Florida Science Standards aligned to GTM Research Reserve's Living Lab Series *(secondary programs)*

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Elementary Science Standards

2nd Grade

SC.2.L.17.1 - Compare and contrast the basic needs that all living things, including humans, have for survival. **PlanPlankton**

SC.2.L.17.2 - Recognize and explain that living things are found all over Earth, but each is only able to live in habitats that meet its basic needs. **PlanPlankton**

SC.2.N.1.1 - Raise questions about the natural world, investigate them in teams through free exploration and systematic observations, and generate appropriate explanations based on those explorations. **PlanPlankton**

SC.2.N.1.2 - Compare the observations made by different groups using the same tools. **PlanPlankton**

SC.2.N.1.3 - Ask "how do you know?" in appropriate situations and attempt reasonable answers when asked the same question by others. **PlanPlankton**

SC.2.N.1.4 - Explain how particular scientific investigations should yield similar conclusions when repeated. **PlanPlankton**

SC.2.N.1.5 - Distinguish between empirical observation (what you see, hear, feel, smell, or taste) and ideas or inferences (what you think). **PlanPlankton**

4th Grade

SC.4.E.6.3 - Recognize that humans need resources found on Earth and that these are either renewable or nonrenewable. **PlanPlankton**

SC.4.E.6.5 - Investigate how technology and tools help to extend the ability of humans to observe very small things and very large things. **PlanPlankton**

SC.4.L.16.2 - Explain that although characteristics of plants and animals are inherited, some characteristics can be affected by the environment. **PlanPlankton**

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. **PlanPlankton**

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. **PlanPlankton**

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. **PlanPlankton**

SC.4.L.17.4 - Recognize ways plants and animals, including humans, can impact the environment. **PlanPlankton**

SC.4.N.1.1 - Raise questions about the natural world, use appropriate reference materials that support understanding to obtain information (identifying the source), conduct both individual and team investigations through free exploration and systematic investigations, and generate appropriate explanations based on those explorations. **PlanPlankton**

SC.4.N.1.2 - Compare the observations made by different groups using multiple tools and seek reasons to explain the differences across groups. **PlanPlankton**

SC.4.N.1.3 - Explain that science does not always follow a rigidly defined method ("the scientific method") but that science does involve the use of observations and empirical evidence. **PlanPlankton**

SC.4.N.1.5 - Compare the methods and results of investigations done by other classmates. **PlanPlankton**

SC.4.N.1.7 - Recognize and explain that scientists base their explanations on evidence. **PlanPlankton**

5th Grade

SC.5.N.1.1 - Scientific process
SC.5.N.1.2 - Difference b/w experiment and other types of scientific investigation (deduction vs. induction)

- Diversity of Scientific Matters, Deduction - Naomi Oreskes
- Induction - Naomi Oreskes

SC.5.N.1.3 - Need for repeated experimental trials
SC.5.N.1.4 - Control group
SC.5.N.1.5 - Authentic scientific investigation frequently doesn't parallel "scientific method"
SC.5.N.1.6 - Difference b/w personal opinion/interpretation and verified observation
SC.5.N.2.1 - Science is grounded in empirical observations that are testable
SC.5.N.2.2 - Evidence produced should be replicable by others

SC.5.E.7.1 - Water cycle (gas, liquid, solid) **EnvWaterData**
SC.5.E.7.2 - Ocean integral part of water cycle **EnvWaterData**
SC.5.E.7.3 - Air Temperature, Barometric Pressure, Humidity, Wind Speed, Precipitation (Weather) **EnvWaterData**

- Classic Candle Experiment
- M&M Climate Activity

SC.5.E.7.5 - Weather-related difference are found among different environments **EnvWaterData**

- Estuaries 101 Graphing Application

SC.5.E.7.6 - Characteristics of different climate zones relate to latitude, elevation, and proximity to water **EnvWaterData**
SC.5.E.7.7

- Sea Level Rise Planning for a Resilient Coastline

SC.5.P.9.1 - physical and chemical changes are affected by temperature **EnvWaterData**

Middle School Science Standards

Environmental and Water Quality (All Levels)	Beach Biosphere (Level 7)	Migrating Marshes (Level 8)	Planet Plankton (Level 9)	Saltmarsh Seining (Level 10)
SC.6.E.7.2 SC.6.E.7.3 SC.6.E.7.5 SC.6.E.7.6 SC.6.E.7.7 SC.6.E.7.8 SC.6.N.1.2 SC.6.N.1.4 SC.6.N.1.5 SC.6.N.2.2 SC.6.P.12.1 SS.6.G.1.1 S.6.G.1.4 SC.7.E.6.6 SC.7.N.1.5 SC.7.P.10.2 SC.7.L.15.3 SC.7.L.17.3 SS.7.C.2.10 SC.8.N.1.2 SC.8.N.1.5 SC.8.N.1.6 SC.8.N.4.1 SC.8.N.4.2 SC.8.E.5.10 SC.8.P.8.4 SC.8.P.8.8 SC.8.P.8.9 SC.8.P.9.3	SC.6.E.6.1 SC.6.E.6.2 SC.6.E.7.7 SC.6.N.1.2 SC.6.N.2.3 SC.6.L.14.3 SC.7.E.6.4 SC.7.N.1.2 SS.7.C.2.14 SC.8.N.1.2 SC.8.N.1.4 SC.8.N.1.6 SC.8.N.4.2 SS.8.FL.1.1 SS.8.FL.1.2 SS.8.FL.1.5 SS.8.G.5.1	SC.6.E.6.1 SC.6.E.6.2 SC.6.E.7.7 SC.6.N.1.2 SC.6.N.2.3 SC.6.L.14.3 SS.6.W.1.1 SS.6.G.1.1 S.6.G.1.4 SS.6.G.2.1 SC.7.E.6.4 SS.7.C.2.14 SS.7.G.2.1 SS.7.G.2.2 SS.7.G.2.3 SC.8.N.1.2 SC.8.N.1.4 SC.8.N.1.6 SC.8.N.4.2 SC.8.L.18.3 SS.8.A.1.2 SS.8.G.1.2 SS.8.FL.1.1 SS.8.FL.1.2 SS.8.FL.1.5 SS.8.G.5.1	SC.6.E.6.2 SC.6.E.7.7 SC.6.N.1.2 SC.6.N.2.3 SC.6.L.14.1 SC.6.L.14.2 SC.6.L.14.3 SC.7.N.1.2 SC.7.L.17.1 SS.7.C.2.14 SC.8.N.1.2 SC.8.N.1.4 SC.8.N.1.6 SC.8.N.4.2 SC.8.L.18.1 SC.8.L.18.2 SS.8.FL.1.1 SS.8.FL.1.2 SS.8.FL.1.5 SS.8.G.5.1	SC.6.E.6.2 SC.6.E.7.7 SC.6.N.1.2 SC.6.N.2.3 SC.6.L.14.1 SC.6.L.14.3 SC.7.N.1.2 SC.7.L.15.3 SC.7.L.17.1 SS.7.C.2.14 SC.8.N.1.2 SC.8.N.1.4 SC.8.N.1.6 SC.8.N.4.2 SS.8.FL.1.1 SS.8.FL.1.2 SS.8.FL.1.5 SS.8.G.5.1

SIXTH GRADE STANDARDS

SCIENCE STANDARDS

SC.6.E.6.1 - Describe and give examples of ways in which Earth's surface is built up and torn down by physical and chemical weathering, erosion, and deposition.
SC.6.E.6.2 - Recognize that there are a variety of different landforms on Earth's surface such as coastlines, dunes, rivers, mountains, glaciers, deltas, and lakes and relate these landforms as they apply to Florida.
SC.6.E.7.2 - Investigate and apply how the cycling of water between the atmosphere and hydrosphere has an effect on weather patterns and climate.
SC.6.E.7.3 - Describe how global patterns such as the jet stream and ocean currents influence local weather in measurable terms such as temperature, air pressure, wind direction and speed, and humidity and precipitation.

SC.6.E.7.4 - Differentiate and show interactions among the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere.
SC.6.E.7.5 - Explain how energy provided by the sun influences global patterns of atmospheric movement and the temperature differences between air, water, and land.
SC.6.E.7.6 - Differentiate between weather and climate.
SC.6.E.7.7 - Investigate how natural disasters have affected human life in Florida.
SC.6.E.7.8 - Describe ways human beings protect themselves from hazardous weather and sun exposure.
SC.6.E.7.9 - Describe how the composition and structure of the atmosphere protects life and insulates the planet.
SC.6.N.1.1 - Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret 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.
SC.6.N.1.4 - Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.
SC.6.N.1.5 - Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.
SC.6.N.2.2 - Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered.
SC.6.N.2.3 - Recognize that scientists who make contributions to scientific knowledge come from all kinds of backgrounds and possess varied talents, interests, and goals.
SC.6.L.14.1 - Describe and identify patterns in the hierarchical organization of organisms from atoms to molecules and cells to tissues to organs to organ systems to organisms.
SC.6.L.14.2 - Investigate and explain the components of the scientific theory of cells (cell theory): all organisms are composed of cells (single-celled or multi-cellular), all cells come from pre-existing cells, and cells are the basic unit of life.
SC.6.L.14.3 - Recognize and explore how cells of all organisms undergo similar processes to maintain homeostasis, including extracting energy from food, getting rid of waste, and reproducing.
SC.6.L.14.4 - Compare and contrast the structure and function of major organelles of plant and animal cells, including cell wall, cell membrane, nucleus, cytoplasm, chloroplasts, mitochondria, and vacuoles.
SC.6.P.12.1 - Measure and graph distance versus time for an object moving at a constant speed. Interpret this relationship.

HISTORY STANDARDS

SS.6.W.1.1 - Use timelines to identify chronological order of historical events.
SS.6.W.1.2 - Identify terms (decade, century, epoch, era, millennium, BC/BCE, AD/CE) and designations of time periods.
SS.6.W.1.4 - Describe the methods of historical inquiry and how history relates to the other social sciences.
SS.6.W.1.5 - Describe the roles of historians and recognize varying historical interpretations (historiography).
SS.6.W.1.6 - Describe how history transmits culture and heritage and provides models of human character.
SS.6.W.2.1 - Compare the lifestyles of hunter-gatherers with those of settlers of early agricultural communities.
SS.6.W.2.2 - Describe how the developments of agriculture and metallurgy related to settlement, population growth, and the emergence of civilization.
SS.6.W.2.3 - Identify the characteristics of civilization.
SS.6.W.2.4 - Compare the economic, political, social, and religious institutions of ancient river civilizations.
SS.6.E.1.1 - Identify the factors (new resources, increased productivity, education, technology, slave economy, territorial expansion) that increase economic growth.
SS.6.E.1.2 - Describe and identify traditional and command economies as they appear in different civilizations.
SS.6.E.3.2 - Categorize products that were traded among civilizations, and give examples of barriers to trade of those products.
SS.6.G.1.1 - Use latitude and longitude coordinates to understand the relationship between people and places on the Earth.

SS.6.G.1.2 - Analyze the purposes of map projections (political, physical, special purpose) and explain the applications of various types of maps.
S.6.G.1.4 - Utilize tools geographers use to study the world. Examples are maps, globes, graphs, charts and geo-spatial tools such as GPS (global positioning system), GIS (Geographic Information Systems), satellite imagery, aerial photography, online mapping resources.
SS.6.G.1.5 - Use scale, cardinal, and intermediate directions, and estimation of distances between places on current and ancient maps of the world.
SS.6.G.1.6 - Use a map to identify major bodies of water of the world, and explain ways they have impacted the development of civilizations.
SS.6.G.1.7 - Use maps to identify characteristics and boundaries of ancient civilizations that have shaped the world today.
SS.6.G.2.1 - Explain how major physical characteristics, natural resources, climate, and absolute and relative locations have influenced settlement, interactions, and the economies of ancient civilizations of the world.
SS.6.G.2.4 - Explain how the geographical location of ancient civilizations contributed to the culture and politics of those societies.
SS.6.G.3.1 - Explain how the physical landscape has affected the development of agriculture and industry in the ancient world.

SEVENTH GRADE STANDARDS

SCIENCE STANDARDS

SC.7.E.6.4: Explain and give examples of how physical evidence supports scientific theories that Earth has evolved over geologic time due to natural processes.
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.
SC.7.N.1.2 - Differentiate replication (by others) from repetition (multiple trials).
SC.7.N.1.3 - Distinguish between an experiment (which must involve the identification and control of variables) and other forms of scientific investigation and explain that not all scientific knowledge is derived from experimentation.
SC.7.N.1.4 - Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment.
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.
SC.7.N.1.6 - Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based.
SC.7.N.1.7 - Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.
SC.7.P.10.1 - Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible, and ultraviolet, and that white light is made up of a spectrum of many different colors.
SC.7.P.10.2 - Observe and explain that light can be reflected, refracted, and/or absorbed.
SC.7.P.11.2 - Investigate and describe the transformation of energy from one form to another.
SC.7.L.15.1 - Recognize that fossil evidence is consistent with the scientific theory of evolution that living things evolved from earlier species.
SC.7.L.15.2 - Explore the scientific theory of evolution by recognizing and explaining ways in which genetic variation and environmental factors contribute to evolution by natural selection and diversity of organisms.
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.
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.
SC.7.L.16.2 - Determine the probabilities for genotype and phenotype combinations using Punnett Squares and pedigrees.

SC.7.L.16.4 - Recognize and explore the impact of biotechnology (cloning, genetic engineering, artificial selection) on the individual, society and the environment.
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.
SC.7.L.17.2 - Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism.
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.

SOCIAL STUDIES STANDARDS

SS.7.C.1.7 - Describe how the Constitution limits the powers of government through separation of powers and checks and balances.
SS.7.C.2.10 - Examine the impact of media, individuals, and interest groups on monitoring and influencing government.
SS.7.C.2.11 - Analyze media and political communications (bias, symbolism, propaganda).
SS.7.C.2.12 - Develop a plan to resolve a state or local problem, by researching public policy alternatives, identifying appropriate government agencies to address the issue, and determining a course of action.
SS.7.C.2.13 - Examine multiple perspectives on public and current issues.
SS.7.C.2.14 - Conduct a service project to further the public good.
SS.7.G.1.3 - Interpret maps to identify geopolitical divisions and boundaries of places in North America.
SS.7.G.2.1 - Locate major cultural landmarks that are emblematic of the United States.
SS.7.G.2.2 - Locate major physical landmarks that are emblematic of the United States.
SS.7.G.2.3 - Explain how major physical characteristics, natural resources, climate, and absolute and relative location have influenced settlement, economies, and inter-governmental relations in North America.
SS.7.G.2.4 - Describe current major cultural regions of North America
SS.7.G.3.1 - Use maps to describe the location, abundance, and variety of natural resources in North America.
SS.7.G.4.1 - Use geographic terms and tools to explain cultural diffusion throughout North America.
SS.7.G.4.2 - Use maps and other geographic tools to examine the importance of demographics within political divisions of the United States.
SS.7.G.5.1 - Use a choropleth or other map to geographically represent current information about issues of conservation or ecology in the local community.
SS.7.G.6.1 - Use Geographic Information Systems (GIS) or other technology to view maps of current information about the United States.

EIGHTH GRADE STANDARDS

SCIENCE STANDARDS

SC.8.N.1.1 - Define a problem from the eighth grade curriculum using appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
SC.8.N.1.2 - Design and conduct a study using repeated trials and replication.
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.
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.
SC.8.N.1.5 - Analyze the methods used to develop a scientific explanation as seen in different fields of science.
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.
SC.8.N.2.2 - Discuss what characterizes science and its methods.

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.
SC.8.N.4.2 - Explain how political, social, and economic concerns can affect science, and vice versa.
SC.8.E.5.10 - Assess how technology is essential to science for such purposes as access to outer space and other remote locations, sample collection, measurement, data collection and storage, computation, and communication of information.
SC.8.L.18.1 - Describe and investigate the process of photosynthesis, such as the roles of light, carbon dioxide, water and chlorophyll; production of food; release of oxygen.
SC.8.L.18.2 - Describe and investigate how cellular respiration breaks down food to provide energy and releases carbon dioxide.
SC.8.L.18.3 - Construct a scientific model of the carbon cycle to show how matter and energy are continuously transferred within and between organisms and their physical environment.
SC.8.P.8.4 - Classify and compare substances on the basis of characteristic physical properties that can be demonstrated or measured; for example, density, thermal or electrical conductivity, solubility, magnetic properties, melting and boiling points, and know that these properties are independent of the amount of the sample.
SC.8.P.8.8 - Identify basic examples of and compare and classify the properties of compounds, including acids, bases, and salts.
SC.8.P.8.9 - Distinguish among mixtures (including solutions) and pure substances.
SC.8.P.9.2 - Differentiate between physical changes and chemical changes.
SC.8.P.9.3 - Investigate and describe how temperature influences chemical changes.

SOCIAL STUDIES STANDARDS

SS.8.A.1.2 - Analyze charts, graphs, maps, photographs and timelines; analyze political cartoons; determine cause and effect.
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.
SS.8.A.2.1 - Compare the relationships among the British, French, Spanish, and Dutch in their struggle for colonization of North America.
SS.8.A.3.15 - Examine this time period (1763-1815) from the perspective of historically under-represented groups (children, indentured servants, Native Americans, slaves, women, working class).
SS.8.A.3.16 - Examine key events in Florida history as each impacts this era of American history.
SS.8.A.5.7 - Examine key events and peoples in Florida history as each impacts this era of American history. Examples may include, but are not limited to, slavery, influential planters, Florida's secession and Confederate membership, women, children, pioneer environment, Union occupation, Battle of Olustee and role of 54th Massachusetts regiment, Battle at Natural Bridge.
SS.8.E.2.1 - Analyze contributions of entrepreneurs, inventors, and other key individuals from various gender, social, and ethnic backgrounds in the development of the United States economy.
SS.8.G.1.1 - Use maps to explain physical and cultural attributes of major regions throughout American history.
SS.8.G.1.2 - Use appropriate geographic tools and terms to identify and describe significant places and regions in American history.
SS.8.G.2.1 - Identify the physical elements and the human elements that define and differentiate regions as relevant to American history.
SS.8.G.2.3 - Use geographic terms and tools to analyze case studies of how selected regions of the United States have changed over time.
SS.8.G.3.1 - Locate and describe in geographic terms the major ecosystems of the United States.
SS.8.G.3.2 - Use geographic terms and tools to explain differing perspectives on the use of renewable and non-renewable resources in the United States and Florida over time.
SS.8.G.4.2 - Use geographic terms and tools to analyze the effects throughout American history of migration to and within the United States, both on the place of origin and destination.
SS.8.G.4.3 - Use geographic terms and tools to explain cultural diffusion throughout the United States as it expanded its territory.
SS.8.G.4.5 - Use geographic terms and tools to analyze case studies of the development, growth, and changing nature of cities and urban centers in the United States over time.

SS.8.FL.1.1 - Explain that careers are based on working at jobs in the same occupation or profession for many years. Describe the different types of education and training required by various careers.
SS.8.FL.1.2 - Explain that careers are based on working at jobs in the same occupation or profession for many years. Describe the different types of education and training required by various careers.
SS.8.FL.1.5 - Examine the fact that investment in education and training generally has a positive rate of return in terms of the income that people earn over a lifetime, with some education or training having a higher rate of return than others.
SS.8.G.5.1 - Describe human dependence on the physical environment and natural resources to satisfy basic needs in local environments in the United States.

High School Science Standards

Organized by Living Lab Series

Environmental and Water Quality Monitoring	*Beach Biosphere (Level 7)*	*Migrating Marshes (Level 8)*	*Planet Plankton (Level 9)*	*Salt Marsh Seining (Level 10)*
• SC.912.E.6.6 • SC.912.E.7.4 • SC.912.E.7.5 • SC.912.E.7.6 • SC.912.E.7.7 • SC.912.E.7.8 • SC.912.E.7.9 • SC.912.L.17.11 • SC.912.L.17.13 • SC.912.L.17.14 • SC.912.L.17.15 • SC.912.L.17.16 • SC.912.L.17.17 • SC.912.L.17.18 • SC.912.L.17.2 • SC.912.L.17.20 • SC.912.L.17.3 • SC.912.L.17.4 • SC.912.L.17.7 • SC.912.N.1.1 • SC.912.N.1.2 • SC.912.N.1.3 • SC.912.N.1.4 • SC.912.N.1.5 • SC.912.N.1.6 • SC.912.N.1.7 • SC.912.N.2.1 • SC.912.N.2.2 • SC.912.N.2.4 • SC.912.N.3.5 • SC.912.N.4.1 • SC.912.P.8.11	• SC.912.E.6.5 • SC.912.E.6.6 • SC.912.E.7.4 • SC.912.E.7.6 • SC.912.E.7.7 • SC.912.E.7.8 • SC.912.E.7.9 • SC.912.E.14.10 • SC.912.L.17.11 • SC.912.L.17.12 • SC.912.L.17.13 • SC.912.L.17.14 • SC.912.L.17.15 • SC.912.L.17.17 • SC.912.L.17.18 • SC.912.L.17.20 • SC.912.L.17.3 • SC.912.L.17.4 • SC.912.L.17.7 • SC.912.N.1.1 • SC.912.N.1.2 • SC.912.N.1.3 • SC.912.N.1.4 • SC.912.N.1.5 • SC.912.N.1.6 • SC.912.N.1.7 • SC.912.N.2.1 • SC.912.N.2.2 • SC.912.N.2.4 • SC.912.N.3.5 • SC.912.N.4.1	• SC.912.E.6.6 • SC.912.E.7.4 • SC.912.E.7.6 • SC.912.E.7.7 • SC.912.E.7.8 • SC.912.E.7.9 • SC.912.E.14.10 • SC.912.L.17.1 • SC.912.L.17.11 • SC.912.L.17.12 • SC.912.L.17.13 • SC.912.L.17.14 • SC.912.L.17.15 • SC.912.L.17.16 • SC.912.L.17.17 • SC.912.L.17.18 • SC.912.L.17.20 • SC.912.L.17.3 • SC.912.L.17.4 • SC.912.L.17.7 • SC.912.L.17.8 • SC.912.N.1.1 • SC.912.N.1.2 • SC.912.N.1.3 • SC.912.N.1.4 • SC.912.N.1.5 • SC.912.N.1.6 • SC.912.N.1.7 • SC.912.N.2.1 • SC.912.N.2.2 • SC.912.N.2.4 • SC.912.N.3.5 • SC.912.N.4.1	• SC.912.E.6.6 • SC.912.E.7.7 • SC.912.E.7.8 • SC.912.E.7.9 • SC.912.E.14.4 • SC.912.L.15.6 • SC.912.L.15.7 • SC.912.L.17.1 • SC.912.L.17.11 • SC.912.L.17.12 • SC.912.L.17.13 • SC.912.L.17.14 • SC.912.L.17.15 • SC.912.L.17.16 • SC.912.L.17.17 • SC.912.L.17.18 • SC.912.L.17.2 • SC.912.L.17.20 • SC.912.L.17.3 • SC.912.L.17.4 • SC.912.L.17.7 • SC.912.L.17.8 • SC.912.L.17.9 • SC.912.N.1.1 • SC.912.N.1.2 • SC.912.N.1.3 • SC.912.N.1.4 • SC.912.N.1.5 • SC.912.N.1.6 • SC.912.N.1.7 • SC.912.N.2.1 • SC.912.N.2.2 • SC.912.N.2.4 • SC.912.N.3.5 • SC.912.N.4.1	• SC.912.E.6.6 • SC.912.E.7.7 • SC.912.E.7.8 • SC.912.E.7.9 • SC.912.L.14.6 • SC.912.L.15.13 • SC.912.L.15.3 • SC.912.L.15.5 • SC.912.L.15.6 • SC.912.L.15.7 • SC.912.L.17.1 • SC.912.L.17.11 • SC.912.L.17.12 • SC.912.L.17.13 • SC.912.L.17.14 • SC.912.L.17.15 • SC.912.L.17.16 • SC.912.L.17.17 • SC.912.L.17.18 • SC.912.L.17.2 • SC.912.L.17.20 • SC.912.L.17.3 • SC.912.L.17.4 • SC.912.L.17.7 • SC.912.L.17.8 • SC.912.N.1.1 • SC.912.N.1.2 • SC.912.N.1.3 • SC.912.N.1.4 • SC.912.N.1.5 • SC.912.N.1.6 • SC.912.N.1.7 • SC.912.N.2.1 • SC.912.N.2.2 • SC.912.N.2.4 • SC.912.N.3.5 • SC.912.N.4.1

Organized by State Standard

SC.912.E.6.5 - Describe the geologic development of the present day oceans and identify commonly found features. **BeachBiosphere**

SC.912.E.6.6 - Analyze past, present, and potential future consequences to the environment resulting from various energy production technologies. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.E.7.4 - Summarize the conditions that contribute to the climate of a geographic area, including the relationships to lakes and oceans. **BeachBiosphere EnvWaterData MigratingMarsh**

SC.912.E.7.5 - Predict future weather conditions based on present observations and conceptual models and recognize limitations and uncertainties of such predictions. **EnvWaterData**

SC.912.E.7.6 - Relate the formation of severe weather to the various physical factors. **BeachBiosphere EnvWaterData MigratingMarsh**

SC.912.E.7.7 - Identify, analyze, and relate the internal (Earth system) and external (astronomical) conditions that contribute to global climate change. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.E.7.8 - Explain how various atmospheric, oceanic, and hydrologic conditions in Florida have influenced and can influence human behavior, both individually and collectively. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.E.7.9 - Cite evidence that the ocean has had a significant influence on climate change by absorbing, storing, and moving heat, carbon, and water. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.E.14.10 - Discuss the relationship between the evolution of land plants and their anatomy. **BeachBiosphere MigratingMarsh**

SC.912.E.14.4 - Compare and contrast structure and function of various types of microscopes. **PlanPlankton**

SC.912.L.14.6 - Explain the significance of genetic factors, environmental factors, and pathogenic agents to health from the perspectives of both individual and public health. **SaltMarshSeining**

SC.912.L.15.13 - Describe the conditions required for natural selection, including: overproduction of offspring, inherited variation, and the struggle to survive, which result in differential reproductive success. **SaltMarshSeining**

SC.912.L.15.3 - Describe how biological diversity is increased by the origin of new species and how it is decreased by the natural process of extinction. **SaltMarshSeining**

SC.912.L.15.5 - Explain the reasons for changes in how organisms are classified. **SaltMarshSeining**

SC.912.L.15.6 - Discuss distinguishing characteristics of the domains and kingdoms of living organisms. **SaltMarshSeining PlanPlankton**

SC.912.L.15.7 - Discuss distinguishing characteristics of vertebrate and representative invertebrate phyla, and chordate classes using typical examples. **SaltMarshSeining PlanPlankton**

SC.912.L.17.1 - Discuss the characteristics of populations, such as number of individuals, age structure, density, and pattern of distribution. **SaltMarshSeining PlanPlankton MigratingMarsh**

SC.912.L.17.11 - Evaluate the costs and benefits of renewable and nonrenewable resources, such as water, energy, fossil fuels, wildlife, and forests. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.L.17.12 - Discuss the political, social, and environmental consequences of sustainable use of land. **BeachBiosphere SaltMarshSeining PlanPlankton MigratingMarsh**

SC.912.L.17.13 - Discuss the need for adequate monitoring of environmental parameters when making policy decisions. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.L.17.14 - Assess the need for adequate waste management strategies. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.L.17.15 - Discuss the effects of technology on environmental quality. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

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. **SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.L.17.17 - Assess the effectiveness of innovative methods of protecting the environment. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.L.17.18 - Describe how human population size and resource use relate to environmental quality. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.L.17.2 - Explain the general distribution of life in aquatic systems as a function of chemistry, geography, light, depth, salinity, and temperature. **SaltMarshSeining EnvWaterData PlanPlankton**

SC.912.L.17.20 - Predict the impact of individuals on environmental systems and examine how human lifestyles affect sustainability. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.L.17.3 - Discuss how various oceanic and freshwater processes, such as currents, tides, and waves, affect the abundance of aquatic organisms. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.L.17.4 - Describe changes in ecosystems resulting from seasonal variations, climate change and succession. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.L.17.7 - Characterize the biotic and abiotic components that define freshwater systems, marine systems and terrestrial systems. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.L.17.8 - Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species. **SaltMarshSeining PlanPlankton MigratingMarsh**

SC.912.L.17.9 - Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels. **PlanPlankton**

SC.912.N.1.1 - Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following... **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.N.1.2 - Describe and explain what characterizes science and its methods. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.N.1.3 - Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on critical and logical thinking, and the active consideration of alternative scientific explanations to explain the data presented. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.N.1.4 - Identify sources of information and assess their reliability according to the strict standards of scientific investigation. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.N.1.5 - Describe and provide examples of how similar investigations conducted in many parts of the world result in the same outcome. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.N.1.6 - Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.N.1.7 - Recognize the role of creativity in constructing scientific questions, methods and explanations. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.N.2.1 - Identify what is science, what clearly is not science, and what superficially resembles science (but fails to meet the criteria for science). **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.N.2.2 - Identify which questions can be answered through science and which questions are outside the boundaries of scientific investigation, such as questions addressed by other ways of

knowing, such as art, philosophy, and religion. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.N.2.4 - Explain that scientific knowledge is both durable and robust and open to change. Scientific knowledge can change because it is often examined and re-examined by new investigations and scientific argumentation. Because of these frequent examinations, scientific knowledge becomes stronger, leading to its durability. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.N.3.5 - Describe the function of models in science, and identify the wide range of models used in science. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.N.4.1 - Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making. **BeachBiosphere SaltMarshSeining EnvWaterData PlanPlankton MigratingMarsh**

SC.912.P.8.11 - Relate acidity and basicity to hydronium and hydroxyl ion concentration and pH. **EnvWaterData**

Social Studies Standards

Do your best to avoid politics during these lessons.

SS.912.A.1.1 - Describe the importance of historiography, which includes how historical knowledge is obtained and transmitted, when interpreting events in history.
SS.912.A.1.2 - Utilize a variety of primary and secondary sources to identify author, historical significance, audience, and authenticity to understand a historical period.
SS.912.A.1.3 - Utilize timelines to identify the time sequence of historical data.
SS.912.A.1.5 - Evaluate the validity, reliability, bias, and authenticity of current events and Internet resources.
SS.912.A.1.6 - Use case studies to explore social, political, legal, and economic relationships in history.
SS.912.A.1.7 - Describe various socio-cultural aspects of American life including arts, artifacts, literature, education, and publications.
SS.912.A.2.4 - Distinguish the freedoms guaranteed to African Americans and other groups with the 13th, 14th, and 15th Amendments to the Constitution.
SS.912.A.2.5 - Assess how Jim Crow Laws influenced life for African Americans and other racial/ethnic minority groups.
SS.912.A.2.6 - Compare the effects of the Black Codes and the Nadir on freed people, and analyze the sharecropping system and debt peonage as practiced in the United States.
SS.912.A.2.7 - Review the Native American experience.
SS.912.A.3.1 - Analyze the economic challenges to American farmers and farmers' responses to these challenges in the mid to late 1800s.
SS.912.A.3.2 - Examine the social, political, and economic causes, course, and consequences of the second Industrial Revolution that began in the late 19th century.
SS.912.A.3.3 - Compare the first and second Industrial Revolutions in the United States.
SS.912.A.3.5 - Identify significant inventors of the Industrial Revolution including African Americans and women.
SS.912.A.3.6 - Analyze changes that occurred as the United States shifted from agrarian to an industrial society.
SS.912.A.3.8 - Examine the importance of social change and reform in the late 19th and early 20th centuries (class system, migration from farms to cities, Social Gospel movement, role of settlement houses and churches in providing services to the poor).

SS.912.A.3.11 - Analyze the impact of political machines in United States cities in the late 19th and early 20th centuries.
SS.912.A.3.12 - Compare how different nongovernmental organizations and progressives worked to shape public policy, restore economic opportunities, and correct injustices in American life.
SS.912.A.3.13 - Examine key events and peoples in Florida history as they relate to United States history.
SS.912.A.4.1 - Analyze the major factors that drove United States imperialism.
SS.912.A.4.2 - Explain the motives of the United States acquisition of the territories.
SS.912.A.5.12 - Examine key events and people in Florida history as they relate to United States history.
SS.912.A.7.5 - Compare nonviolent and violent approaches utilized by groups (African Americans, women, Native Americans, Hispanics) to achieve civil rights.
SS.912.W.2.15 - Determine the factors that contributed to the growth of a modern economy.
SS.912.A.5.7 - Examine the freedom movements that advocated civil rights for African Americans, Latinos, Asians, and women.
SS.912.A.7.14 - Review the role of the United States as a participant in the global economy (trade agreements, international competition, impact on American labor, environmental concerns).
SS.912.W.1.4 - Explain how historians use historical inquiry and other sciences to understand the past.
SS.912.W.1.5 - Compare conflicting interpretations or schools of thought about world events and individual contributions to history (historiography).
SS.912.W.1.6 - Evaluate the role of history in shaping identity and character.
SS.912.W.4.14 - Recognize the practice of slavery and other forms of forced labor experienced during the 13th through 17th centuries in East Africa, West Africa, Europe, Southwest Asia, and the Americas.
SS.912.W.4.15 - Explain the origins, developments, and impact of the trans-Atlantic slave trade between West Africa and the Americas.