

NORTH CAROLINA STANDARD COURSE OF STUDY
Crosswalk
Grade 4 Science

The purpose of this document is to provide a general comparison of the 2009 Grade 4 Science Standard Course of Study and the 2023 Grade 4 Science Standard Course of Study. It provides initial insight into similarities and differences between these two sets of standards. This document is not intended to answer all questions about the nuances of the new 2023 standards versus the previous 2009 standards..

Grade 4 Science Standards

Note: The 2023 Grade 4 standards and objectives are not intended to be the curriculum, nor do they indicate the whole of a curriculum which will be written by a local public-school unit (PSU) or school. The standards for this course have been developed to serve as the framework which will guide each PSU in the development of the curriculum for Grade 4.

Motion and Stability- Forces and Interactions		
2023 Standards/Objectives	2009 Essential Standards/Clarifying Objectives	Notes
<i>PS.4.1 Understand how various forces affect the motion of an object.</i>	<i>4.P.1 Explain how various forces affect the motion of an object.</i>	
PS.4.1.1 Ask questions to summarize the relationship of magnetic interactions between two objects not in contact with each other.	4.P.1.1 Explain how magnets interact with all things made of iron and with other magnets to produce motion without touching them.	Includes elements from 4.P.2.1 physical properties of samples of matter- ability to be attracted by magnets.
PS.4.1.2 Carry out investigations to explain how electrically charged objects push or pull on other objects to produce motion.	4.P.1.2 Explain how electrically charged objects push or pull on other electrically charged objects and produce motion.	Includes elements from 4.P.2.1 physical properties of samples of matter- ability to conduct electricity.

Energy		
2023 Standards/Objectives	2009 Essential Standards/Clarifying Objectives	Notes
<i>PS.4.2 Understand that energy can be transferred from place to place by sound, light, heat, and electric currents.</i>	<i>4.P.3 Recognize that energy takes various forms that may be grouped based on their interaction with matter.</i>	
PS.4.2.1 Ask questions to identify basic forms of energy (light, sound, heat, and electrical) that cause motion or create change.	4.P.3.1 Recognize the basic forms of energy (light, sound, heat, electrical, and magnetic) as the ability to cause motion or create change.	
PS.4.2.2 Use models to explain a simple electrical circuit and the necessary components.		New Includes elements from 4.P.2.1 physical properties of samples of matter- ability to conduct electricity
PS.4.2.3 Carry out investigations on common materials to classify them as insulators or conductors of electricity.		New Includes elements from 4.P.2.1 physical properties of samples of matter- ability to conduct electricity.

Waves and Their Applications		
2023 Standards/Objectives	2009 Essential Standards/Clarifying Objectives	Notes
<i>PS.4.3 Understand the nature of light and how light interacts with objects.</i>	<i>4.P.3 Recognize that energy takes various forms that may be grouped based on their interaction with matter.</i>	
PS.4.3.1 Carry out investigations to infer the path light travels from a light source to a mirror and how it is reflected (by the mirror) using different angles.	4.P.3.2 Recognize that light travels in a straight line until it strikes an object or travels from one medium to another, and that light can be reflected, refracted, and absorbed.	
PS.4.3.2 Carry out investigations to explain how light is refracted and absorbed.	4.P.3.2 Recognize that light travels in a straight line until it strikes an object or travels from one medium to another, and that light can be reflected, refracted, and absorbed.	

From Molecules to Organisms		
2023 Standards/Objectives	2009 Essential Standards/Clarifying Objectives	Notes
<i>LS.4.1 Understand the effects of environmental changes, adaptations, and behaviors that enable organisms to survive in changing habitats.</i>	<i>4.L.1 Understand the effects of environmental changes, adaptations and behaviors that enable animals (including humans) to survive in changing habitats.</i>	
LS.4.1.1 Use models to explain that plants and animals have external structures that function to support survival.		New
LS. 4.1.2 Use models to explain that animals receive different types of information through their senses, process the information, and respond to the information in different ways.	4.L.1.2 Explain how animals meet their needs by using behaviors in response to information received from the environment.	
LS.4.1.3 Engage in argument from evidence to explain how differences among animals of the same population sometimes gives individuals an advantage in surviving and reproducing in changing habitats.	4.L.1.4 Explain how differences among animals of the same population sometimes give individuals an advantage in surviving and reproducing in changing habitats.	

Biological Evolution- Unity and Diversity		
2023 Standards/Objectives	2009 Essential Standards/Clarifying Objectives	Notes
<i>LS.4.2 Understand the use of fossils as evidence of the history of Earth and its changing life forms.</i>	<i>4.E.2 Understand the use of fossils and changes in the surface of the earth as evidence of the history of Earth and its changing life forms.</i>	
LS.4.2.1 Analyze and interpret data to compare fossils to one another and living organisms.	4.E.2.1 Compare fossils (including molds, casts, and preserved parts of plants and animals) to one another and to living organisms.	
LS.4.2.2 Analyze and interpret data to explain how fossils suggest ideas about Earth's early environment.	4.E.2.2 Infer ideas about Earth's early environments from fossils of plants and animals that lived long ago.	

Earth's Place in the Universe		
2023 Standards/Objectives	2009 Essential Standards/Clarifying Objectives	Notes
<i>ESS.4.1 Understand the causes of day and night and phases of the moon.</i>	<i>4.E.1 Explain the causes of day and night and phases of the moon.</i>	
ESS.4.1.1 Use models to explain the cause of day and night based on the rotation of the Earth on its axis.	4.E.1.1 Explain the cause of day and night based on the rotation of Earth on its axis.	
ESS.4.1.2 Use models to explain the repeating pattern of the phases of the moon (new, crescent, quarter, gibbous, and full).	4.E.1.2 Explain the monthly changes in the appearance of the moon, based on the moon's orbit around the Earth.	

Earth's Systems		
2023 Standards/Objectives	2009 Essential Standards/Clarifying Objectives	Notes
<i>ESS.4.2 Understand patterns of change in the Earth's surface over time.</i>	<i>4.P.2 Understand the composition and properties of matter before and after they undergo a change or interaction.</i>	
	<i>4.E.2 Understand the use of fossils and changes in the surface of the earth as evidence of the history of Earth and its changing life forms.</i>	
ESS.4.2.1 Carry out investigations to classify minerals using tests for the physical properties of hardness, color, luster, cleavage and streak.	4.P.2.2 Explain how minerals are identified using tests for the physical properties of hardness, color, luster, cleavage and streak.	Includes elements of 4.P.2.1 physical properties of samples of matter (strength, hardness, flexibility, ability to be attracted by magnets, reactions to water and fire).
ESS.4.2.2 Carry out investigations to classify rocks as metamorphic, sedimentary, or igneous based on their composition, how they are formed, and the processes that create them.	4.P.2.3 Classify rocks as metamorphic, sedimentary or igneous based on their composition, how they are formed and the processes that create them.	

ESS.4.2.3 Use models to explain changes in Earth's surface over time (to include slow changes of erosion and weathering, and fast changes of earthquakes, landslides, and volcanic activity).	4.E.2.3 Give examples of how the surface of the earth changes due to slow processes such as erosion and weathering, and rapid processes such as landslides, volcanic eruptions, and earthquakes.	
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Earth and Human Activity		
2023 Standards/Objectives	2009 Essential Standards/Clarifying Objectives	Notes
<i>ESS.4.3 Understand changes caused by human impact on the environment.</i>	<i>4.L.1 Understand the effects of environmental changes, adaptations and behaviors that enable animals (including humans) to survive in changing habitats.</i>	
ESS.4.3.1 Ask questions to infer whether changes in an organism's environment are beneficial or harmful.	4.L.1.1 Give examples of changes in an organism's environment that are beneficial to it and some that are harmful.	
ESS.4.3.2 Engage in argument from evidence to explain how humans can adapt their behavior to live in changing environments (e.g. recycling wastes, establishing rain gardens, planting native species to prevent flooding and erosion).	4.L.1.3 Explain how humans can adapt their behavior to live in changing habitats (e.g., recycling wastes, establishing rain gardens, planting trees and shrubs to prevent flooding and erosion).	
ESS.4.3.3 Obtain, evaluate, and communicate information to compare solutions to environmental problems impacting plants and animals.		New

Not addressed

4.P.2.1 Compare the physical properties of samples of matter (strength, hardness, flexibility, ability to conduct heat, ability to conduct electricity, ability to be attracted by magnets, reactions to water and fire). (Content realigned and included under several fourth grade objectives and denoted in support documents.)

4.L.2.1 Classify substances as food or non-food items based on their ability to provide energy and materials for survival, growth and repair of the body. (Removed based on data gathered during the revision process)

4.L.2.2 Explain the role of vitamins, minerals and exercise in maintaining a healthy body. (Removed based on data gathered during the revision process)