

Science Curriculum: Grade 6 – Earth Science
Georgia Performance Standards: Year Curriculum Map

This document is part of a framework that is designed to support the major concepts addressed in the Sixth Grade Science Curriculum of the Georgia Performance Standards. Each unit integrates laboratory experiences and field work using the process of inquiry. NOTE: There are several strategies that are common throughout the units such as the use of a laboratory notebook, written laboratory reports, and common teaching strategies. Keeping in mind that the standards are recursive in nature, it should be noted that many of the standards are revisited in different units throughout the year.

UNIT I		UNIT II			UNIT III		UNIT IV	UNIT V
Ia	Ib	IIa	IIb	IIc	IIIa	IIIb		
Geology : Rocks and Minerals Fossils	Geology : Weathering and Erosion	Geology: Inside the Earth	Hydrology and Oceanograph y: Water in Earth’s	Meteorology: Climate and Weather	Astronomy: Earth, Moon, and Sun	Astronomy: The Universe and Solar System	Human Impact	Culminating Activities
S6E5	S6E5	S6E5	S6E3	S6E4	S6E1/S6E2	S6E1	S6E5/S6E6	
4 Weeks	4 Weeks	3 Weeks	4 Weeks	2 Weeks	4 Weeks	3 Weeks	4 Weeks	5 weeks
Focus: In this unit students investigate the three types of rocks found in the rock cycle — igneous, sedimentary, and metamorphic — and compare and contrast their origins and processes of formation. Students will study how fossils provide evidence of constant environmental change. In this unit students will study how fossils provide evidence of constant environmental change.	Focus: In this unit students will investigate processes of weathering and erosion in the formation of earth’s structures.	Focus: In this unit students will examine surface and subsurface processes that are involved in the formation and destruction of earth materials.	Focus: In this unit students will study the movement of water through the crust, ocean, and atmosphere.	Focus: In the unit, students will investigate the interaction of atmospheric conditions and the effects of these on weather and climate.	Focus: In this unit students will explore how objects in the solar system are in regular and predictable motion. Those motions explain such phenomena as the day, the year, phases of the moon, and eclipses.	Focus: In this unit students will examine how scientific theories of the solar system and universe have changed and how gravity shapes and drives the universe.	Focus: In this unit students will explore how human activities impact the availability of renewable and nonrenewable resources and ways to conserve natural resources.	Focus: Students will complete problem-based activities using concepts learned in Quarters 1-3.

*Note: Beginning of the Year - Unit 0: Getting Ready for Science = 1 Week End of the Year - Unit V: Culminating Essential Lab = 4 weeks

Vertical Alignment to 7th

Seventh

S7L1. Students will investigate the diversity of living organisms and how they can be compared scientifically.

- a. Demonstrate the process for the development of a dichotomous key.
- b. Classify organisms based on physical characteristics using a dichotomous key of the six kingdom system (archaebacteria, eubacteria, protists, fungi, plants, and animals).

S7L2. Students will describe the structure and function of cells, tissues, organs, and organ systems.

- a. Explain that cells take in nutrients in order to grow and divide and to make needed materials.
- b. Relate cell structures (cell membrane, nucleus, cytoplasm, chloroplasts, mitochondria) to basic cell functions.
- c. Explain that cells are organized into tissues, tissues into organs, organs into systems, and systems into organisms.
- d. Explain that tissues, organs, and organ systems serve the needs cells have for oxygen, food, and waste removal.
- e. Explain the purpose of the major organ systems in the human body (i.e., digestion, respiration, reproduction, circulation, excretion, movement, control, and coordination, and for protection from disease).

Vertical Alignment to 7th

S7L3. Students will recognize how biological traits are passed on to successive generations.

- a. Explain the role of genes and chromosomes in the process of inheriting a specific trait.
- b. Compare and contrast that organisms reproduce asexually and sexually (bacteria, protists, fungi, plants & animals).
- c. Recognize that selective breeding can produce plants or animals with desired traits.

S7L4. Students will examine the dependence of organisms on one another and their environments.

- a. Demonstrate in a food web that matter is transferred from one organism to another and can recycle between organisms and their environments.
- b. Explain in a food web that sunlight is the source of energy and that this energy moves from organism to organism.
- c. Recognize that changes in environmental conditions can affect the survival of both individuals and entire species.
- d. Categorize relationships between organisms that are competitive or mutually beneficial.
- e. Describe the characteristics of Earth's major terrestrial biomes (i.e. tropical rain forest, savannah, temperate, desert, taiga, tundra, and mountain) and aquatic communities (i.e. freshwater, estuaries, and marine).

Eighth

S8P1. Students will examine the scientific view of the nature of matter.

- a. Distinguish between atoms and molecules.
- b. Describe the difference between pure substances (elements and compounds) and mixtures.
- c. Describe the movement of particles in solids, liquids, gases, and plasmas states.
- d. Distinguish between physical and chemical properties of matter as physical (i.e., density, melting point, boiling point) or chemical (i.e., reactivity, combustibility).
- e. Distinguish between changes in matter as physical (i.e., physical change) or chemical (development of a gas, formation of precipitate, and change in color).
- f. Recognize that there are more than 100 elements and some have similar properties as shown on the Periodic Table of Elements.
- g. Identify and demonstrate the Law of Conservation of Matter.

Eighth

S8P2. Students will be familiar with the forms and transformations of energy.

- a. Explain energy transformation in terms of the Law of Conservation of Energy.
- b. Explain the relationship between potential and kinetic energy.
- c. Compare and contrast the different forms of energy (heat, light, electricity, mechanical motion, sound) and their characteristics.
- d. Describe how heat can be transferred through matter by the collisions of atoms (conduction) or through space (radiation). In a liquid or gas, currents will facilitate the transfer of heat (convection).

S8P3. Students will investigate relationship between force, mass, and the motion of objects.

- a. Determine the relationship between velocity and acceleration.
- b. Demonstrate the effect of balanced and unbalanced forces on an object in terms of gravity, inertia, and friction.
- c. Demonstrate the effect of simple machines

Reading Standards for Literacy in Science

Grades 6–8 students:

Key Ideas and Details

1. Cite specific textual evidence to support analysis of science and technical texts.

2. Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

Reading Standards for Literacy in Science

Grades 6–8 students:

Craft and Structure

4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6–8 texts and topics*.

5. Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.

6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.

Reading Standards for Literacy in Science

Grades 6–8 students:

Integration of Knowledge and Ideas

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).

8. Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

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.

Reading Standards for Literacy in Science

Grades 6–8 students:

Range of Reading and Level of Text Complexity

10. By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.
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Grades 6–8 students:

Text Types and Purposes

1. Write arguments focused on *discipline-specific content*.
 - a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.
 - b. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources.
 - c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.
 - d. Establish and maintain a formal style.
 - e. Provide a concluding statement or section that follows from and supports the argument presented.

Grades 6–8 students:

Text Types and Purposes (continued)

2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.
 - a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.
 - b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.
 - c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.
 - d. Use precise language and domain-specific vocabulary to inform about or explain the topic.
 - e. Establish and maintain a formal style and objective tone.
 - f. Provide a concluding statement or section that follows from and supports the information or explanation presented.

3. In Science, Students must be able to write precise enough description of the step-by-step procedures used in their investigations so that others can replicate and (possibly) reach the same results.

Grades 6–8 students:

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.

6. Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

Research to Build and Present Knowledge

7. Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

8. Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

9. Draw evidence from informational texts to support analysis reflection, and research.

Range of Writing

10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
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