Florida Science Curriculum
Crosswalk to ICLE Essential Skills Curriculum Survey

Florida Science Curriculum	Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
K-2 Grades			**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
1. The Nature of Matter											
Standard 1: The student understands that all matter has observable, measurable properties. **SC.A.1.1**											
Knows that objects can be described, classified, and compared by their composition (e.g., wood or metal) and their physical properties (e.g., color, size, and shape). **SC.A.1.1.1**	5	Make observations of the local environment using senses and instruments. Inferences and interpretations are arrived at based on observations. Classify observable properties and organize observations in a meaningful and logical way.				✓					
Recognizes that the same material can exist in different states. **SC.A.1.1.2**	57	Understand physical/chemical change (e.g., change of phase between gases, liquids, and solids).					✓				
Verifies that things can be done to materials to change some of their physical properties (e.g., cutting, heating, and freezing), but not all materials respond the same way (e.g., heating causes water to boil and sugar to melt). **SC.A.1.1.3**	57	Understand physical/chemical change (e.g., change of phase between gases, liquids, and solids).					✓				
Standard 2: The student understands the basic principles of atomic theory. **SC.A.2.1**											

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K-2 Grades				**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
	Recognizes that many things are made of smaller pieces, different amounts, and various shapes. **SC.A.2.1.1**	5	Make observations of the local environment using senses and instruments. Inferences and interpretations are arrived at based on observations. Classify observable properties and organize observations in a meaningful and logical way.				✓					
2. Energy												
Standard 1: The student recognizes that energy may be changed in form with varying efficiency. **SC.B.1.1**												
	Knows that the Sun supplies heat and light energy to Earth. **SC.B.1.1.1**	25	Know the properties of electromagnetic energy (energy radiated from all objects not at a temperature of absolute zero), solar energy (energy from the sun), and earth energy (energy released from the decay of radioactive matter). Understand that weather and climate involve energy transfer in and out of the atmosphere by means of conduction, convection, and radiation.				✓					
	Knows that light can pass through some objects and not others. **SC.B.1.1.2**	90	Know the characteristics and phenomena of sound waves and light waves.						✓			
	Describes a model energy system (e.g., an aquarium or terrarium). **SC.B.1.1.3**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					

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K-2 Grades				**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
	Knows that heat can be produced in many ways (e.g., by burning and rubbing). **SC.B.1.1.4**	60	Observe and interpret energy and change relationships with the understanding that change occurs simultaneously at the interface between two parts of the environment where there is an energy exchange.					✓				
	Knows that every human action requires energy that comes from food. **SC.B.1.1.5**	3	Understand nutrition - the need for food and a good diet, ingestion, digestion, egestion and related disorders such as ulcers, appendicitis, etc.				✓					
Standard 2: The student understands the interaction of matter and energy. **SC.B.2.1**												
	Recognizes systems of matter and energy. **SC.B.2.1.1**	60	Observe and interpret energy and change relationships with the understanding that change occurs simultaneously at the interface between two parts of the environment where there is an energy exchange.					✓				
3. Force and Motion												
Standard 1: The student understands that types of motion may be described, measured, and predicted. **SC.C.1.1**												
	Understands that different things move at different speeds. **SC.C.1.1**	77	Understand and apply kinematics (i.e., the mathematical methods of describing motion without regard to the forces that produce it, such as velocity, acceleration and deceleration, and displacement).						✓			

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K-2 Grades				**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
	Knows that there is a relationship between force and motion. **SC.C.1.1.1**	84	Understand and apply statics (i.e., the relation between forces acting on an object at rest) and dynamics (i.e., the relation between the forces acting on an object and the resulting motion).						✓			
Standard 2: The student understands that the types of force that act on an object and the effect of that force can be described, measured, and predicted. **SC.C.2.1**												
	Knows that one way to change how something is moving is to give it a push or a pull **SC.C.2.1.1**	84	Understand and apply statics (i.e., the relation between forces acting on an object at rest) and dynamics (i.e., the relation between the forces acting on an object and the resulting motion).						✓			
	Knows that sound is caused by vibrations (pushing and pulling) to cause waves. **SC.C.2.1.2**	90	Know the characteristics and phenomena of sound waves and light waves.						✓			
4. Processes that Shape the Earth												
Standard 1: The student recognizes that processes in the lithosphere, atmosphere, hydrosphere, and biosphere interact to shape the Earth. **SC.D.1.1**												
	Recognizes that the solid materials making up the Earth come in all sizes, from boulders to grains of sand. **SC.D.1.1.1**	71	Analyze the properties of the earth's crust and interior (i.e., solid and liquid zones, crustal thickness, crustal composition, density, temperature and pressure, and interior composition).						✓			

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K-2 Grades				**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
	Knows that life occurs on or near the surface of the Earth in land, air, and water. **SC.D.1.1.2**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
	Recognizes patterns in weather. **SC.D.1.1.3**	48	Predict weather as a probability of occurrence by examining the factors that produce change in atmospheric variables.					✓				
Standard 2: The student understands the need for protection of the natural systems on Earth. **SC.D.2.1**												
	Understands that people influence the quality of life of those around them. **SC.D.2.1.1**	10	Understand the human impact on the environment through pollution (air, water, and soil), and ways to improve it through education, research, laws, and conservation.				✓					
5. Earth and Space												
Standard 1: The student understands the interaction and organization in the Solar System and the universe and how this affects life on Earth. **SC.E.1.1**												
	Knows that the light reflected by the Moon looks a little different every day but looks the same again about every 28 days. **SC.E.1.1.1**	50	Identify and comprehend celestial observations (i.e., motions of objects in the sky) such as star paths, planetary motions, satellite motions, and sun motions.					✓				

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K-2 Grades				**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
	Knows that the appearance of sunrise and sunset is due to the rotation of Earth every 24 hours. **SC.E.1.1.2**	50	Identify and comprehend celestial observations (i.e., motions of objects in the sky) such as star paths, planetary motions, satellite motions, and sun motions.					✓				
Standard 2: The student recognizes the vastness of the universe and the Earth's place in it. **SC.E.2.1**												
	Knows that there are many objects in the sky that are only visible at night. **SC.E.2.1.1**	5	Make observations of the local environment using senses and instruments. Inferences and interpretations are arrived at based on observations. Classify observable properties and organize observations in a meaningful and logical way.				✓					
6. Processes of Life												
Standard 1: The student describes patterns of structure and function in living things. **SC.F.1.1**												
	Knows the basic needs of all living things. **SC.F.1.1.1**	40	Know the survival requirements of animals and plants and the history and implications of population growth.					✓				
	Knows how to apply knowledge about life processes to distinguish between living and non-living things. **SC.F.1.1.2**								✓			

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	Describes how organisms change as they grow and mature. **SC.F.1.1.3**	24	Understand the nature of change in the environment and how it occurs through the occurrence of an event (e.g., altering the properties of matter or of a system). Describe and measure change using time and space relationships as a frame of reference.				✓					
	Understands that structures of living things are adapted to their function in specific environments. **SC.F.1.1.4**	2	Identify and understand the structure and parts that comprise the systems (i.e., cardiovascular, nervous, lymphatic, muscular, etc.) and regions (i.e., head and neck, upper limb, thorax, abdominopelvic, back, and lower limb) of the human body.				✓					
	Compares and describes the structural characteristics of plants and animals. **SC.F.1.1.5**	15	Identify and describe the levels of organization in living systems (i.e., tissues, organs, organ systems, and organisms).				✓					
Standard 2: The student understands the process and importance of genetic diversity. **SC.F.2.1**												
	Knows that living things have offspring that resemble their parents. **SC.F.2.1.1**	12	Examine the foundations of genetics involving heredity and inherited traits passed on through generations, understand the gene-chromosome concept, and apply classical genetic studies (Mendelian genetics).				✓					
	Knows that there are many different kinds of living things that live in a variety of environments. **SC.F.2.1.2**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
7. How Living Things Interact with Their Environment.												

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K-2 Grades				**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
Standard 1: The student understands the competitive, interdependent, cyclic nature of living things in the environment. **SC.G.1.1**												
	Knows that environments have living and non-living parts. **SC.G.1.1.1**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
	Knows that plants and animals are dependent upon each other for survival. **SC.G.1.1.2**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
	Knows that there are many different plants and animals living in many different kinds of environments (e.g., hot, cold, wet, dry, sunny, and dark). **SC.G.1.1.3**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
	Knows that animals and plants can be associated with their environment by an examination of their structural characteristics. **SC.G.1.1.4**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
Standard 2: The student understands the consequences of using limited natural resources **SC.G.2.1**.												
	Knows that if living things do not get food, water, shelter, and space, they will die. **SC.G.2.1.1**	40	Know the survival requirements of animals and plants and the history and implications of population growth.					✓				

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	Knows that the activities of humans affect plants and animals in many ways. **SC.G.2.12**	10	Understand the human impact on the environment through pollution (air, water, and soil), and ways to improve it through education, research, laws, and conservation.					✓				
8. The Nature of Science												
Standard 1: The student uses the scientific processes and habits of mind to solve problems. **SC.H.1.1**												
	Knows that in order to learn, it is important to observe the same things often and compare them. **SC.H.1.1.1**	5	Make observations of the local environment using senses and instruments. Inferences and interpretations are arrived at based on observations. Classify observable properties and organize observations in a meaningful and logical way.				✓					
	Knows that when tests are repeated under the same conditions, similar results are usually obtained. **SC.H.1.1.2**	XS-1	Know and apply the principles of scientific inquiry.						✓			
	Knows that in doing science, it is often helpful to work with a team and to share findings with others. **SC.H.1.1.3**	XS-1	Know and apply the principles of scientific inquiry.						✓			
	Knows that people use scientific processes including hypotheses, making inferences, and recording and communicating data when exploring the natural world. **SC.H.1.1.4**	XS-1	Know and apply the principles of scientific inquiry.				✓					

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	Uses the senses, tools, and instruments to obtain information from his or her surroundings. **SC.H.1.1.5**	5	Make observations of the local environment using senses and instruments. Inferences and interpretations are arrived at based on observations. Classify observable properties and organize observations in a meaningful and logical way.				✓					
Standard 2: The student understands that most natural events occur in comprehensible, consistent patterns. **SC.H.2.1**												
	Knows that most natural events occur in patterns. **SC.H.2.1.1**	5	Make observations of the local environment using senses and instruments. Inferences and interpretations are arrived at based on observations. Classify observable properties and organize observations in a meaningful and logical way.				✓					
Standard 3: The student understands that science, technology, and society are interwoven and interdependent. **SC.H.3.1**												
	Knows that scientists and technologists use a variety of tools (e.g., thermometers, magnifiers, rulers, and scales) to obtain information in more detail and to make work easier. **SC.H.3.1.1**	XS-2	Know and apply the principles of scientific inquiry.				✓					

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3-5 Grade			**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
1. The Nature of Matter											
Standard 1: The student understands that all matter has observable, measurable properties. **SC.A.1.2**											
Determines that the properties of materials (e.g., density and volume) can be compared and measured (e.g., using rulers, balances, and thermometers). **SC.A.1.2.1**	23	Measure properties of the environment using dimensional quantities such as time, length, mass, pressure, volume, acceleration, etc. Compare quantities and consider the error involved with measuring environmental properties.				✓					
Knows that common materials (e.g., water) can be changed from one state to another by heating and cooling. **SC.A.1.2.2**	57	Understand physical/chemical change (e.g., change of phase between gases, liquids, and solids).					✓				
Knows that the weight of an object always equals the sum of its parts. **SC.A.1.2.3**	111	Use stoichiometry to compute quantitative relationships implied by chemical formulas (e.g., find the percent composition by mass of an element in a compound and the simplest ratio in which the atoms combine to form a compound) and chemical equations (e.g., solve mass, mass-volume, and volume problems).						✓			

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3-5 Grade			**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
Knows that different materials are made by physically combining substances and that different objects can be made by combining different materials. **SC.A.1.2.4**	78	Understand the historical development of the periodic table and apply the principles inherent in its development, including the properties and atomic structure of elements and resultant chemical compound, the forces acting between atoms and molecules, and changes in substances as a result of chemical combination.						✓			
Knows that materials made by chemically combining two or more substances may have properties that differ from the original materials. **SC.A.1.2.5**	78	Understand the historical development of the periodic table and apply the principles inherent in its development, including the properties and atomic structure of elements and resultant chemical compound, the forces acting between atoms and molecules, and changes in substances as a result of chemical combination.						✓			
Standard 2: The student understands the basic principles of atomic theory. **SC.A.2.2**											
Knows that materials may be made of parts too small to be seen without magnification. **SC.A.2.2.1**	5	Make observations of the local environment using senses and instruments. Inferences and interpretations are arrived at based on observations. Classify observable properties and organize observations in a meaningful and logical way.				✓					
2. Energy											
Standard 1: The student recognizes that energy may be changed in form with varying efficiency. **SC.B.1.2**											

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3-5 Grade				H	M	L	H	M	L	H	M	L
	Knows how to trace the flow of energy in a system (e.g., as in an ecosystem). **SC.B.1.2.1**	13	Make observations of the local environment using senses and instruments. Inferences and interpretations are arrived at based on observations. Classify observable properties and organize observations in a meaningful and logical way.				✓					
	Recognizes various forms of energy (e.g., heat, light, and electricity). **SC.B.1.2.2**	55	Identify types of energy (e.g., heat, light, and electricity) and know how to apply measurements of energy (e.g., the calorie, and thermometry).					✓				
	Knows that most things that emit light also emit heat. **SC.B.1.2.3**	90	Know the characteristics and phenomena of sound waves and light waves.						✓			
	Knows the many ways in which energy can be transformed from one type to another. **SC.B.1.2.4**	60	Observe and interpret energy and change relationships with the understanding that change occurs simultaneously at the interface between two parts of the environment where there is an energy exchange.					✓				
	Knows that various forms of energy (e.g., mechanical, chemical, electrical, magnetic, nuclear, and radiant) can be measured in ways that make it possible to determine the amount of energy that is transformed. **SC.B.1.2.5**	55	Identify types of energy (e.g., heat, light, and electricity) and know how to apply measurements of energy (e.g., the calorie, and thermometry).					✓				
	Knows ways that heat can move from one object to another. **SC.B.1.2.6**	57	Understand physical/chemical change (e.g., change of phase between gases, liquids, and solids).					✓				
Standard 2: The student understands the interaction of matter and energy. **SC.B.2.2**												

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3-5 Grade				H	M	L	H	M	L	H	M	L
	Knows that some source of energy is needed for organisms to stay alive and grow. **SC.B.2.2.1**	40	Know the survival requirements of animals and plants and the history and implications of population growth.					✓				
	Recognizes the costs and risks to society and the environment posed by the use of nonrenewable energy. **SC.B.2.2.2**	6	Understand how humans, through technology, cause environmental change by disrupting the equilibrium or balance of nature by introducing pollutants into the environment.				✓					
	Knows that the limited supply of usable energy sources (e.g., fuels such as coal or oil) places great significance on the development of renewable energy sources. **SC.B.2.2.3**	6	Understand how humans, through technology, cause environmental change by disrupting the equilibrium or balance of nature by introducing pollutants into the environment.				✓					
3. Force and Motion												
Standard 1: The student understands that types of motion may be described, measured, and predicted. **SC.C.1.2**												
	Understands that the motion of an object can be described and measured. **SC.C.1.2.1**	23	Measure properties of the environment using dimensional quantities such as time, length, mass, pressure, volume, acceleration, etc. Compare quantities and consider the error involved with measuring environmental properties.				✓					
	Knows that waves travel at different speeds through different materials. **SC.C.1.2.2**	90	Know the characteristics and phenomena of sound waves and light waves.						✓			

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3-5 Grade			**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
Standard 2: The student understands that the types of force that act on an object and the effect of that force can be described, measured, and predicted. **SC.C.2.2**											
Recognizes that forces of gravity, magnetism, and electricity operate simple machines. **SC.C.2.2.1**	49	Understand the concepts and uses of machines (e.g., levers and pulleys).					✓				
Knows that an object may move in a straight line at a constant speed, speed up, slow down, or change direction dependent on net force acting on the object. **SC.C.2.2.2**	77	Understand and apply kinematics (i.e., the mathematical methods of describing motion without regard to the forces that produce it, such as velocity, acceleration and deceleration, and displacement).						✓			
Knows that the more massive an object is, the less effect a given force has. **SC.C.2.2.3**	84	Understand and apply statics (i.e., the relation between forces acting on an object at rest) and dynamics (i.e., the relation between the forces acting on an object and the resulting motion).						✓			
Knows that the motion of an object is determined by the overall effect of all of the forces acting on the object. **SC.C.2.2.4**	84	Understand and apply statics (i.e., the relation between forces acting on an object at rest) and dynamics (i.e., the relation between the forces acting on an object and the resulting motion).						✓			
4. Processes that Shape the Earth											
Standard 1: The student recognizes that processes in the lithosphere, atmosphere, hydrosphere, and biosphere interact to shape the Earth. **SC.D.1.2**											

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	Knows that larger rocks can be broken down into smaller rocks, which in turn can be broken down to combine with organic material to form soil. **SC.D.1.2.1**	72	Know the processes involved in the rock cycle (i.e., old rocks at the surface gradually weather and form sediments that are buried, compacted, heated, and often recrystallized into new rock which is eventually brought to the surface by the forces that drive plate motions).						✓			
	Knows that 75 percent of the surface of the Earth is covered by water. **SC.D.1.2.2**	17	Identify and comprehend the concepts involving the earth's water, i.e., ground water (infiltration, permeability, porosity, and capillarity), surface water (runoff), and pollution (sources, types, concentration, and long range effects).				✓					
	Knows that the water cycle is influenced by temperature, pressure, and the topography of the land. **SC.D.1.2.3**	7	Know the processes involved in the water cycle, (i.e., evaporation, condensation, precipitation, surface runoff, percolation) and their effects on climate patterns.				✓					
	Knows that the surface of the Earth is in a continuous state of change as waves, weather, and shifts of the land constantly change and produce many new features. **SC.D.1.2.4**	64	Examine evidence of crustal movement by identifying minor changes in the earth's crust (e.g., deformed rock strata, displaced fossils, and displaced strata), and major changes in the earth's crust (e.g., zones of frequent crustal activity, geosynclines, vertical movements, ocean floor spreading, and continental drift).					✓				
	Knows that some changes in the Earth's surface are due to slow processes and some changes are due to rapid processes. **SC.D.1.2.5**	32	Understand earthquakes by examining the different types of seismic waves, wave velocities, how waves are transmitted through solids and/or fluids, and how to locate an epicenter by analyzing the travel times of seismic waves.				✓					

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		64	Examine evidence of crustal movement by identifying minor changes in the earth's crust (e.g., deformed rock strata, displaced fossils, and displaced strata), and major changes in the earth's crust (e.g., zones of frequent crustal activity, geosynclines, vertical movements, ocean floor spreading, and continental drift).									
Standard 2: The student understands the need for protection of the natural systems on Earth. **SC.D.2.2**												
	Knows that reusing, recycling, and reducing the use of natural resources improve and protect the quality of life. **SC.D.2.2.1**	10	Understand the human impact on the environment through pollution (air, water, and soil), and ways to improve it through education, research, laws, and conservation.				✓					
5. Earth and Space												
Standard 1: The student understands the interaction and organization in the Solar System and the universe and how this affects life on Earth. **SC.E.1.2**												
	Knows that the tilt of the Earth on its own axis as it rotates and revolves around the Sun causes changes in season, length of day, and energy available. **SC.E.1.2.1**	1	Understand how and why the rotation and revolution of the earth around the sun affects the length of night and day, the changing of seasons, and weather patterns.				✓					

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		27	Understand that because of the tilt of the earth's axis, sunlight and heat are more intense on one part of the earth during its one-year revolution around the sun; the change in the amount of heat produces the seasons.									
	Knows that the combination of the Earth's movement and the Moon's own orbit around the Earth results in the appearance of cyclical phases of the Moon. **SC.E.1.2.2**	50	Identify and comprehend celestial observations (i.e., motions of objects in the sky) such as star paths, planetary motions, satellite motions, and sun motions.					✓				
	Knows that the Sun is a star and that its energy can be captured or concentrated to generate heat and light for work on Earth. **SC.E.1.2.3**	25	Know the properties of electromagnetic energy (energy radiated from all objects not at a temperature of absolute zero), solar energy (energy from the sun), and earth energy (energy released from the decay of radioactive matter). Understand that weather and climate involve energy transfer in and out of the atmosphere by means of conduction, convection, and radiation.				✓					
	Knows that the planets differ in size, characteristics, and composition and that they orbit the Sun in our Solar System. **SC.E.1.2.4**	50	Identify and comprehend celestial observations (i.e., motions of objects in the sky) such as star paths, planetary motions, satellite motions, and sun motions.					✓				
	Understands the arrangement of planets in our Solar System. **SC.E.1.2.5**	50	Identify and comprehend celestial observations (i.e., motions of objects in the sky) such as star paths, planetary motions, satellite motions, and sun motions.					✓				
Standard 2: The student recognizes the vastness of the universe and the Earth's place in it. **SC.E.2.2**												

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	Knows that, in addition to the Sun, there are many other stars that are far away. **SC.E.2.2.1**	50	Identify and comprehend celestial observations (i.e., motions of objects in the sky) such as star paths, planetary motions, satellite motions, and sun motions.					✓				
6. Processes of Life												
Standard 1: The student describes patterns of structure and function in living things. **SC.F.1.2**												
	Knows that the human body is made of systems with structures and functions that are related. **SC.F.1.2.1**	2	Identify and understand the structure and parts that comprise the systems (i.e., cardiovascular, nervous, lymphatic, muscular, etc.) and regions (i.e., head and neck, upper limb, thorax, abdominopelvic, back, and lower limb) of the human body.				✓					
	Knows how all animals depend on plants. **SC.F.1.2.2**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
	Knows that living things are different but share similar structures. **SC.F.1.2.3**	30	Know the characteristics, roles, and divisions of complex organisms (i.e., plants and animals).				✓					

Florida Science Curriculum	Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
3-5 Grade			**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
Knows that similar cells form different kinds of structures. **SC.F.1.2.4**	15	Identify and describe the levels of organization in living systems (i.e., tissues, organs, organ systems, and organisms).				✓					
Standard 2: The student understands the process and importance of genetic diversity. **SC.F.2.2**											
Kows that many characteristics of an organism are inherited from the parents of the organism, but that other characteristics are learned from an individual's interactions with the environment. **SC.F.2.2.1**	12	Examine the foundations of genetics involving heredity and inherited traits passed on through generations, understand the gene-chromosome concept, and apply classical genetic studies (Mendelian genetics).				✓					
7. How Living Things Interact with Their Environment											
Standard 1: The student understands the competitive, interdependent, cyclic nature of living things in the environment. **SC.G.1.2**											

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
3-5 Grade				H	M	L	H	M	L	H	M	L
	Knows ways that plants, animals, and protists interact. **SC.G.1.2.1**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
	Knows that living things compete in a climatic region with other living things and that structural adaptations make them fit for an environment. **SC.G.1.2.2**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
	Knows that green plants use carbon dioxide, water, and sunlight energy to turn minerals and nutrients into food for growth, maintenance, and reproduction. **SC.G.1.2.3**	11	Know the structure and functions of roots, stems, leaves, flowers and other parts of plants.				✓					
	Knows that some organisms decompose dead plants and animals into simple minerals and nutrients for use by living things and thereby recycle matter. **SC.G.1.2.4**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
	Knows that animals eat plants or other animals to acquire the energy they need for survival. **SC.G.1.2.5**	40	Know the survival requirements of animals and plants and the history and implications of population growth.					✓				
	Knows that organisms are growing, dying, and decaying and that new organisms are being produced from the materials of dead organisms. **SC.G.1.2.6**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
3-5 Grade				H	M	L	H	M	L	H	M	L
	Knows that variations in light, water, temperature, and soil content are largely responsible for the existence of different kinds of organisms and population densities in an ecosystem. **SC.G.1.2.7**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
Standard 2: The student understands the consequences of using limited natural resources. **SC.G.2.2**												
	Knows that all living things must compete for Earth's limited resources; organisms best adapted to compete for the available resources will be successful and pass their adaptations (traits) to their offspring. **SC.G.2.2.1**	44	Examine evolutions it relates to theories concerning the origin of life and natural selection.					✓				
	Knows that the size of a population is dependent upon the available resources within its community. **SC.G.2.2.2**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
	Understands that changes in the habitat of an organism may be beneficial or harmful. **SC.G.2.2.3**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
8. The Nature of Science												

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
3-5 Grade				H	M	L	H	M	L	H	M	L
Standard 1: The student uses the scientific processes and habits of mind to solve problems. **SC.H.1.2**												
	Knows that it is important to keep accurate records and descriptions to provide information and clues on causes of discrepancies in repeated experiments. **SC.H.1.2.1**	19	Exhibit good data management skills by collecting, organizing, and graphing data.				✓					
	Knows that a successful method to explore the natural world is to observe and record, and then analyze and communicate the results. **SC.H.1.2.2**	5	Make observations of the local environment using senses and instruments. Inferences and interpretations are arrived at based on observations. Classify observable properties and organize observations in a meaningful and logical way.				✓					
	Knows that to work collaboratively, all team members should be free to reach, explain, and justify their own individual conclusions. **SC.H.1.2.3**	XS-1	Knows and apply the principles of scientific inquiry.						✓			
	Knows that to compare and contrast observations and results is an essential skill in science. **SC.H.1.2.4**	XS-1	Knows and apply the principles of scientific inquiry.				✓					
	Knows that a model of something is different from the real thing, but can be used to learn something about the real thing. **SC.H.1.2.5**	XS-2	Plan and apply real or hypothetical models and constructions to facilitate investigations and learning and the solution to practical problems.						✓			

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
3-5 Grade				**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
Standard 2: The student understands that most natural events occur in comprehensible, consistent patterns. **SC.H.2.2**												
	Knows that natural events are often predictable and logical. **SC.H.2.2.1**	XS-1	Knows and apply the principles of scientific inquiry.					✓				
Standard 3: The student understands that science, technology, and society are interwoven and interdependent. **SC.H.3.2**												
	Understands that people, alone or in groups, invent new tools to solve problems and do work that affects aspects of life outside of science. **SC.H.3.2.1**	XS-3	Understand the impact upon society and the environment of scientific and technological discoveries and the contributions of scientists. Understand how society may accept or reject scientific discoveries based upon need or refusal to change.						✓			
	Knows that data are collected and interpreted in order to explain an event or concept. **SC.H.3.2.2**	XS-1	Knows and apply the principles of scientific inquiry.				✓					
	Knows that before a group of people build something or try something new, they should determine how it may affect other people. **SC.H.3.2.3**	XS-2	Plan and apply real or hypothetical models and constructions to facilitate investigations and learning and the solution to practical problems.					✓				

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
3-5 Grade				H	M	L	H	M	L	H	M	L
	Knows that through the use of science processes and knowledge, people can solve problems, make decisions, and form new ideas. **SC.H.3.2.4**	XS-3	Understand the impact upon society and the environment of scientific and technological discoveries and the contributions of scientists. Understand how society may accept or reject scientific discoveries based upon need or refusal to change.				✓					

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
6-8 Grades				**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
1. The Nature of Matter												
Standard 1: The student understands that all matter has observable, measurable properties. **SC.A.1.3**												
	Identifies various ways in which substances differ (e.g., mass, volume, shape, density, texture, and reaction to temperature and light). **SC.A.1.3.1**	23	Measure properties of the environment using dimensional quantities such as time, length, mass, pressure, volume, acceleration, etc. Compare quantities and consider the error involved with measuring environmental properties.				✓					
	Understands the difference between weight and mass. **SC.A.1.3.2**	23	Measure properties of the environment using dimensional quantities such as time, length, mass, pressure, volume, acceleration, etc. Compare quantities and consider the error involved with measuring environmental properties.				✓					
	Knows that temperature measures the average energy of motion of the particles that make up the substance. **SC.A.1.3.3**	94	Understand the concept of internal energy (the total potential and kinetic energies associated with the motion and relative position of the molecules of an object) and heat (the energy transfer from a warm body to a cold body).						✓			
	Knows that atoms in solids are close together and do not move around easily; in liquids, atoms tend to move farther apart; in gas, atoms are quite far apart and move around freely. **SC.A.1.3.4**	57	Understand physical/chemical change (e.g., change of phase between gases, liquids, and solids).					✓				

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
6-8 Grades				H	M	L	H	M	L	H	M	L
	Knows the difference between a physical change in a substance (i.e., altering the shape, form, volume, or density) and a chemical change (i.e., producing new substances with different characteristics). **SC.A.1.3.5**	57	Understand physical/chemical change (e.g., change of phase between gases, liquids, and solids).					✓				
	Knows that equal volumes of different substances may have different masses. **SC.A.1.3.6**	23	Measure properties of the environment using dimensional quantities such as time, length, mass, pressure, volume, acceleration, etc. Compare quantities and consider the error involved with measuring environmental properties.				✓					
Standard 2: The student understands the basic principles of atomic theory. **SC.A.2.3**												
	Describes and compares the properties of particles and waves. **SC.A.2.3.1**	93	Know the concepts and theories of waves (i.e., a vibratory disturbance that propagates through a material or space, and how energy transfer, pulses and periodic waves, and wave motion is incorporated).						✓			
	Knows the general properties of the atom (a massive nucleus of neutral neutrons and positive protons surrounded by a cloud of negative electrons) and accepts that single atoms are not visible. **SC.A.2.3.2**	107	Know the three most prominent models of the atom: The Rutherford, Bohr, and Cloud models. Examine how each theorizes the way in which electrons orbit about the nucleus.						✓			

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
6-8 Grades				H	M	L	H	M	L	H	M	L
	Knows that radiation, light, and heat are forms of energy used to cook food, treat diseases, and provide energy. **SC.A.2.3.3**	55	Identify types of energy (e.g., heat, light, and electricity) and know how to apply measurements of energy (e.g., the calorie, and thermometry).					✓				
2. Energy												
Standard 1: The student recognizes that energy may be changed in form with varying efficiency **SC.B.1.3**												
	Identifies forms of energy and explains that they can be measured and compared. **SC.B.1.3.1**	55	Identify types of energy (e.g., heat, light, and electricity) and know how to apply measurements of energy (e.g., the calorie, and thermometry).					✓				
	Knows that energy cannot be created or destroyed, but only changed from one form to another. **SC.B.1.3.2**	60	Observe and interpret energy and change relationships with the understanding that change occurs simultaneously at the interface between two parts of the environment where there is an energy exchange.					✓				
	Knows the various forms in which energy comes to Earth from the Sun (e.g., visible light, infrared, and microwave). **SC.B.1.3.3**	55	Identify types of energy (e.g., heat, light, and electricity) and know how to apply measurements of energy (e.g., the calorie, and thermometry).					✓				
	Knows that energy conversions are never 100% efficient (i.e., some energy is transformed to heat and is unavailable for further useful work). **SC.B.1.3.4**	60	Observe and interpret energy and change relationships with the understanding that change occurs simultaneously at the interface between two parts of the environment where there is an energy exchange.					✓				

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
6-8 Grades				H	M	L	H	M	L	H	M	L
	Knows the processes by which thermal energy tends to flow from a system of higher temperature to a system of lower temperature. **SC.B.1.3.5**								✓			
	Knows the properties of waves (e.g., frequency, wavelength, and amplitude); that each wave consists of a number of crests and troughs; and the effects of different media on waves. **SC.B.1.3.6**	109	Know the characteristics of periodic waves (i.e., frequency, period, amplitude, phase, wavelength, speed, the Doppler Effect, and wave fronts).						✓			
Standard 2: The student understands the interaction of matter and energy. **SC.B.2.3**												
	Knows that most events in the universe (e.g., weather changes, moving cars, and the transfer of a nervous impulse in the human body) involve some form of energy transfer and that these changes almost always increase the total disorder of the system and its surroundings, reducing the amount of useful energy. **SC.B.2.3.1**	60	Observe and interpret energy and change relationships with the understanding that change occurs simultaneously at the interface between two parts of the environment where there is an energy exchange.					✓				
	Knows that most of the energy used today is derived from burning stored energy collected by organisms millions of years ago (i.e., nonrenewable fossil fuels). **SC.B.2.3.2**	6	Understand how humans, through technology, cause environmental change by disrupting the equilibrium or balance of nature by introducing pollutants into the environment.				✓					

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
6-8 Grades				**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
3. Force and Motion												
Standard 1: The student understands that types of motion may be described, measured, and predicted. **SC.C.1.3**												
	Knows that the motion of an object can be described by its position, direction of motion, and speed. **SC.C.1.3.1**	77	Understand and apply kinematics (i.e., the mathematical methods of describing motion without regard to the forces that produce it, such as velocity, acceleration and deceleration, and displacement).						✓			
	Knows that vibrations in materials set up wave disturbances that spread away from the source (e.g., sound and earthquake waves). **SC.C.1.3.2**	93	Know the concepts and theories of waves (i.e., a vibratory disturbance that propagates through a material or space, and how energy transfer, pulses and periodic waves, and wave motion is incorporated).						✓			
Standard 2: The student understands that the types of force that act on an object and the effect of that force can be described, measured, and predicted. **SC.C.2.3**												
	Knows that many forces (e.g., gravitational, electrical, and magnetic) act at a distance (i.e., without contact). **SC.C.2.3.1**	84	Understand and apply statics (i.e., the relation between forces acting on an object at rest) and dynamics (i.e., the relation between the forces acting on an object and the resulting motion).						✓			

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
6-8 Grades				H	M	L	H	M	L	H	M	L
	Knows common contact forces. **SC.C.2.3.2**	84	Understand and apply statics (i.e., the relation between forces acting on an object at rest) and dynamics (i.e., the relation between the forces acting on an object and the resulting motion).						✓			
	Knows that if more than one force acts on an object, then the forces can reinforce or cancel each other, depending on their direction and magnitude. **SC.C.2.3.3**	84	Understand and apply statics (i.e., the relation between forces acting on an object at rest) and dynamics (i.e., the relation between the forces acting on an object and the resulting motion).						✓			
	Knows that simple machines can be used to change the direction or size of a force. **SC.C.2.3.4**	49	Understand the concepts and uses of machines (e.g., levers and pulleys).					✓				
	Understands that an object in motion will continue at a constant speed and in a straight line until acted upon by a force and that an object at rest will remain at rest until acted upon by a force. **SC.C.2.3.5**	77	Understand and apply kinematics (i.e., the mathematical methods of describing motion without regard to the forces that produce it, such as velocity, acceleration and deceleration, and displacement).						✓			
	Explains and shows the ways in which a net force (that is, the sum of all acting forces) can act on an object (e.g., speeding up an object traveling in the same direction as the net force, slowing down an object traveling in the direction opposite of the net force). **SC.C.2.3.6**	77	Understand and apply kinematics (i.e., the mathematical methods of describing motion without regard to the forces that produce it, such as velocity, acceleration and deceleration, and displacement).						✓			
	Knows that gravity is a universal force that every mass exerts on every other mass. **SC.C.2.3.7**	84	Understand and apply statics (i.e., the relation between forces acting on an object at rest) and dynamics (i.e., the relation between the forces acting on an object and the resulting motion).						✓			

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
6-8 Grades				**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
4. Processes that Shape the Earth												
Standard 1: The student recognizes that processes in the lithosphere, atmosphere, hydrosphere, and biosphere interact to shape the Earth. **SC.D.1.3**												
	Knows that mechanical and chemical activities shape and reshape the Earth's land surface by eroding rock and soil in some areas and depositing them in other areas, sometimes in seasonal layers. **SC.D.1.3.1**	98	Know the characteristics of the erosional - depositional system by differentiating between an erosional process and a depositional process, locating the interface between erosion and deposition, and obtaining dynamic equilibrium between the two processes.						✓			
	Knows that over the whole Earth, organisms are growing, dying, and decaying as new organisms are produced by the old ones. **SC.D.1.3.2**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
	Knows how conditions that exist in one system influence the conditions that exist in other systems. **SC.D.1.3.3**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
6-8 Grades				**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
	Knows the ways in which plants and animals reshape the landscape (e.g., bacteria, fungi, worms, rodents, and other organisms add organic matter to the soil, increasing soil fertility, encouraging plant growth, and strengthening resistance to erosion). **SC.D.1.3.4**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
	Understands concepts of time and size relating to the interaction of Earth's processes (e.g., lightning striking in a split second as opposed to the shifting of the Earth's plates altering the landscape, distance between atoms measured in Angstrom units as opposed to distance between stars measured in light-years). **SC.D.1.3.5**	23	Measure properties of the environment using dimensional quantities such as time, length, mass, pressure, volume, acceleration, etc. Compare quantities and consider the error involved with measuring environmental properties.				✓					
Standard 2: The student understands the need for protection of the natural systems on Earth. **SC.D.2.3**												
	Understands that quality of life is relevant to personal experience. **SC.D.2.3.1**									✓		
	Knows the positive and negative consequences of human action on the Earth's systems. **SC.D.2.3.2**	10	Understand the human impact on the environment through pollution (air, water, and soil), and ways to improve it through education, research, laws, and conservation.				✓					
5. Earth and Space												

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
6-8 Grades				H	M	L	H	M	L	H	M	L
Standard 1: The student understands the interaction and organization in the Solar System and the universe and how this affects life on Earth. **SC.E.1.3**												
	Understands the vast size of our Solar System and the relationship of the planets and their satellites. **SC.E.1.3.1**	50	Apply the geocentric and heliocentric solar system models to explain celestial and/or terrestrial objects or events. Learn the geometry of the earth's orbit around the sun and the gravitational force and energy effects on the earth relative to its position in the orbit.					✓				
	Knows that available data from various satellite probes show the similarities and differences among planets and their moons in the Solar System. **SC.E.1.3.2**	50	Apply the geocentric and heliocentric solar system models to explain celestial and/or terrestrial objects or events. Learn the geometry of the earth's orbit around the sun and the gravitational force and energy effects on the earth relative to its position in the orbit.					✓				
	Understands that our Sun is one of many stars in our galaxy. **SC.E.1.3.3**	50	Apply the geocentric and heliocentric solar system models to explain celestial and/or terrestrial objects or events. Learn the geometry of the earth's orbit around the sun and the gravitational force and energy effects on the earth relative to its position in the orbit.					✓				
	Knows that stars appear to be made of similar chemical elements, although they differ in age, size, temperature, and distance. **SC.E.1.3.4**	50	Apply the geocentric and heliocentric solar system models to explain celestial and/or terrestrial objects or events. Learn the geometry of the earth's orbit around the sun and the gravitational force and energy effects on the earth relative to its position in the orbit.					✓				

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
6-8 Grades				**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
Standard 2: The student recognizes the vastness of the universe and the Earth's place in it. **SC.E.2.3**												
	Knows that thousands of other galaxies appear to have the same elements, forces, and forms of energy found in our Solar System. **SC.E.2.3.1**	50	Apply the geocentric and heliocentric solar system models to explain celestial and/or terrestrial objects or events. Learn the geometry of the earth's orbit around the sun and the gravitational force and energy effects on the earth relative to its position in the orbit.					✓				
6. Processes of Life												
Standard 1: The student describes patterns of structure and function in living things. **SC.F.1.3**												
	Understands that living things are composed of major systems that function in reproduction, growth, maintenance, and regulation. **SC.F.1.3.1**	15	Identify and describe the levels of organization in living systems (i.e., tissues, organs, organ systems, and organisms).				✓					
	Knows that the structural basis of most organisms is the cell and most organisms are single cells, while some, including humans, are multicellular. **SC.F.1.3.2**	9	Identify the cell as a common unit between living things; understand cell structure and the functions they perform.				✓					

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
6-8 Grades				H	M	L	H	M	L	H	M	L
	Knows that in multicellular organisms cells grow and divide to make more cells in order to form and repair various organs and tissues. **SC.F.1.3.3**	9	Identify the cell as a common unit between living things; understand cell structure and the functions they perform.				✓					
	Knows that the levels of structural organization for function in living things include cells, tissues, organs, systems, and organisms. **SC.F.1.3.4**	15	Identify and describe the levels of organization in living systems (i.e., tissues, organs, organ systems, and organisms).				✓					
	Explains how the life functions of organisms are related to what occurs within the cell. **SC.F.1.3.5**	9	Identify the cell as a common unit between living things; understand cell structure and the functions they perform.				✓					
	Knows that the cells with similar functions have similar structures, whereas those with different structures have different functions. **SC.F.1.3.6**	9	Identify the cell as a common unit between living things; understand cell structure and the functions they perform.				✓					
	Knows that behavior is a response to the environment and influences growth, development, maintenance, and reproduction. **SC.F.1.3.7**								✓			
Standard 2: The student understands the process and importance of genetic diversity. **SC.F.2.3**												

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
6-8 Grades				**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
	Knows the patterns and advantages of sexual and asexual reproduction in plants and animals. **SC.F.2.3.1**	14	Understand that sexual reproduction involves the union of special sex cells that are usually produced by two separate parents with half of the genes coming from each parent allowing for a high degree of genetic diversity. Most plants and animals use sexual reproduction.				✓					
		63	Understand that asexual reproduction involves the production of offspring from a single parent organism with all the genes coming from that parent. Asexual reproduction occurs with unicellular organisms and some plants.									
	Knows that the variation in each species is due to the exchange and interaction of genetic information as it is passed from parent to offspring. **SC.F.2.3.2**	12	Examine the foundations of genetics involving heredity and inherited traits passed on through generations, understand the gene-chromosome concept, and apply classical genetic studies (Mendelian genetics).				✓					
	Knows that generally organisms in a population live long enough to reproduce because they have survival characteristics. **SC.F.2.3.3**	44	Examine evolution as it relates to theories concerning the origin of life and natural selection.					✓				
	Knows that the fossil record provides evidence that changes in the kinds of plants and animals in the environment have been occurring over time. **SC.F.2.3.4**	67						✓				
7. How Living Things Interact with Their Environment												

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
6-8 Grades				H	M	L	H	M	L	H	M	L
Standard 1: The student understands the competitive, interdependent, cyclic nature of living things in the environment. **SC.G.1.3**												
	Knows that viruses depend on other living things. **SC.G.1.3.1**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
	Knows that biological adaptations include changes in structures, behaviors, or physiology that enhance reproductive success in a particular environment. **SC.G.1.3.2**	9	Identify the cell as a common unit between living things; understand cell structure and the functions they perform.				✓					
	Understands that the classification of living things is based on a given set of criteria and is a tool for understanding biodiversity and interrelationships. **SC.G.1.3.3**	59	Know the classification system into which organisms are separated and grouped based on common characteristics. The classification groups include (from largest to smallest): kingdom, phylum, class, genus, and species.					✓				
	Knows that the interactions of organisms with each other and with the non-living parts of their environments result in the flow of energy and the cycling of matter throughout the system. **SC.G.1.3.4**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
	Knows that life is maintained by a continuous input of energy from the sun and by the recycling of the atoms that make up the molecules of living organisms. **SC.G.1.3.5**	42	Understand the chemical reactions involved in cell functions (e.g., food molecules taken into cells are broken down to provide the chemical constituents needed to synthesize other molecules).					✓				

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
6-8 Grades				H	M	L	H	M	L	H	M	L
Standard 2: The student understands the consequences of using limited natural resources. **SC.G.2.3**												
	Knows that some resources are renewable and others are nonrenewable. **SC.G.2.3.1**	60	Observe and interpret energy and change relationships with the understanding that change occurs simultaneously at the interface between two parts of the environment where there is an energy exchange.					✓				
	Knows that all biotic and abiotic factors are interrelated and that if one factor is changed or removed, it impacts the availability of other resources within the system. **SC.G.2.3.2**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
	Knows that a brief change in the limited resources of an ecosystem may alter the size of a population or the average size of individual organisms and that long-term change may result in the elimination of animal and plant populations inhabiting the Earth. **SC.G.2.3.3**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
	Understands that humans are a part of an ecosystem and their activities may deliberately or inadvertently alter the equilibrium in ecosystems. **SC.G.2.3.4**	10	Understand the human impact on the environment through pollution (air, water, and soil), and ways to improve it through education, research, laws, and conservation.				✓					

Florida Science Curriculum	Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
6-8 Grades			**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
8. The Nature of Science											
Standard 1: The student uses the scientific processes and habits of mind to solve problems. **SC.H.1.3**											
Knows that scientific knowledge is subject to modification as new information challenges prevailing theories and as a new theory leads to looking at old observations in a new way. **SC.H.1.3.1**	XS-3	Understand the impact upon society and the environment of scientific and technological discoveries and the contributions of scientists. Understand how society may accept or reject scientific discoveries based upon need or refusal to change.					✓				
Knows that the study of the events that led scientists to discoveries can provide information about the inquiry process and its effects. **SC.H.1.3.2**	XS-3	Understand the impact upon society and the environment of scientific and technological discoveries and the contributions of scientists. Understand how society may accept or reject scientific discoveries based upon need or refusal to change.						✓			
Knows that science disciplines differ from one another in topic, techniques, and outcomes but that they share a common purpose, philosophy, and enterprise. **SC.H.1.3.3**	XS-1	Knows and apply the principles of scientific inquiry.					✓				
Knows that accurate record keeping, openness, and replication are essential to maintaining an investigator's credibility with other scientists and society. **SC.H.1.3.4**	XS-1	Knows and apply the principles of scientific inquiry.					✓				

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
6-8 Grades				H	M	L	H	M	L	H	M	L
	Knows that a change in one or more variables may alter the outcome of an investigation. **SC.H.1.3.5**	XS-1	Knows and apply the principles of scientific inquiry.				✓					
	Recognizes the scientific contributions that are made by individuals of diverse backgrounds, interests, talents, and motivations. **SC.H.1.3.6**	XS-3	Understand the impact upon society and the environment of scientific and technological discoveries and the contributions of scientists. Understand how society may accept or reject scientific discoveries based upon need or refusal to change.					✓				
	Knows that when similar investigations give different results, the scientific challenge is to verify whether the differences are significant by further study. **SC.H.1.3.7**	XS-1	Knows and apply the principles of scientific inquiry.					✓				
Standard 2: The student understands that most natural events occur in comprehensible, consistent patterns. **SC.H.2.3**												
	Recognizes that patterns exist within and across systems. **SC.H.2.3.1**	XS-1	Knows and apply the principles of scientific inquiry.				✓					
	Knows that science ethics demand that scientists must not knowingly subject coworkers, students, the neighborhood, or the community to health or property risks. **SC.H.3.3.1**	XS-1	Knows and apply the principles of scientific inquiry.				✓					
	Knows that special care must be taken in using animals in scientific research. **SC.H.3.3.2**	XS-1	Knows and apply the principles of scientific inquiry.				✓					

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
6-8 Grades				H	M	L	H	M	L	H	M	L
	Knows that in research involving human subjects, the ethics of science require that potential subjects be fully informed about the risks and benefits associated with the research and of their right to refuse to participate. **SC.H.3.3.3**	XS-1	Knows and apply the principles of scientific inquiry.				✓					
	Knows that technological design should require taking into account constraints such as natural laws, the properties of the materials used, and economic, political, social, ethical, and aesthetic values. **SC.H.3.3.4**	XS-2	Plan and apply real or hypothetical models and constructions to facilitate investigations and learning and the solution to practical problems.					✓				
	Understands that contributions to the advancement of science, mathematics, and technology have been made by different kinds of people, in different cultures, at different times and are an intrinsic part of the development of human culture. **SC.H.3.3.5**	XS-3	Understand the impact upon society and the environment of scientific and technological discoveries and the contributions of scientists. Understand how society may accept or reject scientific discoveries based upon need or refusal to change.					✓				
	Knows that no matter who does science and mathematics or invents things, or when or where they do it, the knowledge and technology that result can eventually become available to everyone. **SC.H.3.3.6**	XS-3	Understand the impact upon society and the environment of scientific and technological discoveries and the contributions of scientists. Understand how society may accept or reject scientific discoveries based upon need or refusal to change.						✓			
	Knows that computers speed up and extend people's ability to collect, sort, and analyze data; prepare research reports; and share data and ideas with others. **SC.H.3.3.7**								✓			

Florida Science Curriculum	Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
9-12 Grades			**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
1. The Nature of Matter											
Standard 1: The student understands that all matter has observable, measurable properties. **SC.A.1.4**											
Knows that the electron configuration in atoms determines how a substance reacts and how much energy is involved in its reactions. **SC.A.1.4.1**	78	Understand the historical development of the periodic table and apply the principles inherent in its development, including the properties and atomic structure of elements and resultant chemical compound, the forces acting between atoms and molecules, and changes in substances as a result of chemical combination.						✓			
Knows that the vast diversity of the properties of materials is primarily due to variations in the forces that hold molecules together. **SC.A.1.4.2**	78	Understand the historical development of the periodic table and apply the principles inherent in its development, including the properties and atomic structure of elements and resultant chemical compound, the forces acting between atoms and molecules, and changes in substances as a result of chemical combination.						✓			
Knows that a change from one phase of matter to another involves a gain or loss of energy. **SC.A.1.4.3**	57	Understand physical/chemical change (e.g., change of phase between gases, liquids, and solids).					✓				

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
9-12 Grades				H	M	L	H	M	L	H	M	L
	Experiments and determines that the rates of reaction among atoms and molecules depend on the concentration, pressure, and temperature of the reactants and the presence or absence of catalysts. **SC.A.1.4.4**								✓			
	Knows that connections (bonds) form between substances when outer-shell electrons are either transferred or shared between their atoms, changing the properties of substances. **SC.A.1.4.5**	78	Understand the historical development of the periodic table and apply the principles inherent in its development, including the properties and atomic structure of elements and resultant chemical compound, the forces acting between atoms and molecules, and changes in substances as a result of chemical combination.						✓			
Standard 2: The student understands the basic principles of atomic theory. **SC.A.2.4**												
	Knows that the number and configuration of electrons will equal the number of protons in an electrically neutral atom and when an atom gains or loses electrons, the charge is unbalanced. **SC.A.2.4.1**	78	Understand the historical development of the periodic table and apply the principles inherent in its development, including the properties and atomic structure of elements and resultant chemical compound, the forces acting between atoms and molecules, and changes in substances as a result of chemical combination.						✓			

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
9-12 Grades				**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
	Knows the difference between an element, a molecule, and a compound. **SC.A.2.4.2**	78	Understand the historical development of the periodic table and apply the principles inherent in its development, including the properties and atomic structure of elements and resultant chemical compound, the forces acting between atoms and molecules, and changes in substances as a result of chemical combination.						✓			
	Knows that a number of elements have heavier, unstable nuclei that decay, spontaneously giving off smaller particles and waves that result in a small loss of mass and release a large amount of energy. **SC.A.2.4.3**	75	Understand nuclear energy involves a reaction where mass is converted to energy.						✓			
	Knows that nuclear energy is released when small, light atoms are fused into heavier ones **SC.A.2.4.4**	105	Understand that fusion is the process of combining two light nuclei to form a heavier one, wherein the energy is far greater than in a fission reaction.						✓			
	Knows that elements are arranged into groups and families based on similarities in electron structure and that their physical and chemical properties can be predicted. **SC.A.2.4.5**	78	Understand the historical development of the periodic table and apply the principles inherent in its development, including the properties and atomic structure of elements and resultant chemical compound, the forces acting between atoms and molecules, and changes in substances as a result of chemical combination.						✓			

Florida Science Curriculum	Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
9-12 Grades			**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
Understands that matter may act as a wave, a particle, or something else entirely different with its own characteristic behavior. **SC.A.2.4.6**	106	Know that quantum theory was developed to explain phenomena that could not be explained by the classical theory of light. Examine the quantum and photon.						✓			
2. Energy											
Standard 1: The student recognizes that energy may be changed in form with varying efficiency. **SC.B.1.4**											
Understands how knowledge of energy is fundamental to all the scientific disciplines (e.g., the energy required for biological processes in living organisms and the energy required for the building, erosion, and rebuilding of the Earth). **SC.B.1.4.1**	25	Know the properties of electromagnetic energy (energy radiated from all objects not at a temperature of absolute zero), solar energy (energy from the sun), and earth energy (energy released from the decay of radioactive matter). Understand that weather and climate involve energy transfer in and out of the atmosphere by means of conduction, convection, and radiation.				✓					
	55	Identify types of energy (e.g., heat, light, and electricity) and know how to apply measurements of energy (e.g., the calorie, and thermometry).									
Understands that there is conservation of mass and energy when matter is transformed. **SC.B.1.4.2**	57	Understand physical/chemical change (e.g., change of phase between gases, liquids, and solids).					✓				

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
9-12 Grades				H	M	L	H	M	L	H	M	L
	Knows that temperature is a measure of the average translational kinetic energy of motion of the molecules in an object. **SC.B.1.4.3**	94	Understand the concept of internal energy (the total potential and kinetic energies associated with the motion and relative position of the molecules of an object) and heat (the energy transfer from a warm body to a cold body).						✓			
	Knows that as electrical charges oscillate, they create time-varying electric and magnetic fields that propagate away from the source as an electromagnetic wave. **SC.B.1.4.4**	93	Know the concepts and theories of waves (i.e., a vibratory disturbance that propagates through a material or space, and how energy transfer, pulses and periodic waves, and wave motion is incorporated).						✓			
	Knows that each source of energy presents advantages and disadvantages to its use in society (e.g., political and economic implications may determine a society's selection of renewable or nonrenewable energy sources). **SC.B.1.4.5**	60	Observe and interpret energy and change relationships with the understanding that change occurs simultaneously at the interface between two parts of the environment where there is an energy exchange.					✓				
	Knows that the first law of thermodynamics relates the transfer of energy to the work done and the heat transferred. **SC.B.1.4.6**	60	Observe and interpret energy and change relationships with the understanding that change occurs simultaneously at the interface between two parts of the environment where there is an energy exchange.					✓				
	Knows that the total amount of usable energy always decreases, even though the total amount of energy is conserved in any transfer. **SC.B.1.4.7**	55	Identify types of energy (e.g., heat, light, and electricity) and know how to apply measurements of energy (e.g., the calorie, and thermometry).					✓				
Standard 2: The student understands the interaction of matter and energy. **SC.B.2.4**												

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
9-12 Grades				H	M	L	H	M	L	H	M	L
	Knows that the structure of the universe is the result of interactions involving fundamental particles (matter) and basic forces (energy) and that evidence suggests that the universe contains all of the matter and energy that ever existed. **SC.B.2.4.1**								✓			
3. Force and Motion												
Standard 1: The student understands that types of motion may be described, measured, and predicted. **SC.C.1.4**												
	Knows that all motion is relative to whatever frame of reference is chosen and that there is no absolute frame of reference from which to observe all motion. **SC.C.1.4.1**	77	Understand and apply kinematics (i.e., the mathematical methods of describing motion without regard to the forces that produce it, such as velocity, acceleration and deceleration, and displacement).						✓			
	Knows that any change in velocity is an acceleration. **SC.C.1.4.2**	84	Understand and apply statics (i.e., the relation between forces acting on an object at rest) and dynamics (i.e., the relation between the forces acting on an object and the resulting motion).						✓			
Standard 2: The student understands that the types of force that act on an object and the effect of that force can be described, measured, and predicted. **SC.C.2.4**												

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
9-12 Grades				H	M	L	H	M	L	H	M	L
	Knows that acceleration due to gravitational force is proportional to mass and inversely proportional to the square of the distance between the objects.. **SC.C.2.4.1**	84	Understand and apply statics (i.e., the relation between forces acting on an object at rest) and dynamics (i.e., the relation between the forces acting on an object and the resulting motion).						✓			
	Knows that electrical forces exist between any two charged objects. **SC.C.2.4.2**								✓			
	Describes how magnetic force and electrical force are two aspects of a single force. **SC.C.2.4.3**	74	Understand the concepts of magnetic forces and magnetic fields.						✓			
	Knows that the forces that hold the nucleus of an atom together are much stronger than electromagnetic force and that this is the reason for the great amount of energy released from the nuclear reactions in the sun and other stars. **SC.C.2.4.4**	XS-4						✓				
	Knows that most observable forces can be traced to electric forces acting between atoms or molecules. **SC.C.2.4.5**	XS-4							✓			
	Explains that all forces come in pairs commonly called action and reaction. **SC.C.2.4.6**	84	Understand and apply statics (i.e., the relation between forces acting on an object at rest) and dynamics (i.e., the relation between the forces acting on an object and the resulting motion).						✓			

Florida Science Curriculum	Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
9-12 Grade			**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
4. Processes that Shape the Earth											
Standard 1: The student recognizes that processes in the lithosphere, atmosphere, hydrosphere, and biosphere interact to shape the Earth. **SC.D.1.4**											
Knows how climatic patterns on Earth result from an interplay of many factors (Earth's topography, its rotation on its axis, solar radiation, the transfer of heat energy where the atmosphere interfaces with lands and oceans, and wind and ocean currents). **SC.D.1.4.1**	1	Understand how and why the rotation and revolution of the earth around the sun affects the length of night and day, the changing of seasons, and weather patterns.				✓					
	25	Know the properties of electromagnetic energy (energy radiated from all objects not at a temperature of absolute zero), solar energy (energy from the sun), and earth energy (energy released from the decay of radioactive matter). Understand that weather and climate involve energy transfer in and out of the atmosphere by means of conduction, convection, and radiation.									
	48	Predict weather as a probability of occurrence by examining the factors that produce change in atmospheric variables.									

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
9-12 Grade				H	M	L	H	M	L	H	M	L
	Knows that the solid crust of Earth consists of slow-moving, separate plates that float on a denser, molten layer of Earth and that these plates interact with each other, changing the Earth's surface in many ways (e.g., forming mountain ranges and rift valleys, causing earthquake and volcanic activity, and forming undersea mountains that can become ocean islands). **SC.D.1.4.2**	32	Understand earthquakes by examining the different types of seismic waves, wave velocities, how waves are transmitted through solids and/or fluids, and how to locate an epicenter by analyzing the travel times of seismic waves.					✓				
		64	Examine evidence of crustal movement by identifying minor changes in the earth's crust (e.g., deformed rock strata, displaced fossils, and displaced strata), and major changes in the earth's crust (e.g., zones of frequent crustal activity, geosynclines, vertical movements, ocean floor spreading, and continental drift).									
		71	Analyze the properties of the earth's crust and interior (i.e., solid and liquid zones, crustal thickness, crustal composition, density, temperature and pressure, and interior composition).									
	Knows that changes in Earth's climate, geological activity, and life forms may be traced and compared. **SC.D.1.4.3**	65	Sequence geologic events by analyzing the chronology of layers, igneous intrusions and extrusions, faults, joints and folds, and internal characteristics such as cracks, veins, and mineral cement.					✓				

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
9-12 Grade				**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
	Knows that Earth's systems and organisms are the result of a long, continuous change over time. **SC.D.1.4.4**	67	Examine the fossil record to understand ancient life forms and evolutionary development.						✓			
		102	Determine geologic history by examining the rock record.									
Standard 2: The student understands the need for protection of the natural systems on Earth. **SC.D.2.4**												
	Understands the interconnectedness of the systems on Earth and the quality of life. **SC.D.2.4.1**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
5. Earth and Space												
Standard 1: The student understands the interaction and organization in the Solar System and the universe and how this affects life on Earth. **SC.E.1.4**												
	Understands the relationships between events on Earth and the movements of the Earth, its Moon, the other planets, and the Sun. **SC.E.1.4.1**	1	Understand how and why the rotation and revolution of the earth around the sun affects the length of night and day, the changing of seasons, and weather patterns.				✓					

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
9-12 Grade				H	M	L	H	M	L	H	M	L
		50	Identify and comprehend celestial observations (i.e., motions of objects in the sky) such as star paths, planetary motions, satellite motions, and sun motions.									
	Knows how the characteristics of other planets and satellites are similar to and different from those of the Earth. **SC.E.1.4.2**	50	Identify and comprehend celestial observations (i.e., motions of objects in the sky) such as star paths, planetary motions, satellite motions, and sun motions.					✓				
	Knows the various reasons that Earth is the only planet in our Solar System that appears to be capable of supporting life as we know it. **SC.E.1.4.3**	40	Know the survival requirements of animals and plants and the history and implications of population growth.					✓				
Standard 2: The student recognizes the vastness of the universe and the Earth's place in it. **SC.E.2.4**												
	Knows that the stages in the development of three categories of stars are based on mass: stars that have the approximate mass of our Sun, stars that are two- to three-stellar masses and develop into neutron stars, and stars that are five- to six-stellar masses and develop into black holes. **SC.E.2.4.1**								✓			

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
9-12 Grade				H	M	L	H	M	L	H	M	L
	Identifies the arrangement of bodies found within and outside our galaxy. **SC.E.2.4.2**	50	Identify and comprehend celestial observations (i.e., motions of objects in the sky) such as star paths, planetary motions, satellite motions, and sun motions.					✓				
	Knows astronomical distance and time. **SC.E.2.4.3**	23	Measure properties of the environment using dimensional quantities such as time, length, mass, pressure, volume, acceleration, etc. Compare quantities and consider the error involved with measuring environmental properties.				✓					
	Understands stellar equilibrium. **SC.E.2.4.4**	50	Identify and comprehend celestial observations (i.e., motions of objects in the sky) such as star paths, planetary motions, satellite motions, and sun motions.					✓				
	Knows various scientific theories on how the universe was formed. **SC.E.2.4.5**								✓			
	Knows the various ways in which scientists collect and generate data about our universe (e.g., X-ray telescopes, computer simulations of gravitational systems, nuclear reactions, space probes, and supercollider simulations). **SC.E.2.4.6**								✓			
	Knows that mathematical models and computer simulations are used in studying evidence from many sources to form a scientific account of the universe. **SC.E.2.4.7**	XS-2	Plan and apply real or hypothetical models and constructions to facilitate investigations and learning and the solution to practical problems.					✓				
6. Processes of Life												

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
9-12 Grade				H	M	L	H	M	L	H	M	L
Standard 1: The student describes patterns of structure and function in living things. **SC.F.1.4**												
	Knows that the body processes involve specific biochemical reactions governed by biochemical principles. **SC.F.1.4.1**	42	Understand the chemical reactions involved in cell functions (e.g., food molecules taken into cells are broken down to provide the chemical constituents needed to synthesize other molecules).					✓				
	Knows that body structures are uniquely designed and adapted for their function. **SC.F.1.4.2**	2	Identify and understand the structure and parts that comprise the systems (i.e., cardiovascular, nervous, lymphatic, muscular, etc.) and regions (i.e., head and neck, upper limb, thorax, abdominopelvic, back, and lower limb) of the human body.				✓					
	Knows that membranes are sites for chemical synthesis and essential energy conversions. **SC.F.1.4.3**	42	Understand the chemical reactions involved in cell functions (e.g., food molecules taken into cells are broken down to provide the chemical constituents needed to synthesize other molecules).					✓				
	Understands that biological systems obey the same laws of conservation as physical systems. **SC.F.1.4.4**	42	Understand the chemical reactions involved in cell functions (e.g., food molecules taken into cells are broken down to provide the chemical constituents needed to synthesize other molecules).					✓				
	Knows that complex interactions among the different kinds of molecules in the cell cause distinct cycles of activity governed by proteins. **SC.F.1.4.5**	42	Understand the chemical reactions involved in cell functions (e.g., food molecules taken into cells are broken down to provide the chemical constituents needed to synthesize other molecules).					✓				

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
9-12 Grade				H	M	L	H	M	L	H	M	L
	Knows that separate parts of the body communicate with each other using electrical and/or chemical signals. **SC.F.1.4.6**	45	Understand nerve regulation - the nervous system and related disorders such as cerebral palsy, meningitis, and polio; and chemical regulation - the endocrine system , hormones and related disorders such as goiter and diabetes.					✓				
	Knows that organisms respond to internal and external stimuli. **SC.F.1.4.7**	45	Understand nerve regulation - the nervous system and related disorders such as cerebral palsy, meningitis, and polio; and chemical regulation - the endocrine system , hormones and related disorders such as goiter and diabetes.					✓				
	Knows that cell behavior can be affected by molecules from other parts of the organism or even from other organisms. **SC.F.1.4.8**	42	Understand the chemical reactions involved in cell functions (e.g., food molecules taken into cells are broken down to provide the chemical constituents needed to synthesize other molecules).					✓				
Standard 2: The student understands the process and importance of genetic diversity. **SC.F.2.4**												
	Understands the mechanisms of a sexual and sexual reproduction and knows the different genetic advantages and disadvantages of asexual and sexual reproduction. **SC.F.2.4.1**	14	Understand that sexual reproduction involves the union of special sex cells that are usually produced by two separate parents with half of the genes coming from each parent allowing for a high degree of genetic diversity. Most plants and animals use sexual reproduction.				✓					

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
9-12 Grade				H	M	L	H	M	L	H	M	L
		63	Understand that asexual reproduction involves the production of offspring from a single parent organism with all the genes coming from that parent. Asexual reproduction occurs with unicellular organisms and some plants.									
	Knows that every cell contains a "blueprint" coded in DNA molecules that specify how proteins are assembled to regulate cells. **SC.F.2.4.2**	56	Know the chemical and structural properties of DNA and its role in specifying the genetic characteristics of an organism.					✓				
	Understands the mechanisms of change (e.g., mutation and natural selection) that lead to adaptations in a species and their ability to survive naturally in changing conditions and to increase species diversity. **SC.F.2.4.3**	44	Examine evolution as it relates to theories concerning the origin of life and natural selection.					✓				
7. How Living Things Interact with Their Environment												
Standard 1: The student understands the competitive, interdependent, cyclic nature of living things in the environment. **SC.G.1.4**												
	Knows of the great diversity and interdependence of living things. **SC.G.1.4.1**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					

Florida Science Curriculum		Curriculum Survey of Essential Skills International Center for Leadership in Education Rank		FCAT			Curriculum Survey			Priority		
9-12 Grade				H	M	L	H	M	L	H	M	L
	Understands how the flow of energy through an ecosystem made up of producers, consumers, and decomposers carries out the processes of life and that some energy dissipates as heat and is not recycled. **SC.G.1.4.2**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
	Knows that the chemical elements that make up the molecules of living things are combined and recombined in different ways. **SC.G.1.4.3**	99	Understand and apply organic reactions involving substitution, addition, fermentation, oxidation, polymerization, etc.						✓			
Standard 2: The student understands the consequences of using limited natural resources. **SC.G.2.4**												
	Knows that layers of energy-rich organic materials have been gradually turned into great coal beds and oil pools (fossil fuels) by the pressure of the overlying earth and that humans burn fossil fuels to release the stored energy as heat and carbon dioxide. **SC.G.2.4.1**	71	Analyze the properties of the earth's crust and interior (i.e., solid and liquid zones, crustal thickness, crustal composition, density, temperature and pressure, and interior composition).						✓			
		89	Identify the factors affecting the deposition of particles (e.g., size, shape, density, and velocity) and analyze the sorting of sediments in a system.									

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9-12 Grade				H	M	L	H	M	L	H	M	L
	Knows that changes in a component of an ecosystem will have unpredictable effects on the entire system but that the components of the system tend to react in a way that will restore the ecosystem to its original condition. **SC.G.2.4.2**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
	Understands how genetic variation of offspring contributes to population control in an environment and that natural selection ensures that those who are best adapted to their surroundings survive to reproduce. **SC.G.2.4.3**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).					✓				
		44	Examine evolution as it relates to theories concerning the origin of life and natural selection.									
	Knows that the world ecosystems are shaped by physical factors that limit their productivity. **SC.G.2.4.4**	13	Understand ecology as the study of the interactions and relationships of organisms with their living and nonliving environments (i.e., the ecosystem, communities, and populations).				✓					
	Understands that the amount of life any environment can support is limited and that human activities can change the flow of energy and reduce the fertility of the Earth. **SC.G.2.4.5**	10	Understand the human impact on the environment through pollution (air, water, and soil), and ways to improve it through education, research, laws, and conservation.				✓					

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9-12 Grade				**H**	**M**	**L**	**H**	**M**	**L**	**H**	**M**	**L**
	Knows the ways in which humans today are placing their environmental support systems at risk (e.g., rapid human population growth, environmental degradation, and resource depletion). **SC.G.2.4.6**	40	Know the survival requirements of animals and plants and the history and implication of population growth.					✓				
8. The Nature of Science												
Standard 1: The student uses the scientific processes and habits of mind to solve problems. **SC.H.1.4**												
	Knows that investigations are conducted to explore new phenomena, to check on previous results, to test how well a theory predicts, and to compare different theories. **SC.H.1.4.1**	XS-1	Knows and apply the principles of scientific inquiry.					✓				
	Knows that from time to time, major shifts occur in the scientific view of how the world works, but that more often, the changes that take place in the body of scientific knowledge are small modifications of prior knowledge. **SC.H.1.4.2**	XS-3	Understand the impact upon society and the environment of scientific and technological discoveries and the contributions of scientists. Understand how society may accept or reject scientific discoveries based upon need or refusal to change.				✓					

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9-12 Grade				H	M	L	H	M	L	H	M	L
	Understands that no matter how well one theory fits observations, a new theory might fit them as well or better, or might fit a wider range of observations, because in science, the testing, revising, and occasional discarding of theories, new and old, never ends and leads to an increasingly better understanding of how things work in the world, but not to absolute truth. **SC.H.1.4.3**	XS-1	Knows and apply the principles of scientific inquiry.					✓				
	Knows that scientists in any one research group tend to see things alike and that therefore scientific teams are expected to seek out the possible sources of bias in the design of their investigations and in their data analysis. **SC.H.1.4.4**	XS-1	Knows and apply the principles of scientific inquiry.						✓			
	Understands that new ideas in science are limited by the context in which they are conceived, are often rejected by the scientific establishment, sometimes spring from unexpected findings, and usually grow slowly from many contributors. **SC.H.1.4.5**	XS-3	Understand the impact upon society and the environment of scientific and technological discoveries and the contributions of scientists. Understand how society may accept or reject scientific discoveries based upon need or refusal to change.						✓			

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9-12 Grade				H	M	L	H	M	L	H	M	L
	Understands that in the short run, new ideas that do not mesh well with mainstream ideas in science often encounter vigorous criticism and that in the long run, theories are judged by how they fit with other theories, the range of observations they explain, how well they explain observations, and how effective they are in predicting new findings. **SC.H.1.4.6**	XS-3	Understand the impact upon society and the environment of scientific and technological discoveries and the contributions of scientists. Understand how society may accept or reject scientific discoveries based upon need or refusal to change.						✓			
	Understands the importance of a sense of responsibility, a commitment to peer review, truthful reporting of the methods and outcomes of investigations, and making the public aware of the findings. **SC.H.1.4.7**	XS-1	Knows and apply the principles of scientific inquiry.					✓				
Standard 2: The student understands that most natural events occur in comprehensible, consistent patterns. **SC.H.2.4**												
	Knows that scientists assume that the universe is a vast system in which basic rules exist that may range from very simple to extremely complex, but that scientists operate on the belief that the rules can be discovered by careful, systemic study. **SC.H.2.4.1**	XS-1	Knows and apply the principles of scientific inquiry.					✓				

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9-12 Grade				H	M	L	H	M	L	H	M	L
	Knows that scientists control conditions in order to obtain evidence, but when that is not possible for practical or ethical reasons, they try to observe a wide range of natural occurrences to discern patterns. **SC.H.2.4.2**	XS-1	Knows and apply the principles of scientific inquiry.						✓			
Standard 3: The student understands that science, technology, and society are interwoven and interdependent. **SC.H.3.4**												
	Knows that performance testing is often conducted using small-scale models, computer simulations, or analogous systems to reduce the chance of system failure. **SC.H.3.4.1**	XS-2	Plan and apply real or hypothetical models and constructions to facilitate investigations and learning and the solution to practical problems.						✓			
	Knows that technological problems often create a demand for new scientific knowledge and that new technologies make it possible for scientists to extend their research in a way that advances science. **SC.H.3.4.2**	XS-3	Understand the impact upon society and the environment of scientific and technological discoveries and the contributions of scientists. Understand how society may accept or reject scientific discoveries based upon need or refusal to change.						✓			
	Knows that scientists can bring information, insights, and analytical skills to matters of public concern and help people understand the possible causes and effects of events. **SC.H.3.4.3**	XS-3	Understand the impact upon society and the environment of scientific and technological discoveries and the contributions of scientists. Understand how society may accept or reject scientific discoveries based upon need or refusal to change.						✓			

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9-12 Grade				H	M	L	H	M	L	H	M	L
	Knows that funds for science research come from federal government agencies, industry, and private foundations and that this funding often influences the areas of discovery. **SC.H.3.4.4**	XS-3	Understand the impact upon society and the environment of scientific and technological discoveries and the contributions of scientists. Understand how society may accept or reject scientific discoveries based upon need or refusal to change.						✓			
	Knows that the value of a technology may differ for different people and at different times. **SC.H.3.4.5**	XS-3	Understand the impact upon society and the environment of scientific and technological discoveries and the contributions of scientists. Understand how society may accept or reject scientific discoveries based upon need or refusal to change.						✓			
	Knows that scientific knowledge is used by those who engage in design and technology to solve practical problems, taking human values and limitations into account. **SC.H.3.4.6**	XS-2	Plan and apply real or hypothetical models and constructions to facilitate investigations and learning and the solution to practical problems.						✓			