Anatomy & Physiology I Honors

Unit Title: Unit 1 Structural Organization

Stage 1: Desired Results

Standards & Indicators:

HS-LS1-1. Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells

HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms

HS-LS1-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis

HS-LS1-7. Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a)	With a growth mindset, failure is an important part of success.
9.4.12.CI.2	Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).	Innovative ideas or innovation can lead to career opportunities
9.4.12.CT.2	Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a)	Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.
9.4.12.CT.4	Participate in online strategy and planning sessions for course-based, school-based, or other projects and determine the strategies that contribute to effective outcomes.	Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.
9.4.12.GCA.1	Collaborate with individuals to analyze a variety of potential solutions to climate change effects and determine why some solutions (e.g., political. economic, cultural) may work better than others (e.g., SL.11-12.1., HS-ETS1-1, HS-ETS1-2, HS-ETS1-4, 6.3.12.GeoGI.1, 7.1.IH.IPERS.6, 7.1.IL.IPERS.7, 8.2.12.ETW.3).	Solutions to the problems faced by a global society require the contribution of individuals with different points of view and experiences
9.4.12.TL.1	Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task (e.g.,	Digital tools differ in features, capacities, and styles. Knowledge of different digital tools is helpful in

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	W.11-12.6.).	selecting the best tool for a given task.

Central Idea/Enduring Understanding: An understanding of the relationship between the function and structure of the organs of the human body is essential to understanding the functioning of each body system.	**Essential/Guiding Question:** How is the human body organized? How is balance maintained within the human body? What are the basic structures and functions of the human body systems?
Content: - Anatomy and physiology terminology - Levels of structural organization - Cell structure and physiology - Body tissue structure and function - Cell solutions: isotonic, hypotonic, hypertonic - Role of homeostasis in the human body - Anatomical positions, directional terms, and body cavities - The eleven body systems	**Skills(Objectives):** - Describe the levels of organization within the human body from the simplest to most complex. - Describe the organelles of a typical cell and indicate their specific functions. - Demonstrate your knowledge of the four types of tissues in the human body. - Describe the importance of homeostasis in maintaining balance in the human body. - Describe the terminology associated with anatomical positions and directions. - Demonstrate your knowledge of the dorsal and ventral body cavities. - Describe the eleven body systems and their functions.

Interdisciplinary Connections:

- Case study incorporating knowledge of body systems with aspects of history taking, differential diagnoses, and treatment

WHST.1112.9 Research to Build and Present Knowledge. Draw evidence from informational texts to support analysis, reflection, and research.

Stage 2: Assessment Evidence

Performance Task(s): - Students will identify the major organelles of a cell under a microscope - Students will identify the body planes and sections using a banana - Students will create a Tissues Poster identifying the four major types of tissues	**Other Evidence:** - Unit Test Grade - Quizzes - Writing projects - Research projects - Google Classroom assignments - Group activities - Classroom discussions - Student created assessments - Rubrics - Review Games (Kahoot, Quizlet)

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Stage 3: Learning Plan

Learning Opportunities/Strategies:	**Resources:**
Examples of learning opportunities include the following: - Case Studies - Projects - Debates - Team building activities - Cooperative learning activities - Interactive games - Online learning websites - Internet research - Student driven activities	Textbook: Martini, Bartholomew. Essentials of Anatomy & Physiology. Fifth Edition. 2010 . Pearson Higher Education. Biodigital.com Inclusive Science Classroom GLSEN Educator Resources

Differentiation

*Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
-Use of critical thinking activities -Alternative assignments -Choice of assignment related to the topic-independent research -Use of student-researched case studies	-Use of critical thinking activities -Alternative assignments -Choice of assignment related to the topic-independent research -Use of student-researched case studies	-Build background knowledge prior to lessons -Highlight key words -Incorporate the use of technology -Provide notes -Provide study guides -Pre-teaching of vocabulary for understanding of concepts -Word Search or crossword puzzles for vocabulary reinforcement -Using alternatives to written assessments (oral reports, class discussion, and/or projects) -Be consistent with expectations	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

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Unit Title: Unit 2 Integumentary System, Skeletal System

Stage 1: Desired Results

Standards & Indicators:

HS-LS1-1. Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells

HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a)	With a growth mindset, failure is an important part of success.
9.4.12.CI.2	Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).	Innovative ideas or innovation can lead to career opportunities
9.4.12.CT.2	Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a)	Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.
9.4.12.CT.4	Participate in online strategy and planning sessions for course-based, school-based, or other projects and determine the strategies that contribute to effective outcomes.	Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.
9.4.12.GCA.1	Collaborate with individuals to analyze a variety of potential solutions to climate change effects and determine why some solutions (e.g., political. economic, cultural) may work better than others (e.g., SL.11-12.1., HS-ETS1-1, HS-ETS1-2, HS-ETS1-4, 6.3.12.GeoGI.1, 7.1.IH.IPERS.6, 7.1.IL.IPERS.7, 8.2.12.ETW.3).	Solutions to the problems faced by a global society require the contribution of individuals with different points of view and experiences
9.4.12.TL.1	Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task (e.g., W.11-12.6.).	Digital tools differ in features, capacities, and styles. Knowledge of different digital tools is helpful in selecting the best tool for a given task.

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Central Idea/Enduring Understanding:	**Essential/Guiding Question:**
- The structures of skin help regulate other parts of the human body. - The skeleton functions to allow movement and support for the human body.	What are the main structural features of the epidermis, dermis and hypodermis and what are their functional significance? What are the common purposes that the integumentary system serves for all body systems? What bones make up the axial and appendicular skeleton?
Content:	**Skills(Objectives):**
- Functions of the integumentary system - Important structures and layers of the skin - Structures and functions of the accessory structures of the integumentary system: hair, nails, glands - Types of membranes: serous, mucous, and synovial - Three types of burns - Pathologies of the integumentary system - Functions of the skeletal system: support, protection, movement, storage, blood cell formation - Anatomy of a long bone: epiphysis, diaphysis, cartilage, bone marrow, periosteum - Classification of bones - Anatomy of the axial and appendicular skeleton - Types of joints in the human body - Pathologies of the skeletal system	- Describe the functions of the integumentary system. - Demonstrate your knowledge of the structural features of the epidermis, dermis, and hypodermis - Describe the accessory structures of the integumentary system. - Describe the interaction between the integumentary system and other body systems. - Describe the characteristics of the three types of membranes and their location in the body. - Describe pathologies of the integumentary system - Describe the functions of the skeletal system. - Demonstrate your knowledge of the bone shapes. - Demonstrate your knowledge of long bone anatomy. - Describe the types of joints found in the human body. - Demonstrate your knowledge of the bones of the axial and appendicular skeletons. - Describe pathologies of the skeletal system.

Interdisciplinary Connections:

- Case study incorporating knowledge of body systems with aspects of history taking, differential diagnoses, and treatment

WHST.1112.9 Research to Build and Present Knowledge. Draw evidence from informational texts to support analysis, reflection, and research.

Stage 2: Assessment Evidence

Performance Task(s):	**Other Evidence:**
- Students will label diagrams of skin, hair, and nails - Students will create a presentation on a skin disorder	- Unit Test Grade - Quizzes - Writing projects - Research projects

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- Students will identify the bones of the axial and appendicular skeleton on models	- Google Classroom assignments - Group activities - Classroom discussions - Student created assessments - Rubrics - Review Games (Kahoot, Quizlet)

Stage 3: Learning Plan

Learning Opportunities/Strategies: Examples of learning opportunities include the following: - Case Studies - Projects - Debates - Team building activities - Cooperative learning activities - Interactive games - Online learning websites - Internet research - Student driven activities	**Resources:** Textbook: Martini, Bartholomew. Essentials of Anatomy & Physiology. Fifth Edition. 2010 . Pearson Higher Education. Biodigital.com Inclusive Science Classroom GLSEN Educator Resources

Differentiation

*Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
-Use of critical thinking activities -Alternative assignments -Choice of assignment related to the topic-independent research -Use of student-researched case studies	-Use of critical thinking activities -Alternative assignments -Choice of assignment related to the topic-independent research -Use of student-researched case studies	-Build background knowledge prior to lessons -Highlight key words -Incorporate the use of technology -Provide notes -Provide study guides -Pre-teaching of vocabulary for understanding of concepts -Word Search or crossword puzzles for vocabulary reinforcement -Using alternatives to written assessments (oral reports, class	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to: breaking assignments into smaller tasks, giving directions through several channels (auditory, visual, kinesthetic, model), and/or small group instruction for reading/writing ELL supports should include, but are not limited to, the following:: Extended time Provide visual aids Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries

		discussion, and/or projects) -Be consistent with expectations	

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Unit Title: Unit 3 Muscular System

Stage 1: Desired Results

Standards & Indicators:

HS-LS1-1. Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells

HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a)	With a growth mindset, failure is an important part of success.
9.4.12.CI.2	Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).	Innovative ideas or innovation can lead to career opportunities
9.4.12.CT.2	Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a)	Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.
9.4.12.CT.4	Participate in online strategy and planning sessions for course-based, school-based, or other projects and determine the strategies that contribute to effective outcomes.	Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.
9.4.12.GCA.1	Collaborate with individuals to analyze a variety of potential solutions to climate change effects and determine why some solutions (e.g., political. economic, cultural) may work better than others (e.g., SL.11-12.1., HS-ETS1-1, HS-ETS1-2, HS-ETS1-4, 6.3.12.GeoGI.1, 7.1.IH.IPERS.6, 7.1.IL.IPERS.7, 8.2.12.ETW.3).	Solutions to the problems faced by a global society require the contribution of individuals with different points of view and experiences
9.4.12.TL.1	Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task (e.g., W.11-12.6.).	Digital tools differ in features, capacities, and styles. Knowledge of different digital tools is helpful in selecting the best tool for a given task.

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Central Idea/Enduring Understanding:	**Essential/Guiding Question:**
- The Muscular System is used to create movement of the human body	What are the structure and functions of the three types of muscles? How are muscles used to create movement of the human body?
Content:	**Skills(Objectives):**
- Three types of muscles: skeletal, smooth, and cardiac - Functions of the muscular system: movement, posture, heat production - Anatomy of skeletal muscle: actin, myosin - Muscle attachments to bone, tendons - Muscle activity leading to contractions: nerve stimulus and the action potential - Muscle nomenclature - Muscle movement - Pathology of the muscular system	- Describe the three types of muscles and their functions. - Describe the activity leading to the contraction of a skeletal muscle. - Demonstrate your knowledge of terminology of muscle movement. - Describe pathologies of the muscular system.

Interdisciplinary Connections:

- Case study incorporating knowledge of body systems with aspects of history taking, differential diagnoses, and treatment

WHST.1112.9 Research to Build and Present Knowledge. Draw evidence from informational texts to support analysis, reflection, and research.

Stage 2: Assessment Evidence

Performance Task(s):	**Other Evidence:**
- Students will analyze slides of muscle tissue under the microscope - Students will label diagrams of muscle locations and anatomy	- Unit Test Grade - Quizzes - Writing projects - Research projects - Google Classroom assignments - Group activities - Classroom discussions - Student created assessments - Rubrics - Review Games (Kahoot, Quizlet)

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Stage 3: Learning Plan

Learning Opportunities/Strategies:
Examples of learning opportunities include the following:
- Case Studies
- Projects
- Debates
- Team building activities
- Cooperative learning activities
- Interactive games
- Online learning websites
- Internet research
- Student driven activities

Resources:
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Differentiation
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Unit Title: Unit 4 Nervous System

Stage 1: Desired Results

Standards & Indicators:

HS-LS1-1. Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells

HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms

Career Readiness, Life Literacies and Key Skills

Standard	Performance Expectations	Core Ideas
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Central Idea/Enduring Understanding:	**Essential/Guiding Question:**
- The Nervous System allows information to be received, interpreted, and sent throughout the human body.	How is the nervous system organized? What are the components of the Central and Peripheral Nervous Systems?
Content: - Organization of the nervous system: the Central Nervous System and Peripheral Nervous System - Nervous tissue structure and function - Anatomy of a neuron - Nerve conduction - Central Nervous System anatomy: brain and spinal cord - Peripheral Nervous System anatomy: cranial and spinal nerves - Reflexes: autonomic and somatic - Special senses - Pathology of the nervous system	**Skills(Objectives):** - Describe how the nervous system is organized into the Central and Peripheral Nervous Systems. - Demonstrate your knowledge of neuron anatomy. - Describe the anatomy of the Central Nervous System. - Describe the anatomy of the Peripheral Nervous System. - Demonstrate your knowledge of nervous system pathologies.
Interdisciplinary Connections: - Case study incorporating knowledge of body systems with aspects of history taking, differential diagnoses, and treatment WHST.1112.9 Research to Build and Present Knowledge. Draw evidence from informational texts to support analysis, reflection, and research.	

Stage 2: Assessment Evidence

Performance Task(s):	**Other Evidence:**
- Students will label diagrams of a neuron and brain - Students will complete a Reflex Lab.	- Unit Test Grade - Quizzes - Writing projects - Research projects - Google Classroom assignments - Group activities - Classroom discussions - Student created assessments - Rubrics - Review Games (Kahoot, Quizlet)

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Stage 3: Learning Plan

Learning Opportunities/Strategies:	**Resources:**
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Pacing Guide

Course Name	Resource	Standards
MP 1		
Unit 1 Structural Organization 23 days	**CHAPTERS 1-4**	HS-LS1-1 HS-LS1-2 HS-LS1-3 HS-LS1-7
MP 1		
UNIT 2 Integumentary System Skeletal System 22 days	**CHAPTERS 5-6**	HS-LS1-1 HS-LS1-2
MP 2		
UNIT 3 Muscular System 22 days	**CHAPTERS 7**	HS-LS1-1 HS-LS1-2
MP 2		
UNIT 4 Nervous System 23 days	**CHAPTER 8-9**	HS-LS1-1 HS-LS1-2

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