

North Carolina Science Standards 2004	ESS Presentations
<b>Kindergarten</b>	
<b>COMPETENCY GOAL 1: The learner will make observations and build an understanding of similarities and differences in animals.</b>	
1.01 Observe and describe the similarities and differences among animals including: structure, growth, changes, movement.	Animals and Plants Growing Up
1.02 Observe how animals interact with their surroundings.	Living Things
1.03 Observe the behaviors of several common animals.	
1.04 Demonstrate how to care for a variety of animals.	
1.05 Observe the similarities of humans to other animals including: basic needs, growth and change, movement.	Animals and Plants
<b>COMPETENCY GOAL 2: The learner will make observations and build an understanding of weather concepts.</b>	
2.01 Observe and report daily weather changes throughout the year.	Weather
2.02 Identify different weather features including: precipitation, wind, temperature, cloud cover.	Weather
2.03 Identify types of precipitation, changes in wind, force, direction and sky conditions.	Weather
2.04 Observe and determine the effects of weather on human activities.	Weather
2.05 Use common tools to measure weather.	Weather
<b>COMPETENCY GOAL 3: The learner will make observations and build an understanding of the properties of common objects.</b>	
3.01 Observe and describe the properties of different kinds of objects (clay, wood, cloth, paper, other) and how they are used.	Marvellous Materials Materials Matter Changing Materials
3.02 Develop and use a vocabulary associated with the properties of materials: color, size, shape, texture.	Marvellous Materials Materials Matter Changing Materials
3.03 Describe how objects look, feel, smell, taste, and sound using their own senses.	Senses Marvellous Materials
3.04 Observe that objects can be described and sorted by their properties.	Marvellous Materials Materials Matter Changing Materials
3.05 Identify some common objects and organisms that are considered to be natural resources in our world.	Changing Materials
<b>COMPETENCY GOAL 4: The learner will use appropriate tools and measurements to increase their ability to describe their world.</b>	

K-2 Product  
3-5 Product

4.01 Describe how tools can be used to make comparisons.	Weather
4.02 Observe and describe how various tools and units of measure are useful: scissors, pencils, crayons, paper clips, hammers.	
4.03 Use nonstandard units of measure to describe and compare objects.	
4.04 Demonstrate the use of standard units of measure and compare with nonstandard units of measure.	
4.05 Demonstrate that standard units of measure produce more consistent results than nonstandard units, allowing information to be shared.	
<b>Grade One</b>	
<b>COMPETENCY GOAL 1: The learner will conduct investigations and make observations to build an understanding of the needs of living organisms.</b>	
1.01 Investigate the needs of a variety of different plants: air, water, light, space.	Living Things Growing Plants
1.02 Investigate the needs of a variety of different animals: air, water, food, shelter, space.	Living Things
1.03 Observe the ways in which humans are similar to other organisms.	Animals and Plants
1.04 Identify local environments that support the needs of common North Carolina plants and animals.	
1.05 Discuss the wide variety of living things on Earth.	Animals and Plants
<b>COMPETENCY GOAL 2: The learner will make observations and use student-made rules to build an understanding of solid earth materials.</b>	
2.01 Describe and sort a variety of earth materials based on their properties: color, hardness, shape, size.	Rocks Soil
2.02 Describe rocks and other earth materials in more than one way, using student-made rules.	Rocks
2.03 Observe the various components that combine to make soil.	Soil
2.04 Compare the components of soil samples from different places.	
2.05 Explore where useful earth materials are found and how they are used.	Changing Materials Rocks
<b>COMPETENCY GOAL 3: The learner will make observations and conduct investigations to build an understanding of the properties and relationship of objects.</b>	
3.01 Describe the differences in the properties of solids and liquids.	
3.02 Investigate several ways in which objects can be described, sorted or classified.	Marvellous Materials Materials Matter Changing Materials

3.03 Classify solids according to their properties: color, texture, shape (ability to roll or stack), ability to float or sink in water.	Marvellous Materials
3.04 Determine the properties of liquids: color, ability to float or sink in water, tendency to flow.	
3.05 Observe mixtures including: solids with solids, liquids with liquids, solids with liquids.	
<b>COMPETENCY GOAL 4: The learner will make observations and conduct investigations to build an understanding of balance, motion and weighing of objects.</b>	
4.01 Describe different ways in which objects can be moved.	Feel the Force
4.02 Observe that movement of an object can be affected by pushing or pulling.	Feel the Force
4.03 Investigate and observe that objects can move steadily or change direction.	Feel the Force
4.04 Observe and describe balance as a function of position and weight.	
4.05 Describe and observe systems that are unstable and modify them to reach equilibrium.	
<b>Grade Two</b>	
<b>COMPETENCY GOAL 1: The learner will conduct investigations and build an understanding of animal life cycles.</b>	
1.01 Describe the life cycle of animals including: birth, developing into an adult, reproducing, aging and death.	Growing Up
1.02 Observe that insects need food, air and space to grow.	
1.03 Observe the different stages of an insect life cycle.	Growing Up
1.04 Compare and contrast life cycles of other animals such as mealworms, ladybugs, crickets, guppies or frogs.	Growing Up
<b>COMPETENCY GOAL 2: The learner will conduct investigations and use appropriate tools to build an understanding of the changes in weather.</b>	
2.01 Investigate and describe how moving air interacts with objects.	Weather
2.02 Observe the force of air pressure pushing on objects.	Weather
2.03 Describe weather using quantitative measures of: temperature, wind direction, wind speed, precipitation.	Weather
2.04 Identify and use common tools to measure weather: wind vane and anemometer, thermometer, rain gauge.	Weather
2.05 Discuss and determine how energy from the sun warms the land, air and water.	Weather
2.06 Observe and record weather changes over time and relate to time of day and time of year.	Weather
<b>COMPETENCY GOAL 3: The learner will observe and conduct investigations to build an understanding of changes in properties.</b>	
3.01 Identify three states of matter: solid, liquid, gas.	Changing State

3.02 Observe changes in state due to heating and cooling of common materials.	Changing State
3.03 Explain how heat is produced and can move from one material or object to another.	Insulators and Conductors
3.04 Show that solids, liquids and gases can be characterized by their properties.	Changing State
3.05 Investigate and observe how mixtures can be made by combining solids, liquids or gases and how they can be separated again.	Separating Mixtures
3.06 Observe that a new material is made by combining two or more materials with properties different from the original material.	Separating Mixtures
<b>COMPETENCY GOAL 4: The learner will conduct investigations and use appropriate technology to build an understanding of the concepts of sound.</b>	
4.01 Demonstrate how sound is produced by vibrating objects and vibrating columns of air.	Senses Sounds
4.02 Show how the frequency can be changed by altering the rate of the vibration.	Sounds
4.03 Show how the frequency can be changed by altering the size and shape of a variety of instruments.	Sounds
4.04 Show how the human ear detects sound by having a membrane that vibrates when sound reaches it.	Sounds
4.05 Observe and describe how sounds are made by using a variety of instruments and other "sound makers" including the human vocal cords.	Senses Sounds
<b>Grade Three</b>	
<b>COMPETENCY GOAL 1: The learner will conduct investigations and build an understanding of plant growth and adaptations.</b>	
1.01 Observe and measure how the quantities and qualities of nutrients, light, and water in the environment affect plant growth.	Growing Plants Plant Reproduction
1.02 Observe and describe how environmental conditions determine how well plants survive and grow in a particular environment.	Growing Plants Plant Reproduction
1.03 Investigate and describe how plants pass through distinct stages in their life cycle including: growth, survival, reproduction.	Plant Reproduction
1.04 Explain why the number of seeds a plant produces depends on variables such as light, water, nutrients, and pollination.	Plant Reproduction
1.05 Observe and discuss how bees pollinate flowers.	Plant Reproduction
1.06 Observe, describe and record properties of germinating seeds.	Plant Reproduction
<b>COMPETENCY GOAL 2: The learner will conduct investigations to build an understanding of soil properties.</b>	
2.01 Observe and describe the properties of soil: color, texture, capacity to hold water.	Soil
2.02 Investigate and observe that different soils absorb water at different rates.	Soil

2.03 Determine the ability of soil to support the growth of many plants, including those important to our food supply.	
2.04 Identify the basic components of soil: sand, clay, humus.	Soil
2.05 Determine how composting can be used to recycle discarded plant and animal material.	Pollution Microorganisms
2.06 Determine the relationship between heat and decaying plant matter in a compost pile.	
<b>COMPETENCY GOAL 3: The learner will make observations and use appropriate technology to build an understanding of the earth/moon/sun system.</b>	
3.01 Observe that light travels in a straight line until it strikes an object and is reflected and/or absorbed.	Reflection and Refraction
3.02 Observe that objects in the sky have patterns of movement including: sun, moon, stars.	Our Solar System Days and Seasons The Moon
3.03 Using shadows, follow and record the apparent movement of the sun in the sky during the day.	Shadows
3.04 Use appropriate tools to make observations of the moon.	The Moon
3.05 Observe and record the change in the apparent shape of the moon from day to day over several months and describe the pattern of changes.	The Moon
3.06 Observe that patterns of stars in the sky stay the same, although they appear to move across the sky nightly.	Our Solar System
<b>COMPETENCY GOAL 4: The learner will conduct investigations and use appropriate technology to build an understanding of the form and function of the skeletal and muscle systems of the human body.</b>	
4.01 Identify the skeleton as a system of the human body.	Body Systems
4.02 Describe several functions of bones: support, protection, locomotion.	Body Systems
4.03 Describe the functions of different types of joints: hinge, ball and socket, gliding.	
4.04 Describe how different kinds of joints allow movement and compare this to the movement of mechanical devices.	
4.05 Observe and describe how muscles cause the body to move.	Body Systems
<b>Grade Four</b>	
<b>COMPETENCY GOAL 1: The learner will make observations and conduct investigations to build an understanding of animal behavior and adaptation.</b>	
1.01 Observe and describe how all living and nonliving things affect the life of a particular animal including: other animals, plants, weather, climate.	Habitats Food Chains Adaptations Interdependence

1.02 Observe and record how animals of the same kind differ in some of their characteristics and discuss possible advantages and disadvantages of this variation.	Adaptations
1.03 Observe and discuss how behaviors and body structures help animals survive in a particular habitat.	Adaptations
1.04 Explain and discuss how humans and other animals can adapt their behavior to live in changing habitats.	Adaptations
1.05 Recognize that humans can understand themselves better by learning about other animals.	
<b>COMPETENCY GOAL 2: The learner will conduct investigations and use appropriate technology to build an understanding of the composition and uses of rocks and minerals.</b>	
2.01 Describe and evaluate the properties of several minerals.	
2.02 Recognize that minerals have a definite chemical composition and structure, resulting in specific physical properties including: hardness, streak color, luster, magnetism.	
2.03 Explain how rocks are composed of minerals.	
2.04 Show that different rocks have different properties.	Rocks
2.05 Discuss and communicate the uses of rocks and minerals.	Rocks
2.06 Classify rocks and rock-forming minerals using student-made rules.	
2.07 Identify and discuss different rocks and minerals in North Carolina including their role in geologic formations and distinguishing geologic regions.	
<b>COMPETENCY GOAL 3: The learner will make observations and conduct investigations to build an understanding of magnetism and electricity.</b>	
3.01 Observe and investigate the pull of magnets on all materials made of iron and the pushes or pulls on other magnets.	Magnets
3.02 Describe and demonstrate how magnetism can be used to generate electricity.	
3.03 Design and test an electric circuit as a closed pathway including an energy source, energy conductor, and an energy receiver.	Circuits
3.04 Explain how magnetism is related to electricity.	Electromagnets
3.05 Describe and explain the parts of a light bulb.	
3.06 Describe and identify materials that are conductors and nonconductors of electricity.	Insulators and Conductors
3.07 Observe and investigate that parallel and series circuits have different characteristics.	
3.08 Observe and investigate the ability of electric circuits to produce light, heat, sound, and magnetic effects.	Circuits Energy Forms Electromagnets
3.09 Recognize lightning as an electrical discharge and show proper safety behavior when lightning occurs.	

<b>COMPETENCY GOAL 4: The learner will conduct investigations and use appropriate technology to build an understanding of how food provides energy and materials for growth and repair of the body.</b>	
4.01 Explain why organisms require energy to live and grow.	Food Chains
4.02 Show how calories can be used to compare the chemical energy of different foods.	
4.03 Discuss how foods provide both energy and nutrients for living organisms.	Food Chains
4.04 Identify starches and sugars as carbohydrates.	
4.05 Determine that foods are made up of a variety of components.	
<b>Grade Five</b>	
<b>COMPETENCY GOAL 1: The learner will conduct investigations to build an understanding of the interdependence of plants and animals.</b>	
1.01 Describe and compare several common ecosystems (communities of organisms and their interaction with the environment).	Habitats Adaptations
1.02 Identify and analyze the functions of organisms within the population of the ecosystem: producers, consumers, decomposers.	Food Chains
1.03 Explain why an ecosystem can support a variety of organisms.	Habitats Food Chains
1.04 Discuss and determine the role of light, temperature, and soil composition in an ecosystem's capacity to support life.	
1.05 Determine the interaction of organisms within an ecosystem.	Habitats Food Chains Adaptations Interdependence
1.06 Explain and evaluate some ways that humans affect ecosystems: habitat reduction due to development, pollutants, increased nutrients.	Pollution Habitats Interdependence
1.07 Determine how materials are recycled in nature.	Microorganisms
<b>COMPETENCY GOAL 2: The learner will make observations and conduct investigations to build an understanding of landforms.</b>	
2.01 Identify and analyze forces that cause change in landforms over time including: water and ice, wind, gravity.	Erosion, Transportation and Deposition
2.02 Investigate and discuss the role of the water cycle and how movement of water over and through the landscape helps shape land forms.	Erosion, Transportation and Deposition Water Cycle
2.03 Discuss and consider the wearing away and movement of rock and soil in erosion and its importance in forming: canyons, valleys, meanders, tributaries.	Erosion, Transportation and Deposition

2.04 Describe the deposition of eroded material and its importance in establishing landforms including: deltas, flood Plains.	Erosion, Transportation and Deposition
2.05 Discuss how the flow of water and the slope of the land affect erosion.	Erosion, Transportation and Deposition
2.06 Identify and use models, maps, and aerial photographs as ways of representing landforms.	
2.07 Discuss and analyze how humans influence erosion and deposition in local communities, including school grounds, as a result of, clearing land, planting vegetation, building dams.	
<b>COMPETENCY GOAL 3: The learner will conduct investigations and use appropriate technology to build an understanding of weather and climate.</b>	
3.01 Investigate the water cycle including the processes of: evaporation, condensation, precipitation, run-off.	Water Cycle Changing State
3.02 Discuss and determine how the following are affected by predictable patterns of weather: temperature, wind direction and speed, precipitation, cloud cover, air pressure.	Predicting the Weather
3.03 Describe and analyze the formation of various types of clouds and discuss their relation to weather systems.	Predicting the Weather
3.04 Explain how global atmospheric movement patterns affect local weather.	
3.05 Compile and use weather data to establish a climate record and reveal any trends.	
3.06 Discuss and determine the influence of geography on weather and climate: mountains, sea breezes, water bodies.	Predicting the Weather
<b>COMPETENCY GOAL 4: The learner will conduct investigations and use appropriate technologies to build an understanding of forces and motion in technological designs.</b>	
4.01 Determine the motion of an object by following and measuring its position over time.	
4.02 Evaluate how pushing or pulling forces can change the position and motion of an object.	Forces
4.03 Explain how energy is needed to make machines move: moving air, gravity.	Gravity
4.04 Determine that an unbalanced force is needed to move an object or change its direction.	Friction
4.05 Determine factors that affect motion including: force, friction, inertia, momentum	Forces Friction
4.06 Build and use a model to solve a mechanical design problem: devise a test for the model, evaluate the results of test.	
4.07 Determine how people use simple machines to solve problems.	