NORTH CAROLINA STANDARD COURSE OF STUDY
K-12 Science - Kindergarten

The North Carolina 2023 K-12 Science Standards are intended to foster conceptual understanding and help develop scientifically literate students. The standards provide foundational knowledge and practices within each grade band and course. The standards are organized within 11 strands which articulate vertical alignment. As students progress from one grade to the next, the depth of knowledge and level of sophistication increases.

Engaging in science encourages students' curiosity, interests, and prepares them for the broadest range of postsecondary opportunities, be it college, career, or military service. The 2023 K-12 Science Standards are designed to allow students to become active participants in science - building their understanding of the natural world through observations and investigations.

The scientific method provides a common framework for introducing the traditional experimental design and hypothesis-testing process. The methodologies or approaches utilized by scientists can vary depending on the nature of their research questions and available tools. Steps that all scientists follow when conducting scientific investigations usually involve asking questions, the collection and analysis of relevant data, the use of logical reasoning, opportunities to communicate and collaborate with others, and the development of explanations.

The Science and Engineering Practices (SEP) are embedded in the standards to support a greater emphasis on how students develop science knowledge and the durable skills within the NC Portrait of a Graduate. While one practice is identified in each objective, teachers should utilize other practices to support students' progress towards mastering the standards.

The North Carolina Science Standards maintain the respect for local control of each Public School Unit (PSU). These 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 PSU or school. The K-12 Science Standard Course of Study has been developed to serve as the framework for a well-planned science curriculum which provides opportunities for investigations, experimentation, and technological design.

Kindergarten	
Strand: Matter and its Interactions	
Standard	**Objectives**
PS.K.1 Understand how objects are described based on their physical properties and how they are used.	PS.K.1.1 Analyze and interpret data to classify objects by physical properties (size, color, shape, texture, weight and flexibility).
	PS.K.1.2 Engage in argument from evidence to summarize how different materials (clay, wood, cloth, paper, etc.) are used based on their physical properties.

Strand: Motion and Stability- Forces and Interactions	
Standard	**Objectives**
PS.K.2 Understand the positions and motions of objects and organisms observed in the environment.	PS.K.2.1 Use models to compare the relative position of various objects observed in the classroom and outside using position words such as: in front of, behind, between, on top of, under, above, below, beside.
	PS.K.2.2 Carry out investigations to illustrate different ways objects and organisms move (to include falling to the ground when dropped): straight, zigzag, round and round, back and forth, fast and slow.

Strand: From Molecules to Organisms- Structures and Processes	
Standard	**Objectives**
LS.K.1 Understand the characteristics of living organisms and nonliving things.	LS.K.1.1 Engage in argument from evidence to summarize the characteristics of living organisms and nonliving things in terms of their: structure, growth, changes, movement, basic needs.
	LS.K.1.2 Use models to exemplify how animals use their body parts to obtain food and other resources, protect themselves, and move from place to place.

Strand: Heredity- Inheritance and Variation of Traits	
Standard	**Objectives**
LS.K.2 Understand characteristics of organisms that make them alike and different.	LS.K.2.1 Analyze and interpret data to compare the characteristics of different types of the same animal to determine individual similarities and differences.
	LS.K.2.2 Analyze and interpret data to compare the characteristics of different types of the same plant to determine individual similarities and differences.

Strand: Earth's Systems	
Standard	**Objectives**
ESS.K.1 Understand change and observable patterns of weather that occur from day to day and throughout the year.	ESS.K.1.1 Analyze and interpret data to compare changes in the environment due to weather.
	ESS.K.1.2 Use mathematics and computational thinking to summarize daily weather conditions noting changes that occur from day to day and throughout the year.
	ESS.K.1.3 Obtain, evaluate and communicate information to compare weather patterns that occur from season to season.

NORTH CAROLINA STANDARD COURSE OF STUDY
K-12 Science - First Grade

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First Grade	
Strand: Motion and Stability- Forces and Interactions	
Standard	**Objectives**
PS.1.1 Understand how forces (pushes or pulls) affect the motion of an object.	PS.1.1.1 Use models to explain the effect of a push or pull on the motion of an object, with or without contact.
	PS.1.1.2 Carry out investigations to compare the effects of a given force on the motion of an object.

Strand: Ecosystems- Interactions, Energy, and Dynamics	
Standard	**Objectives**
LS.1.1 Understand the basic needs of a variety of plants and animals in different ecosystems.	LS.1.1.1 Obtain, evaluate and communicate information to summarize the needs of different plants and animals.
	LS.1.1.2 Analyze and interpret data to compare how the needs of plants and animals can be met in different environments.

Strand: Earth's Place in the Universe	
Standard	**Objectives**
ESS.1.1 Recognize the features and patterns of the earth/moon/sun system as observed from Earth.	ESS.1.1.1 Use models to recognize differences in the features of the day and night sky and apparent movement of objects across the sky as observed from Earth.
	ESS.1.1.2 Analyze and interpret data to recognize patterns of observable changes in the moon's appearance from day to day.

Strand: Earth's Systems	
Standard	**Objectives**
ESS.1.2 Understand the physical properties of Earth materials.	ESS.1.2.1 Obtain, evaluate and communicate information to summarize the physical properties of Earth materials, including rocks, minerals, soils, and water.
	ESS.1.2.2 Carry out investigations to compare the properties of different soil samples from local places relating their capacity to retain water, provide nutrients, and support the growth of plants.

Strand: Earth and Human Activity	
Standard	**Objectives**
ESS.1.3 Understand that natural resources are important to humans.	ESS.1.3.1 Obtain, evaluate and communicate information to summarize ways in which humans use natural resources.
	ESS.1.3.2 Engage in argument from evidence to explain ways that humans can protect natural resources in the environment.

NORTH CAROLINA STANDARD COURSE OF STUDY
K-12 Science, Second Grade

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Second Grade	
Strand: Matter and its Interactions	
Standard	**Objectives**
PS.2.1 Understand properties of solids and liquids and the changes they undergo.	PS.2.1.1 Carry out investigations to illustrate examples of matter that can change from a solid to a liquid and from a liquid to a solid by heating and cooling.
	PS.2.1.2 Analyze and interpret data to compare the amount (volume and weight) of water in a container before and after freezing.
	PS.2.1.3 Analyze and interpret data to compare the amount (volume and weight) of water left in an open container over time to the water left in a closed container.

Strand: Waves and Their Applications in Technologies for Information Transfer	
Standard	**Objectives**
PS.2.2 Understand the relationship between sound and vibrating objects.	PS.2.2.1 Carry out investigations to illustrate how sound is produced by vibrating objects and columns of air.
	PS.2.2.2 Use models to summarize the relationship between sound and how sounds are produced and detected by parts of the body that vibrate.

Strand: From Molecules to Organisms- Structures and Processes	
Standard	**Objectives**
LS.2.1 Understand animal life cycles.	LS.2.1.1 Use models to summarize the life cycle of animals including: birth, developing into an adult, reproducing, aging and death.
	LS.2.1.2 Obtain, evaluate and communicate information to compare life cycles of different animals.

Strand: Heredity- Inheritance and Variation of Traits	
Standard	**Objectives**
LS.2.2 Understand that organisms differ from or are similar to their parents and other offspring based on characteristics of the organism.	LS.2.2.1 Obtain, evaluate, and communicate information to summarize ways in which animals closely resemble their parents and ways they are different.
	LS.2.2.2 Analyze and interpret data to illustrate variations among offspring of the same parents.

Strand: Earth's Systems	
Standard	**Objectives**
ESS2.1 Understand patterns of weather and factors that affect weather.	ESS.2.1.1 Obtain, evaluate, and communicate information to summarize how energy from the sun serves as a source of light and warms the land, air, and water.
	ESS.2.1.2 Use mathematics and computational thinking to summarize weather conditions (temperature, wind direction, wind speed, precipitation).
	ESS.2.1.3 Carry out investigations to collect data and compare weather patterns that occur over time and relate observable patterns to time of day and time of year.
	ESS.2.1.4 Obtain, evaluate and communicate information to recognize the tools scientists use for observing, recording, and predicting weather changes from day to day and during the season.