# Activity Standards

The curriculum used in the NESTT program aligns with Next Generation Sunshine State Standards and Common Core Standards. The program is developed and revised annually (and throughout the school year) in concert with local teachers and parent educators. This collaborative approach offers all involved a way to reach out to new student audiences, and engage them in inventive and exciting learning experiences. As an enrichment program, informal experiential learning fosters interest, behavior management, and academic improvement.

Program activities can be modified to fit any grade level standards.

# Scientific Method

| Activity | Grades 4-5 | Grades 6-8 |
|---|---|---|
| Egg drop | SC.5.N.1.1 Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions. | SC.6.N.1.2 Explain why scientific investigations should be replicable.<br>SC.8.N.1.2 Design and conduct a study using repeated trials and replication.<br>SC.8.N.1.3 Use phrases such as "results support" or "fail to support" in science, understanding that science does not offer conclusive 'proof' of a knowledge claim. |
| Rocket Launch | SC.5.N.1.3 Recognize and explain the need for repeated experimental trials. | SC.7.N.1.2 Differentiate replication (by others) from repetition (multiple trials).<br>SC.8.N.1.4 Explain how hypotheses are valuable if they lead to further investigations, even if they turn out not to be supported by the data. |

# Data Collection

| Activity | Grades 4-5 | Grades 6-8 |
|---|---|---|
| Pine Rockland survey: DBH of trees with plant recruitment of seedlings and saplings | SC.35.CS-CP.1.4 Collect, organize, graph, and analyze data to answer a question using a database or spreadsheet. | MAFS.7.SP.1.1 Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences. |
| Water testing | G.K12.1.3.3c Investigative Methodologies - Perform: Apply the indicators that reflect quality in a field and understand how the field measures success. | SC.6.N.1.4 Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation. |
| Anole survey | G.K12.1.3.2c Management of Data for Research - Perform: Use appropriate data gathering instruments needed for a research study. | SC.7.L.16.1 Understand and explain that every organism requires a set of instructions that specifies its traits, that this hereditary information (DNA) contains genes located in the chromosomes of each cell, and that heredity is the passage of these instructions from one generation to another. |
| Butterfly count | SC.35.CS-CP.1.4 Collect, organize, graph, and analyze data to answer a question using a database or spreadsheet. | SC.7.N.1.5 Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics |

# Social Science

| Activity | Grades 4-5 | Grades 6-8 |
|---|---|---|
| Simulation Archaeology dig | WL.K12.NH.6.4 Identify cultural artifacts, symbols, and images of the target culture(s). | SS.8.A.1.7 View historic events through the eyes of those who were there as shown in their art, writings, music, and artifacts<br>SC.6.N.1.5 Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.<br>SS.8.A.1.1 Provide supporting details for an answer from text, interview for oral history.<br>LAFS.8.SL.1.2 Analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation. |
| Fabric ship | SS.4.A.3.2 Describe causes and effects of European colonization on the Native American tribes of Florida. | |
| Tequesta Hike | SS.4.A.2.1 Compare Native American tribes in Florida. | |
| House tour | WL.K12.IH.6.3 Discuss historical or current contributions of groups representing other languages or cultures (e.g., explorers, historical figures, artists, inventors, etc.) | |
| Dig your own fossil and create an artifact | SC.35.CS-CS.3.2 Create an artifact (independently and collaboratively) that answers a research question clearly communicating thoughts and ideas. | |
| Plant hike | SC.4.L.17.4 Recognize ways plants and animals, including humans, can impact the environment. | |

# Animal Studies

| Activity | Grades 4-5 | Grades 6-8 |
|---|---|---|
| Animal fossils and classroom pets | SC.4.L.16.3 Recognize that animal behaviors may be shaped by heredity and learning.<br>SC.4.L.16.2 Explain that although characteristics of plants and animals are inherited, some characteristics can be affected by the environment.<br>SC.5.L.17.1 Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics. | SC.6.L.15.1 Analyze and describe how and why organisms are classified according to shared characteristics with emphasis on the Linnaean system combined with the concept of Domains. |
| Hike in search of mutualism, commensalism, predation, and parasitism | SC.4.L.17.2 Explain that animals, including humans, cannot make their own food and that when animals eat plants or other animals, the energy stored in the food source is passed to them. | SC.7.L.17.2 Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism. |
| Mangrove Hike | SC.4.L.17.3 Trace the flow of energy from the Sun as it is transferred along the food chain through the producers to the consumers. | SC.7.L.17.1 Explain and illustrate the roles of and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web. |

# Habitat Studies

| Activity | Grades 4-5 | Grades 6-8 |
|---|---|---|
| Mangrove hike | SC.4.L.16.4 Compare and contrast the major stages in the life cycles of Florida plants and animals, such as those that undergo incomplete and complete metamorphosis, and flowering and nonflowering seed-bearing plants.<br>SC.4.E.6.4 Describe the basic differences between physical weathering (breaking down of rock by wind, water, ice, temperature change, and plants) and erosion (movement of rock by gravity, wind, water, and ice).<br>SC.4.L.17.4 Recognize ways plants and animals, including humans, can impact the environment. | SC.7.L.17.3 Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites.<br>SC.912.E.6.4 Analyze how specific geologic processes and features are expressed in Florida and elsewhere. |
| Hardwood Hammock hike | | |
| Pine Rockland hike | | |
| Salt Marsh hike | | |
| Creek hike | | |

# Ecology

| Activity | Grades 4-5 | Grades 6-8 |
|---|---|---|
| Seed bombs and native planting | SC.4.L.16.4 Compare and contrast the major stages in the life cycles of Florida plants and animals, such as those that undergo incomplete and complete metamorphosis, and flowering and nonflowering seed-bearing plants. | SC.912.L.17.11 Evaluate the costs and benefits of renewable and nonrenewable resources, such as water, energy, fossil fuels, wildlife, and forests. |
| Natural areas hike/creek hike | SC.1.L.14.3 Differentiate between living and nonliving things. SC.912.L.17.7 Characterize the biotic and abiotic components that define freshwater systems, marine systems and terrestrial systems. | SC.912.L.17.7 Characterize the biotic and abiotic components that define freshwater systems, marine systems and terrestrial systems. |
| Terrariums-Ecosystem in a bottle | SC.35.CS-CS.1.1 Identify the concepts illustrated by a simulation (e.g., ecosystem, predator/prey, and invasive species). | SC.6.E.7.9 Describe how the composition and structure of the atmosphere protects life and insulates the planet. |
| Measuring air polution in lichen | SC.5.N.1.1 Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions. | SC.912.L.14.9 Relate the major structure of fungi to their functions. |
| Sift through soil, soil layers | SC.4.E.6.2 Identify the physical properties of common earth-forming minerals, including hardness, color, luster, cleavage, and streak color, and recognize the role of minerals in the formation of rocks. | SC.912.L.17.7 Characterize the biotic and abiotic components that define freshwater systems, marine systems and terrestrial systems. |
| Scat hike | SC.4.L.17.2 Explain that animals, including humans, cannot make their own food and that when animals eat plants or other animals, the energy stored in the food source is passed to them. | SC.8.N.1.5 Analyze the methods used to develop a scientific explanation as seen in different fields of science. |
| Edible scat | | |

# Environmental Science

<table>
<tr><th>Activity</th><th>Grades 4-5</th><th>Grades 6-8</th></tr>
<tr><td>Pine Rockland Hike</td><td rowspan="2">SC.4.L.17.4 Recognize ways plants and animals, including humans, can impact the environment.</td><td>SC.7.E.6.6 Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.</td></tr>
<tr><td>Mangrove clean-up</td><td rowspan="2">SC.912.L.17.14 Assess the need for adequate waste management strategies.<br>SC.912.L.17.18 Describe how human population size and resource use relate to environmental quality.</td></tr>
<tr><td>Recycled art</td><td>SC.4.E.6.3 Recognize that humans need resources found on Earth and that these are either renewable or nonrenewable.</td></tr>
<tr><td>Owl pellet dissection/ fragmentation game</td><td>SC.5.L.14.2 Compare and contrast the function of organs and other physical structures of plants and animals, including humans, for example: some animals have skeletons for support -- some with internal skeletons others with exoskeletons -- while some plants have stems for support.</td><td>SC.7.L.17.3 Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites.<br>SC.912.L.17.18 Describe how human population size and resource use relate to environmental quality.</td></tr>
<tr><td>Eutrophication/Water testing</td><td>SC.912.L.17.16 Discuss the large-scale environmental impacts resulting from human activity, including waste spills, oil spills, runoff, greenhouse gases, ozone depletion, and surface and groundwater pollution.</td><td>SC.912.L.17.16 Discuss the large-scale environmental impacts resulting from human activity, including waste spills, oil spills, runoff, greenhouse gases, ozone depletion, and surface and groundwater pollution.</td></tr>
</table>

# Environmental Science

| Activity | Grades 4-5 | Grades 6-8 |
|---|---|---|
| Calculate your ecological footprint | SC.4.L.17.4 Recognize ways plants and animals, including humans, can impact the environment. | SC.912.L.17.20 Predict the impact of individuals on environmental systems and examine how human lifestyles affect sustainability.<br>VA.68.H.3.2 Discuss the use of background knowledge and critical-thinking skills, learned in the visual arts, to understand varying concepts, viewpoints, and solutions |
| Animal Observation | SC.5.L.15.1 Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations. | SC.8.N.1.6 Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence. |
| Plant Bioindicators | G.K12.1.3.3c Investigative Methodologies - Perform: Apply the indicators that reflect quality in a field and understand how the field measures success. | SC.7.L.17.3 Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites. |
| Animal Bioindicators | | |
| Start a compost pile | SC.4.E.6.3 Recognize that humans need resources found on Earth and that these are either renewable or nonrenewable. | SC.912.L.17.12 Discuss the political, social, and environmental consequences of sustainable use of land. |

# Marine Biology

| Activity | Grades 4-5 | Grades 6-8 |
|---|---|---|
| Catching critters | SC.5.L.15.1 Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.<br>SC.5.L.17.1 Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics. | SC.6.L.15.1 Analyze and describe how and why organisms are classified according to shared characteristics with emphasis on the Linnaean system combined with the concept of Domains.<br>SC.7.L.15.3 Explore the scientific theory of evolution by relating how the inability of a species to adapt within a changing environment may contribute to the extinction of that species.<br>SC.912.L.17.13 Discuss the need for adequate monitoring of environmental parameters when making policy decisions. |
| Touch tank | | |
| Fishing | | |
| Plankton tow/microscope use | | |
| Water testing/pH/ocean acidification | SC.35.CS-CP.1.3<br>Identify, research, and collect a data set on a topic, issue, problem, or question using age-appropriate technologies. | SC.912.L.17.15 Discuss the effects of technology on environmental quality. |
| Fishing | SC.5.P.8.2 Investigate and identify materials that will dissolve in water and those that will not and identify the conditions that will speed up or slow down the dissolving process. | SC.912.L.17.16 Discuss the large-scale environmental impacts resulting from human activity, including waste spills, oil spills, runoff, greenhouse gases, ozone depletion, and surface and groundwater pollution. |

# Marine Biology

| Activity | Grades 4-5 | Grades 6-8 |
|---|---|---|
| Kayaking | SC.4.L.17.4 Recognize ways plants and animals, including humans, can impact the environment. | SC.7.L.17.3 Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites. |
| Canoeing | | |
| Snorkeling | | |
| Paddle Boarding | | |
| Fish Dissection | SC.5.L.14.2 Compare and contrast the function of organs and other physical structures of plants and animals, including humans, for example: some animals have skeletons for support -- some with internal skeletons others with exoskeletons -- while some plants have stems for support.<br>SC.5.L.14.1 Identify the organs in the human body and describe their functions, including the skin, brain, heart, lungs, stomach, liver, intestines, pancreas, muscles and skeleton, reproductive organs, kidneys, bladder, and sensory organs. | SC.6.L.15.1 Analyze and describe how and why organisms are classified according to shared characteristics with emphasis on the Linnaean system combined with the concept of Domains.<br>SC.7.L.15.3 Explore the scientific theory of evolution by relating how the inability of a species to adapt within a changing environment may contribute to the extinction of that species.<br>SC.6.L.14.5 Identify and investigate the general functions of the major systems of the human body (digestive, respiratory, circulatory, reproductive, excretory, immune, nervous, and musculoskeletal) and describe ways these systems interact with each other to maintain homeostasis. |
| Squid Dissection | | |
| Shark Dissection | | |
| Sea Star Dissection | | |
| Crab Dissection | | |

# Application of Science

| Activity | Grades 4-5 | Grades 6-8 |
|---|---|---|
| Who killed the mayor lab | G.K12.2.2.2c Questions and Inquiry - Perform: Use questions to refocus the nature of the inquiry.<br>G.K12.3.1.2a Scientific Method - Know: Demonstrate the ability to gather and document data relevant to scientific investigations using the scientific method. | LAFS.8.SL.1.3 Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and relevance and sufficiency of the evidence and identifying when irrelevant evidence is introduced. |
| Discuss environmental topics covered by the media, discuss media bias | G.K12.4.2.3b<br>Critical Thinking - Understand: Recognize bias and value statements in a variety of media. | SC.8.N.4.2 Explain how political, social, and economic concerns can affect science, and vice versa<br>LAFS.8.SL.1.2 Analyze the purpose of information presented in diverse media and formats |
| Natural Areas hike | SC.5.N.1.1<br>Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions. | SC.8.N.4.1 Explain that science is one of the processes that can be used to inform decision making at the community, state, national, and international levels. |
| Blood typing lab | G.K12.2.2.2c Questions and Inquiry - Perform: Use questions to refocus the nature of the inquiry.<br>G.K12.3.1.2a Scientific Method - Know: Demonstrate the ability to gather and document data relevant to scientific investigations using the scientific method. | SC.7.L.16.2 Determine the probabilities for genotype and phenotype combinations using Punnett Squares and pedigrees. |
| Mangrove wall | SC.5.L.15.1 Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations. | SC.912.L.17.11 Evaluate the costs and benefits of renewable and nonrenewable resources, such as water, energy, fossil fuels, wildlife, and forests. |