSW complete the Nervous system Cornell guided notes that introduces the Nervous system. Answers can be found in Nervous System ppt Cornell Notes Answer Key

		TSW demonstrate the movement that their muscle creates.			
Assessment/Summary (5-10 minutes) <i>Summative Assessment should have between 40 to 50 questions</i>	Show students Exit ticket Unit 2 ppt	Show students Exit ticket Unit 2 ppt	Show students Exit ticket Unit 2 ppt	Hole's Essential Chapter Review Questions on pg. 282-284	Summative Assessment: Unit 2 Exam
Small Group Tasks (TBA)	Students will be given accommodations based on IEP requirements.	Students will be given accommodations based on IEP requirements.	Students will be given accommodations based on IEP requirements.	Students will be given accommodations based on IEP requirements.	Questions may be modified for students in small groups and/ or time in half should be provided to those students whose accommodations permits.

Assessment Prep

Prepare students for assessment by reviewing the following Assessment Prep Presentation Topics:

Unit 2 Review

- Structures and functions of the integumentary, skeletal, and muscular systems (from cellular → organ level)
- How pathologies and senescence affect the anatomy and physiology of the integumentary, skeletal, and muscular systems
- Ways in which the integumentary, skeletal, and muscular systems work together to provide the body with structure, support, protection, and movement
- Ways in which the integumentary, skeletal, and muscular systems work to maintain homeostasis within the body.

Labs / Investigations

Mandatory Labs	Explore Learning Gizmo	Pivot Interactives/Phet
1. Bone Identification Lab	<ul style="list-style-type: none"> • Muscles and Bones • Cellular Respiration (STEM case) 	

Additional Resources/Tasks

Supplemental Resources	<ul style="list-style-type: none"> • Skin structure Identity Review • Sunscreen & Skin Cancer Lab • Bone Identity and location Review • Muscle Identity and location Review • Muscular System Interactive ppt • Paget's Bone Disease Case Study and Answer Key **Note** Remove the answer key before assigning the worksheet
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