

NORTH CAROLINA ESSENTIAL STANDARDS

Science

Grade: Kindergarten

Course: Earth Systems, Structures and Processes

NCES.K.E.1 - Understand change and observable patterns of weather that occur from day to day and throughout the year.

NCES.K.E.1.1 - Infer that change is something that happens to many things in the environment based on observations made using one or more of their senses.

NCES.K.E.1.2 - Summarize daily weather conditions noting changes that occur from day to day and throughout the year.

NCES.K.E.1.3 - Compare weather patterns that occur from season to season.

Course: Structures & Functions of Living Organisms

NCES.K.L.1 - Compare characteristics of animals that make them alike and different from other animals and nonliving things.

NCES.K.L.1.1 - Compare different types of the same animal (i.e. different types of dogs, different types of cats, etc.) to determine individual differences within a particular type of animal.

NCES.K.L.1.2 - Compare characteristics of living and nonliving things in terms of their: Structure, Growth, Changes, Movement, Basic needs.

Course: Forces and Motion

NCES.K.P.1 - Understand the positions and motions of objects and organisms observed in the environment.

NCES.K.P.1.1 - 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 and beside.

NCES.K.P.1.2 - Give examples of 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.

Course: Matter, Properties and Change

NCES.K.P.2 - Understand how objects are described based on their physical properties and how they are used.

NCES.K.P.2.1 - Classify objects by observable physical properties (including size, color, shape, texture, weight and flexibility).

NCES.K.P.2.2 - Compare the observable physical properties of different kinds of materials (clay, wood, cloth, paper, etc) from which objects are made and how they are used.

Grade: Grade 1

Course: Earth in the Universe

NCES.1.E.1 - Recognize the features and patterns of the earth/moon/sun system as observed from Earth.

NCES.1.E.1.1 - Recognize differences in the features of the day and night sky and apparent movement of objects across the sky as observed from Earth.

NCES.1.E.1.2 - Recognize patterns of observable changes in the Moon's appearance from day to day.

Course: Earth Systems, Structures and Processes

NCES.1.E.2 - Understand the physical properties of Earth materials that make them useful in different ways.

NCES.1.E.2.1 - Summarize the physical properties of Earth materials, including rocks, minerals, soils and



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water that make them useful in different ways.

NCES.1.E.2.2 - Compare the properties of soil samples from different places relating their capacity to retain water, nourish and support the growth of certain plants.

Course: Ecosystems

NCES.1.L.1 - Understand characteristics of various environments and behaviors that enable plants and animals to survive.

NCES.1.L.1.1 - Recognize that plants and animals need air, water, light (plants only), space, food and shelter and that these may be found in their environment.

NCES.1.L.1.2 - Give examples of how the needs of different plants and animals can be met by their environments in North Carolina or different places throughout the world.

NCES.1.L.1.3 - Summarize ways that humans protect their environment and/or improve conditions for the growth of the plants and animals that live there. (e.g., reuse or recycle products to avoid littering.)

Course: Molecular Biology

NCES.1.L.2 - Summarize the needs of living organisms for energy and growth.

NCES.1.L.2.1 - Summarize the basic needs of a variety of different plants (including air, water, nutrients, and light) for energy and growth.

NCES.1.L.2.2 - Summarize the basic needs of a variety of different animals (including air, water, and food) for energy and growth.

Course: Forces and Motion

NCES.1.P.1 - Understand how forces (pushes or pulls) affect the motion of an object.

NCES.1.P.1.1 - Explain the importance of a push or pull to changing the motion of an object.

NCES.1.P.1.2 - Explain how some forces (pushes and pulls) can be used to make things move without touching them, such as magnets.

NCES.1.P.1.3 - Predict the effect of a given force on the motion of an object, including balanced forces.

Grade: **Grade 2**

Course: Earth Systems, Structures and Processes

NCES.2.E.1 - Understand patterns of weather and factors that affect weather.

NCES.2.E.1.1 - Summarize how energy from the sun serves as a source of light that warms the land, air and water.

NCES.2.E.1.2 - Summarize weather conditions using qualitative and quantitative measures to describe: Temperature, Wind direction, Wind speed, Precipitation.

NCES.2.E.1.3 - Compare weather patterns that occur over time and relate observable patterns to time of day and time of year.

NCES.2.E.1.4 - Recognize the tools that scientists use for observing, recording, and predicting weather changes from day to day and during the seasons.

Course: Structures & Functions of Living Organisms

NCES.2.L.1 - Understand animal life cycles.

NCES.2.L.1.1 - Summarize the life cycle of animals: Birth, Developing into an adult, Reproducing, Aging



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and death.

NCES.2.L.1.2 - Compare life cycles of different animals such as, but not limited to, mealworms, ladybugs, crickets, guppies or frogs.

Course: Evolution and Genetics

NCES.2.L.2 - Remember that organisms differ from or are similar to their parents based on the characteristics of the organism.

NCES.2.L.2.1 - Identify ways in which many plants and animals closely resemble their parents in observed appearance and ways they are different.

NCES.2.L.2.2 - Recognize that there is variation among individuals that are related.

Course: Forces and Motion

NCES.2.P.1 - Understand the relationship between sound and vibrating objects.

NCES.2.P.1.1 - Illustrate how sound is produced by vibrating objects and columns of air.

NCES.2.P.1.2 - Summarize the relationship between sound and objects of the body that vibrate - eardrum and vocal cords.

Course: Matter, Properties and Change

NCES.2.P.2 - Understand properties of solids and liquids and the changes they undergo.

NCES.2.P.2.1 - Give examples of matter that change from a solid to a liquid and from a liquid to a solid by heating and cooling.

NCES.2.P.2.2 - Compare the amount (volume and weight) of water in a container before and after freezing.

NCES.2.P.2.3 - Compare what happens to water left in an open container over time as to water left in a closed container.

Grade: **Grade 3**

Course: Earth in the Universe

NCES.3.E.1 - Recognize the major components and patterns observed in the earth/moon/sun system.

NCES.3.E.1.1 - Recognize that the earth is part of a system called the solar system that includes the sun (a star), planets, and many moons and the earth is the third planet from the sun in our solar system.

NCES.3.E.1.2 - Recognize that changes in the length and direction of an object's shadow indicate the apparent changing position of the Sun during the day although the patterns of the stars in the sky, to include the Sun, stay the same.

Course: Earth Systems, Structures and Processes

NCES.3.E.2 - Compare the structures of the Earth's surface using models or three-dimensional diagrams.

NCES.3.E.2.1 - Compare Earth's saltwater and freshwater features (including oceans, seas, rivers, lakes, ponds, streams, and glaciers).

NCES.3.E.2.2 - Compare Earth's land features (including volcanoes, mountains, valleys, canyons, caverns, and islands) by using models, pictures, diagrams, and maps.



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Course: Structures & Functions of Living Organisms

NCES.3.L.1 - Understand human body systems and how they are essential for life: protection, movement and support.

NCES.3.L.1.1 - Compare the different functions of the skeletal and muscular system.

NCES.3.L.1.2 - Explain why skin is necessary for protection and for the body to remain healthy.

Course: Ecosystems

NCES.3.L.2 - Understand how plants survive in their environments.

NCES.3.L.2.1 - Remember the function of the following structures as it relates to the survival of plants in their environments: Roots - absorb nutrients;Stems - provide support;Leaves - synthesize food;Flowers - attract pollinators and produce seeds for reproduction

NCES.3.L.2.2 - Explain how environmental conditions determine how well plants survive and grow.

NCES.3.L.2.3 - Summarize the distinct stages of the life cycle of seed plants.

NCES.3.L.2.4 - Explain how the basic properties (texture and capacity to hold water) and components (sand, clay and humus) of soil determine the ability of soil to support the growth and survival of many plants.

Course: Forces and Motion

NCES.3.P.1 - Understand motion and factors that affect motion.

NCES.3.P.1.1 - Infer changes in speed or direction resulting from forces acting on an object.

NCES.3.P.1.2 - Compare the relative speeds (faster or slower) of objects that travel the same distance in different amounts of time.

NCES.3.P.1.3 - Explain the effects of earth's gravity on the motion of any object on or near the earth.

Course: Matter, Properties and Change

NCES.3.P.2 - Understand the structure and properties of matter before and after they undergo a change.

NCES.3.P.2.1 - Recognize that air is a substance that surrounds us, takes up space and has mass.

NCES.3.P.2.2 - Compare solids, liquids, and gases based on their basic properties.

NCES.3.P.2.3 - Summarize changes that occur to the observable properties of materials when different degrees of heat are applied to them, such as melting ice or ice cream, boiling water or an egg, or freezing water.

Course: Energy: Conservation and Transfer

NCES.3.P.3 - Recognize how energy can be transferred from one object to another.

NCES.3.P.3.1 - Recognize that energy can be transferred from one object to another by rubbing them against each other.

NCES.3.P.3.2 - Recognize that energy can be transferred from a warmer object to a cooler one by contact or at a distance and the cooler object gets warmer.

Grade: **Grade 4**

Course: Earth in the Universe

NCES.4.E.1 - Explain the causes of day and night and phases of the moon.

NCES.4.E.1.1 - Explain the cause of day and night based on the rotation of Earth on its axis.



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NCES.4.E.1.2 - Explain the monthly changes in the appearance of the moon, based on the moon's orbit around the Earth.

Course: Earth History

NCES.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.

NCES.4.E.2.1 - Compare fossils (including molds, casts, and preserved parts of plants and animals) to one another and to living organisms.

NCES.4.E.2.2 - Infer ideas about Earth's early environments from fossils of plants and animals that lived long ago.

NCES.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.

Course: Ecosystems

NCES.4.L.1 - Understand the effects of environmental changes, adaptations and behaviors that enable animals (including humans) to survive in changing habitats.

NCES.4.L.1.1 - Give examples of changes in an organism's environment that are beneficial to it and some that are harmful.

NCES.4.L.1.2 - Explain how animals meet their needs by using behaviors in response to information received from the environment.

NCES.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).

NCES.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.

Course: Molecular Biology

NCES.4.L.2 - Understand food and the benefits of vitamins, minerals and exercise.

NCES.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.

NCES.4.L.2.2 - Explain the role of vitamins, minerals and exercise in maintaining a healthy body.

Course: Forces and Motion

NCES.4.P.1 - Explain how various forces affect the motion of an object.

NCES.4.P.1.1 - Explain how magnets interact with all things made of iron and with other magnets to produce motion without touching them.

NCES.4.P.1.2 - Summarize how electrically charged objects push or pull on other electrically charged objects and produce motion.

Course: Matter, Properties and Change

NCES.4.P.2 - Understand the composition and properties of matter before and after they undergo a change or interaction.

NCES.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

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and fire).

NCES.4.P.2.2 - Explain how minerals are identified using tests for the physical properties of hardness, color, luster, cleavage and streak.

NCES.4.P.2.3 - Classify rocks as metamorphic, igneous, or sedimentary based on their composition, how they are formed and the processes that create them.

Course: Energy: Conservation and Transfer

NCES.4.P.3 - Recognize that energy takes various forms that may be grouped based on their interaction with matter.

NCES.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.

NCES.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.

Grade: Grade 5

Course: Earth Systems, Structures and Processes

NCES.5.E.1 - Understand weather patterns and phenomena, making connections to the weather in a particular place and time.

NCES.5.E.1.1 - Compare daily and seasonal changes in weather conditions (including wind speed and direction, precipitation, and temperature) and patterns.

NCES.5.E.1.2 - Predict upcoming weather events from weather data collected through observation and measurements.

NCES.5.E.1.3 - Explain how global patterns such as the jet stream and water currents influence local weather in measurable terms such as temperature, wind direction and speed, and precipitation.

Course: Structures & Functions of Living Organisms

NCES.5.L.1 - Understand how structures and systems of organisms (to include the human body) perform functions necessary for life.

NCES.5.L.1.1 - Explain why some organisms are capable of surviving as a single cell while others require many cells that are specialized to survive.

NCES.5.L.1.2 - Compare the major systems of the human body (digestive, respiratory, circulatory, muscular, skeletal, and cardiovascular) in terms of their functions necessary for life.

Course: Ecosystems

NCES.5.L.2 - Understand the interdependence of plants and animals with their ecosystem.

NCES.5.L.2.1 - Compare the characteristics of several common ecosystems, including estuaries and salt marshes, oceans, lakes and ponds, forests, and grasslands).

NCES.5.L.2.2 - Classify the organisms within an ecosystem according to the function they serve: producers, consumers, or decomposers (biotic factors).

NCES.5.L.2.3 - Infer the effects that may result from the interconnected relationship of plants and animals to their ecosystem.



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Course: Evolution and Genetics

NCES.5.L.3 - Understand why organisms differ from or are similar to their parents based on the characteristics of the organism.

NCES.5.L.3.1 - Explain why organisms differ from or are similar to their parents based on the characteristics of the organism.

NCES.5.L.3.2 - Give examples of likenesses that are inherited and some that are not.

Course: Forces and Motion

NCES.5.P.1 - Understand force, motion and the relationship between them.

NCES.5.P.1.1 - Explain how factors such as gravity, friction, and change in mass affect the motion of objects.

NCES.5.P.1.2 - Infer the motion of objects in terms of how far they travel in a certain amount of time and the direction in which they travel.

NCES.5.P.1.3 - Illustrate the motion of an object using a graph to show a change in position over a period of time.

NCES.5.P.1.4 - Predict the effect of a given force or a change in mass on the motion of an object.

Course: Matter, Properties and Change

NCES.5.P.2 - Understand the interactions of matter and energy and the changes that occur.

NCES.5.P.2.1 - Explain how the sun's energy impacts the processes of the water cycle (including evaporation, transpiration, condensation, precipitation and runoff).

NCES.5.P.2.2 - Compare the weight of an object to the sum of the weight of its parts before and after an interaction.

NCES.5.P.2.3 - Summarize properties of original materials, and the new material(s) formed, to demonstrate that a change has occurred.

Course: Energy: Conservation and Transfer

NCES.5.P.3 - Explain how the properties of some materials change as a result of heating and cooling.

NCES.5.P.3.1 - Explain the effects of the transfer of heat (either by direct contact or at a distance) that occurs between objects at different temperatures. (conduction, convection or radiation)

NCES.5.P.3.2 - Explain how heating and cooling affect some materials and how this relates to their purpose and practical applications.

Grade: **Grade 6**

Course: Earth in the Universe

NCES.6.E.1 - Understand the earth/moon/sun system, and the properties, structures and predictable motions of celestial bodies in the Universe.

NCES.6.E.1.1 - Explain how the relative motion and relative position of the sun, Earth and moon affect the seasons, tides, phases of the moon, and eclipses.

NCES.6.E.1.2 - Explain why Earth sustains life while other planets do not based on their properties (including types of surface, atmosphere and gravitational force) and location to the Sun.

NCES.6.E.1.3 - Summarize space exploration and the understandings gained from them.



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Course: Earth: Systems, Structures and Processes

NCES.6.E.2 - Understand the structure of the earth and how interactions of constructive and destructive forces have resulted in changes in the surface of the Earth over time and the effects of the lithosphere on humans.

NCES.6.E.2.1 - Summarize the structure of the earth, including the layers, the mantle and core based on the relative position, composition and density.

NCES.6.E.2.2 - Explain how crustal plates and ocean basins are formed, move and interact using earthquakes, heat flow and volcanoes to reflect forces within the earth.

NCES.6.E.2.3 - Explain how the formation of soil is related to the parent rock type and the environment in which it develops.

NCES.6.E.2.4 - Conclude that the good health of humans requires: monitoring the lithosphere, maintaining soil quality and stewardship.

Course: Structures & Functions of Living Organisms

NCES.6.L.1 - Understand the structures, processes and behaviors of plants that enable them to survive and reproduce.

NCES.6.L.1.1 - Summarize the basic structures and functions of flowering plants required for survival, reproduction and defense.

NCES.6.L.1.2 - Explain the significance of the processes of photosynthesis, respiration, and transpiration to the survival of green plants and other organisms.

Course: Ecosystems

NCES.6.L.2 - Understand the flow of energy through ecosystems and the responses of populations to the biotic and abiotic factors in their environment.

NCES.6.L.2.1 - Summarize how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within food chains and food webs (terrestrial and aquatic) from producers to consumers to decomposers.

NCES.6.L.2.2 - Explain how plants respond to external stimuli (including dormancy and forms of tropism) to enhance survival in an environment.

NCES.6.L.2.3 - Summarize how the abiotic factors (such as temperature, water, sunlight, and soil quality) of biomes (freshwater, marine, forest, grasslands, desert, Tundra) affect the ability of organisms to grow, survive and/or create their own food through photosynthesis.

Course: Forces and Motion

NCES.6.P.1 - Understand the properties of waves and the wavelike property of energy in earthquakes, light and sound waves.

NCES.6.P.1.1 - Compare the properties of waves to the wavelike property of energy in earthquakes, light and sound.

NCES.6.P.1.2 - Explain the relationship among visible light, the electromagnetic spectrum, and sight.

NCES.6.P.1.3 - Explain the relationship among the rate of vibration, the medium through which vibrations travel, sound and hearing.

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Course: Matter: Properties and Change

NCES.6.P.2 - Understand the structure, classifications and physical properties of matter.

NCES.6.P.2.1 - Recognize that all matter is made up of atoms and atoms of the same element are all alike, but are different from the atoms of other elements.

NCES.6.P.2.2 - Explain the effect of heat on the motion of atoms through a description of what happens to particles during a change in phase.

NCES.6.P.2.3 - Compare the physical properties of pure substances that are independent of the amount of matter present including density, melting point, boiling point, and solubility to properties that are dependent on the amount of matter present to include volume, mass and weight.

Course: Energy: Conservation and Transfer

NCES.6.P.3 - Understand characteristics of energy transfer and interactions of matter and energy.

NCES.6.P.3.1 - Illustrate the transfer of heat energy from warmer objects to cooler ones using examples of conduction, radiation and convection and the effects that may result.

NCES.6.P.3.2 - Explain the effects of electromagnetic waves on various materials to include absorption, scattering, and change in temperature.

NCES.6.P.3.3 - Explain the suitability of materials for use in technological design based on a response to heat (to include conduction, expansion, and contraction) and electrical energy (conductors and insulators).

Grade: **Grade 7**

Course: Earth Systems, Structures and Processes

NCES.7.E.1 - Understand how the cycling of matter (water and gases) in and out of the atmosphere relates to Earth

NCES.7.E.1.1 - Compare the composition, properties and structure of Earth's atmosphere to include: mixtures of gases and differences in temperature and pressure within layers.

NCES.7.E.1.2 - Explain how the cycling of water in and out of the atmosphere and atmospheric conditions relate to the weather patterns on Earth.

NCES.7.E.1.3 - Explain the relationship between the movement of air masses, high and low pressure systems, and frontal boundaries to storms (including thunderstorms, hurricanes, and tornadoes) and other weather conditions that may result.

NCES.7.E.1.4 - Predict weather conditions and patterns based on information obtained from: Weather data collected from direct observations and measurement (wind speed and direction, air temperature, humidity and air pressure) Weather maps, satellites and radar Cloud shapes and types and associated elevation

NCES.7.E.1.5 - Explain the influence of convection, global winds and the jet stream on weather and climatic conditions.

NCES.7.E.1.6 - Conclude that the good health of humans requires: monitoring the atmosphere, maintaining air quality and stewardship.

Course: Structures & Functions of Living Organisms

NCES.7.L.1 - Understand the processes, structures and functions of living organisms that enable them to survive, reproduce and carry out the basic functions of life.

NCES.7.L.1.1 - Compare the structures and life functions of single-celled organisms that carry out all of the basic functions of life including: Euglena; Amoeba; Paramecium; Volvox



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NCES.7.L.1.2 - Compare the structures and functions of plant and animal cells, including major organelles (cell membrane, cell wall, nucleus, chloroplasts, mitochondria, and vacuoles).

NCES.7.L.1.3 - Summarize the hierarchical organization of multi-cellular organisms from cells to tissues to organs to systems to organisms.

NCES.7.L.1.4 - Summarize the general functions of the major systems of the human body (digestion, respiration, reproduction, circulation, and excretion) and ways that these systems interact with each other to sustain life.

Course: Evolution and Genetics

NCES.7.L.2 - Understand the relationship of the mechanisms of cellular reproduction, patterns of inheritance and external factors to potential variation among offspring.

NCES.7.L.2.1 - Explain why offspring that result from sexual reproduction (fertilization and meiosis) have greater variation than offspring that result from asexual reproduction (budding and mitosis).

NCES.7.L.2.2 - Infer patterns of heredity using information from Punnett squares and pedigree analysis.

NCES.7.L.2.3 - Explain the impact of the environment and lifestyle choices on biological inheritance (to include common genetic diseases) and survival.

Course: Forces/Motion

NCES.7.P.1 - Understand motion, the effects of forces on motion and the graphical representations of motion.

NCES.7.P.1.1 - Explain how the motion of an object can be described by its position, direction of motion, and speed with respect to some other object.

NCES.7.P.1.2 - Explain the effects of balanced and unbalanced forces acting on an object (including friction, gravity and magnets).

NCES.7.P.1.3 - Illustrate the motion of an object using a graph to show a change in position over a period of time.

NCES.7.P.1.4 - Interpret distance versus time graphs for constant speed and variable motion.

Course: Energy: Conservation and Transfer

NCES.7.P.2 - Understand forms of energy, energy transfer and transformation and conservation in mechanical systems.

NCES.7.P.2.1 - Explain how kinetic and potential energy contribute to the mechanical energy of an object.

NCES.7.P.2.2 - Explain how energy can be transformed from one form to another (specifically potential energy and kinetic energy) using a model or diagram of a moving object (roller coaster, pendulum, or cars on ramps as examples).

NCES.7.P.2.3 - Recognize that energy can be transferred from one system to another when two objects push or pull on each other over a distance (work) and electrical circuits require a complete loop through which an electrical current can pass.

NCES.7.P.2.4 - Explain how simple machines such as inclined planes, pulleys, levers and wheel and axels are used to create mechanical advantage and increase efficiency.

Grade: **Grade 8**

Course: Earth Systems, Structures and Processes

NCES.8.E.1 - Understand the hydrosphere and the impact of humans on local systems and the effects of the



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hydrosphere on humans.

NCES.8.E.1.1 - Explain the structure of the hydrosphere including:(a)Water distribution on earth;(b)Local river basin and water availability.

NCES.8.E.1.2 - Summarize evidence that Earth's oceans are a reservoir of nutrients, minerals, dissolved gases, and life forms: Estuaries, Marine ecosystems, Upwelling, Behavior of gases in the marine environment, Deep ocean technology and understandings gained.

NCES.8.E.1.3 - Predict the safety and potential potability of water supplies in North Carolina based on physical and biological factors, including:Temperature;Dissolved oxygen;pH;Nitrates and phosphates;Turbidity;Bio-indicators

NCES.8.E.1.4 - Conclude that the good health of environments and organisms requires: Monitoring of the hydrosphere; Water quality standards; Methods of water treatment; Maintaining safe water quality; Stewardship

Course: Earth History

NCES.8.E.2 - Understand the history of Earth and its life forms based on evidence of change recorded in fossil records and landforms.

NCES.8.E.2.1 - Infer the age of Earth and relative age of rocks and fossils from index fossils and ordering of rock layers (relative dating and radioactive dating).

NCES.8.E.2.2 - Explain the use of fossils, ice cores, composition of sedimentary rocks, faults, and igneous rock formations found in rock layers as evidence of the history of the Earth and its changing life forms.

Course: Structures & Functions of Living Organisms

NCES.8.L.1 - Understand the hazards caused by agents of diseases that effect living organisms.

NCES.8.L.1.1 - Summarize the basic characteristics of viruses, bacteria, fungi and parasites relating to the spread, treatment and prevention of disease.

NCES.8.L.1.2 - Explain the difference between epidemic and pandemic as it relates to the spread, treatment and prevention of disease.

NCES.8.L.2 - Understand how biotechnology is used to affect living organisms.

NCES.8.L.2.1 - Summarize aspects of biotechnology including:Specific genetic information available;Careers; Economic benefits to North Carolina;Ethical issues;Implications for agriculture

Course: Ecosystems

NCES.8.L.3 - Understand how organisms interact with and respond to the biotic and abiotic components of their environment.

NCES.8.L.3.1 - Explain how factors such as food, water, shelter and space affect populations in an ecosystem.

NCES.8.L.3.2 - Summarize the relationships among producers, consumers, and decomposers including the positive and negative consequences of such interactions including:Coexistence and cooperation;Competition (predator/prey);Parasitism;Mutualism

NCES.8.L.3.3 - Explain how the flow of energy within food webs is interconnected with the cycling of matter (including water, nitrogen, carbon dioxide and oxygen).



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Course: Evolution and Genetics

NCES.8.L.4 - Understand the evolution of organisms and landforms based on evidence, theories and processes that impact the Earth over time.

NCES.8.L.4.1 - Summarize the use of evidence drawn from geology, fossils, and comparative anatomy to form the basis for biological classification systems and the theory of evolution.

NCES.8.L.4.2 - Explain the relationship between genetic variation and an organism's ability to adapt to its environment.

Course: Molecular Biology

NCES.8.L.5 - Understand the composition of various substances as it relates to their ability to serve as a source of energy and building materials for growth and repair of organisms.

NCES.8.L.5.1 - Summarize how food provides the energy and the molecules required for building materials, growth and survival of all organisms (to include plants).

NCES.8.L.5.2 - Explain the relationship among a healthy diet, exercise, and the general health of the body (emphasis on the relationship between respiration and digestion).

Course: Matter: Properties and Change

NCES.8.P.1 - Understand the properties of matter and changes that occur when matter interacts in an open and closed container.

NCES.8.P.1.1 - Classify matter as elements, compounds, or mixtures based on how the atoms are packed together in arrangements.

NCES.8.P.1.2 - Explain how the physical properties of elements and their reactivity have been used to produce the current model of the Periodic Table of elements.

NCES.8.P.1.3 - Compare physical changes such as size, shape and state to chemical changes that are the result of a chemical reaction to include changes in temperature, color, formation of a gas or precipitate.

NCES.8.P.1.4 - Explain how the idea of atoms and a balanced chemical equation support the law of conservation of mass.

Course: Energy: Conservation and Transfer

NCES.8.P.2 - Explain the environmental implications associated with the various methods of obtaining, managing, and using energy resources.

NCES.8.P.2.1 - Explain the environmental consequences of the various methods of obtaining, transforming and distributing energy.

NCES.8.P.2.2 - Explain the implications of the depletion of renewable and nonrenewable energy resources and the importance of conservation.