Unit 1: Levels of Organization

Content Area: **Science**
Course(s): **Anatomy/Physiology Lab**
Time Period: **1st Marking Period**
Length: **10 Weeks**
Status: **Published**

Unit Overview

Students will identify what anatomy and physiology is; body organization and its molecular makeup including cellular and tissue composition.

Transfer

Students will be able to use proper medical terminology and describe and understand their bodies and how it works.

Meaning

Understandings

Students will understand that...

- Explain how anatomy and physiology are related.

- Understand the importance of homeostasis for survival.

- Understand how the body is organized.

- How the body is related to its parts: molecular, cellular and tissue levels.

Essential Questions

Students will keep considering.....

- How does the body's parts relate to how it works?

- How is the body organized and understanding the naming of body parts?

- How do we connect molecular, cellular and tissue components together?

Application of Knowledge and Skill

Students will know...

Students will know.....

The basic organization of the body, and basic medical terminology.

What types of cells and tissues does the body contain?

What does the cell need to survive and how does it metabolize its nutrients.

How does DNA & RNA affect genetic information?

Where are the different types of tissues found?

Students will be skilled at...

Students will be skilled at.....

- Identifying body regions and anatomical positions using medical terms.

- Describe how the external environment affects the internal environment.

- Using the microscope to view different tissues and to differentiate among the tissues.

- Using basic labs to understand cellular transport.

- Using various models to understand metabolic reactions and enzyme & substrate reactions.

Academic Vocabulary

anatomy physiology axial appendicular cranial vertebral thoracic abdominal abdominopelvic pelvic oral nasal membranes viscera

parietal pleural pericardial peritoneal cells tissues organs organ systems anatomical positions organic DNA RNA metabolism homeostasis

homeostatic mechanism organelles cell transport passive transport active transport cell cycle anabolism catabolism metabolic pathways

epithelial tissues connective tissues muscle nervous

Learning Goal 1

Students will be able to explain the interrelations of anatomy and physiology, the levels of organization, and organization of the human body, and the importance of homeostasis for survival.

Proficiency Scale

SCI.HS-LS1-3	Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.
SCI.HS-LS1-2	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

Target 1

Students will be able to explain how anatomy and physiology are related.

Target 2

Students will be able to list the levels of organization in the human body and characteristics of each.

Target 3

Students will be able to describe the major characteristics of life, maintenance of life and the importance of homeostasis for survival.

Target 4

Students will be able to identify the locations of the major body cavities, organs located in each body cavity, membranes associated with those cavities.

Target 5

Students will be able use terms that describe relative positions, body sections and body regions.

Learning Goal 2

Students will be able to explain how cells differ from one another, how cell parts determine their function, how substances pass through the cell, and why regulation of the cell cycle is important to health.

Proficiency Scale

SCI.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.
SCI.HS-LS1-2	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.
SCI.HS-LS1-4	Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.

Target 1

Students will be able to differentiate among cell types, and the organelles found there.

Target 2

Students will be able to explain how substances move in and out of cells, and differentiate among the types of

transport.

Target 3

Students will be able to describe the cell cycle and explain why regulation of the cell cycle is important to health.

Learning Goal 3

Students will be able to explain the function of metabolism, describe how enzymes control metabolic pathways, and how enzymes control metabolic reactions.

Proficiency Scale

SCI.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.
SCI.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.
SCI.HS-LS1-6	Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.

Target 1

Students will be able to compare and contrast anabolism and catabolism.

Target 2

Students will be able to describe how enzymes control metabolic reactions and how cellular respiration releases chemical energy.

Target 3

Students will be able to describe the general metabolic pathways of carbohydrates, lipids, and proteins.

Target 4

Students will be able to describe how DNA and RNA are involved in protein synthesis.

Learning Goal 4

Students will be able to differentiate among the 4 major tissue types, general characteristics, functions and examples of each type.

Proficiency Scale

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

Target 1

Students will be able to describe the general characteristics of the four types of tissue, identify specific types of epithelial and connective tissue and their functions.

Target 2

Students will be able to distinguish among the the three types of muscle tissue, and general characteristics and functions of nervous tissue.

Formative Assessment and Performance Opportunities

Labs, Worksheets, Guided notes, Homework and classwork activities, Group projects and activities

Summative Assessment

Unit Assessment will be created collaboratively and used for every student in the course. In addition, there will be other assessments in the form of lab reports, pen and paper tests, and quizzes. Common Assessment is administered through LinkIt.

Accommodations/Modifications

- Allow additional time to examine tissue types
- Pair students for support
- Provide additional online resources, http://www.haspi.org/

Unit Resources

Hole's Essentials of Human Anatomy and Physiology 11th Edition

21st Century Life and Careers

CRP.K-12.CRP2.1	Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.

Interdisciplinary Connections

LA.RL.11-12.1	Cite strong and thorough textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
LA.RST.11-12.1	Accurately cite strong and thorough evidence from the text to support analysis of science and technical texts, attending to precise details for explanations or descriptions.
LA.WHST.11-12.1	Write arguments focused on discipline-specific content.
LA.WHST.11-12.2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.
LA.WHST.11-12.5	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
LA.WHST.11-12.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and

	following a standard format for citation.
LA.WHST.11-12.9	Draw evidence from informational texts to support analysis, reflection, and research.
LA.SL.11-12.5	Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.