

Unit 3: Human Body Systems

7th Grade Honors Marine Science

21 Class Meetings
Updated June 2026

Essential Questions

- How do body systems work together to keep us alive?
- What role do different organs in a body system play in digestion, respiration, and overall health?
- Why is homeostasis essential for survival?

Enduring Understandings with Unit Goals

EU 1: In multi-cellular organisms, the body is a system of multiple interacting subsystems.

- Discover that different organs work together to form tissues and organs that specialize in certain functions.
- Determine how specialized tissues in the digestive system and other systems comprise each organ, enabling the specific organ functions to be carried out.
- Explore each body system and how chemical changes occur to carry out life functions.
- Conclude that organs are composed of interacting tissues.

EU 2: Food molecules are rearranged through chemical reactions, forming new molecules that support growth and/or release energy as matter moves through organisms.

- Examine how the particles (atoms) are rearranged through chemical reactions to form new molecules.
- Describe how enzymes break down food and aid in digestion.
- Discover how food molecules are rearranged, and how energy is released within organisms.

EU 3: Homeostasis is essential because cells can only function properly within stable internal conditions.

- Describe how the body maintains stable conditions (temperature, oxygen levels, blood sugar).
- Identify examples of homeostasis in everyday life (sweating, breathing faster, heartbeat faster).
- Explain how the body responds to internal and external changes to stay balanced.
- Describe how feedback systems (positive and negative) help maintain homeostasis.

Standards

Common Core State Standards:

- **RI.7.1:** Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
- **W 6.1:** Write arguments to support claims with clear reasons and relevant evidence.

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- **W 6.2:** Write informative/explanatory texts to examine and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
- **RST.6-8.:** Cite specific textual evidence to support analysis of science and technical texts.
- **RST.6-8.9:** Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
- **RST.6-8.7:** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table)

Next Generation Science Standards:

- **MS-LS1-3:** Plan and carry out an investigation to provide evidence that living organisms need energy and matter to live and grow.
- **MS-LS1-3:** Use an argument supported by evidence for how the body is a system of interacting sub systems composed of groups of cells.
- **MS-LS1-7:** Develop a model to describe how food and water are transported through the human digestive system.
- **MS-LS1-8:** Information Processing - Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.

ISAAC Vision of the Graduate Competencies

Competency 1: Write effectively for a variety of purposes.

Competency 2: Speak to diverse audiences in an accountable manner.

Competency 3: Develop the behaviors needed to interact and contribute with others on a team.

Competency 4: Analyze and solve problems independently and collaboratively.

Competency 5: Be responsible, creative, and empathetic members of the community.

Unit Content Overview

1. Organ Systems

- Identify that specialized cells make up tissues which then make up organs in each organ system.
- Describe the role each organ plays in different systems.
- Identify the major organs in each organ system.
- Construct models depicting the beginning and end of an organ system.
- Comparing fish and human anatomy

2. Food, Nutrients & Digestion

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- Explain how the digestive and circulatory systems work together to provide energy for cells.
- Describe how enzymes aid in breaking down food and digestion.
- Identify different types of nutrients and how they impact our bodies and health.

3. Homeostasis

- Describe how the body maintains balance at the cellular level.
- Explain how multiple systems respond at the same time to maintain balance.
- Interpret data (heart rate, breathing rate, temperature) to determine if homeostasis is maintained.
- Explain the difference between positive feedback and negative feedback in the body.

Key Terms and Vocabulary: cells, organs, nutrients, carbohydrates, protein, fats, vitamins, mineral, enzymes, cellular respiration, glucose, oxygen, reactants, products, digestive system, saliva, esophagus, stomach, small intestines, large intestines, digestion, metabolism, absorption, circulatory system, heart, respiration, trachea, bronchi, alveoli, diaphragm, lungs, blood vessels, capillaries, aorta, atrium, ventricle, artery, vein, voluntary, involuntary, cardiac, skeletal, muscular, smooth, femur, central nervous system, peripheral nervous system, spinal cord, brain, nerve, neuron, homeostasis, positive feedback loops, negative feedback loops

Interdisciplinary Connection:

- Language Arts
- Humanities
- Mathematics

Daily Learning Objectives with TWPS

Students will be able to...

- Discover the purpose and function of the organ systems within the human body.
 - *What organ systems do you already know? How do you think they work together to keep us healthy?*
- Explain the organs involved in the process of digestion.
 - *How do we digest our food? What organs are essential to this process?*
- Describe how the body breaks down food and absorbs nutrients to support overall health.
 - *What role do enzymes play in digestion? How do they help break down food? Describe a food you ate yesterday, and describe the steps necessary for digestion.*
- Apply knowledge of energy transfer to organize and explain the digestive system.
 - *How do you think our digestive system turns food into energy that our body can use?*
- Identify the main organs in the respiratory system.
 - *How do you think our body would function without one of the major systems like the respiratory or digestive system?*
- Describe the circulatory system and the major function of each organ.
 - *How do the different organs in the circulatory system keep us healthy?*

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- Compare and contrast the respiratory system with the circulatory system.
 - *How do the respiratory and circulatory systems work together to deliver oxygen to other parts of our body?*
- Describe the role of the circulatory and respiratory systems in delivering oxygen throughout the body. *
 - *How does your circulatory and respiratory system work harder during a physical activity like running a mile in PE?*
- Identify the main organs in the muscular system
 - *How are muscles designed to perform different jobs in the body?*
- Identify the main organs in the skeletal system
 - *How are bones designed to perform different jobs in the body?*
- Explain how the muscular and skeletal systems work together to produce movement.
 - *How do your muscles and bones work together to make you bend your arms and pick up a water bottle?*
- Identify the main organs in the nervous system
 - *You see a ball coming toward you while playing catch. How does your nervous system help you catch it?*
- Compare and contrast the human anatomy to the anatomy of a fish
 - *How is the anatomy of a fish different or similar to the anatomy of a human?*
 - *Why do you think there are similarities and differences in how these organs are structured and function?*
- Describe homeostasis and how it helps regulate our bodies.
 - *How would our lives be different if our bodies could not regulate temperature?*
- Construct explanations using evidence for how systems interact to maintain homeostasis.
 - *How does your body try to maintain stable energy levels (blood sugar)?*
- Interpret data (heart rate, breathing rate, temperature, blood pressure, blood sugar) to determine if homeostasis is maintained.
 - *If one system (like the respiratory system) stopped working properly, how would it affect other systems and homeostasis?*
- Propose solutions or behaviors that help maintain homeostasis.
 - *When you are sick, you may get a fever. How does a fever help (or hurt) homeostasis?*
- Explain the difference between positive feedback and negative feedback in the body.
 - *Is positive feedback always “helpful”, or can it be harmful? Explain.*
- Create a model representing a chosen organ system and explain the structure and purpose of your chosen organ system.
 - *Why is your organ system the most important? Explain*
- Demonstrate content knowledge for success on the NGSS practice question.
 - *When taking a test like SBAC or NGSS, what strategies help you do well?*

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Instructional Strategies/Differentiated Instruction

- Guided notetaking
- Interactive Notebook
- Warm up activities
- Flexible grouping
- Independent reading
- Lab Demonstrations
- Exit slips
- Graphic Organizers
- Whole group instruction
- Student-led instruction
- Independent problem-solving
- Collaborative problem-solving
- Cross-curricular problem solving (independent and collaborative)
- Accountable Talk
- Homework
- Word walls with visuals
- Investigations/labs
- CER (Claim, Evidence, Reasoning)

EL DIFFERENTIATED INSTRUCTION:

- Sentence starters
- Simplified directions
- Prompting and questioning
- Alternate responses when needed
- Explicit modeling
- Key vocabulary
- Visuals
- Vocabulary word bank
- Reading and accountable talk discussions of texts
- Tiered Instruction
- Hands-on activities
- SIOP strategies- Teachers implement SIOP strategies

Assessments

FORMATIVE ASSESSMENTS:

- Interactive Notebook
- Labs
- Claim Evidence Reasoning Responses
- Guided notes
- Homework
- Daily Think-Write-Pair-Share (TWPS) Activities
- Accountable Talk Discussions
- Oral questioning

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- Exit slips
- Warm Up activities
- NGSS Practice
- Diagrams
- Lab Reports

SUMMATIVE ASSESSMENTS:

- Quiz EU 1
- Quiz EU 2
- Unit 3 Performance Task EU1, EU2, EU3

Unit Task

Unit Task Name: “Build an Organ System”

Description: Students will use their knowledge of the body systems to create a model of one of the body systems. (EU1) This visual representation of a 2-D model. Students will be sure to identify or label each organ in the organ system of choice and to describe the function. (EU1) Students will then explain and write an informative paragraph describing how the organ system works and interacts with one other organ system in the body to keep homeostasis. (EU2, EU3)

Evaluation: Teacher Created Scoring Guide, CER rubric

Unit Resources

- Open Sci Ed unit resources
- Science notebooks
- Laptops
- NGSS Interim Assessments
- Newsela
- Read Works
- Quizlet
- Pear Assessment