

Florida Department of Education

COURSE DESCRIPTION GRADES PreK-5

Course Number: 5020010
Course Title: Science - Grade Kindergarten
Course Length: Year
Course Status: State Board Approved

RELATED BENCHMARKS (19) :

Scheme	Descriptor	Cognitive Complexity
SC.K.E.5.1	Explore the Law of Gravity by investigating how objects are pulled toward the ground unless something holds them up.	Moderate
SC.K.E.5.2	Recognize the repeating pattern of day and night.	Low
SC.K.E.5.3	Recognize that the Sun can only be seen in the daytime.	Low
SC.K.E.5.4	Observe that sometimes the Moon can be seen at night and sometimes during the day.	Moderate
SC.K.E.5.5	Observe that things can be big and things can be small as seen from Earth.	High
SC.K.E.5.6	Observe that some objects are far away and some are nearby as seen from Earth.	High
SC.K.L.14.1	Recognize the five senses and related body parts.	Low
SC.K.L.14.2	Recognize that some books and other media portray animals and plants with characteristics and behaviors they do not have in real life.	Moderate
SC.K.L.14.3	Observe plants and animals, describe how they are alike and how they are different in the way they look and in the things they do.	Moderate

SC.K.N.1.1	Collaborate with a partner to collect information.	Low
SC.K.N.1.2	Make observations of the natural world and know that they are descriptors collected using the five senses.	Moderate
SC.K.N.1.3	Keep records as appropriate -- such as pictorial records -- of investigations conducted.	Moderate
SC.K.N.1.4	Observe and create a visual representation of an object which includes its major features.	High
SC.K.N.1.5	Recognize that learning can come from careful observation.	Moderate
SC.K.P.8.1	Sort objects by observable properties, such as size, shape, color, temperature (hot or cold), weight (heavy or light) and texture.	Moderate
SC.K.P.9.1	Recognize that the shape of materials such as paper and clay can be changed by cutting, tearing, crumpling, smashing, or rolling.	Low
SC.K.P.10.1	Observe that things that make sound vibrate.	Low
SC.K.P.12.1	Investigate that things move in different ways, such as fast, slow, etc.	High
SC.K.P.13.1	Observe that a push or a pull can change the way an object is moving.	Low

Florida Department of Education

COURSE DESCRIPTION GRADES PreK-5

Course Number: 5020020
Course Title: Science - Grade One
Course Length: Year
Course Status: State Board Approved

RELATED BENCHMARKS (19) :

Scheme	Descriptor	Cognitive Complexity
SC.1.E.5.1	Observe and discuss that there are more stars in the sky than anyone can easily count and that they are not scattered evenly in the sky.	Moderate
SC.1.E.5.2	Explore the Law of Gravity by demonstrating that Earth's gravity pulls any object on or near Earth toward it even though nothing is touching the object.	Moderate
SC.1.E.5.3	Investigate how magnifiers make things appear bigger and help people see things they could not see without them.	Moderate
SC.1.E.5.4	Identify the beneficial and harmful properties of the Sun.	Moderate
SC.1.E.6.1	Recognize that water, rocks, soil, and living organisms are found on Earth's surface.	Low
SC.1.E.6.2	Describe the need for water and how to be safe around water.	Moderate
SC.1.E.6.3	Recognize that some things in the world around us happen fast and some happen slowly.	High
SC.1.L.14.1	Make observations of living things and their environment using the five senses.	Low

SC.1.L.14.2	Identify the major parts of plants, including stem, roots, leaves, and flowers.	Low
SC.1.L.14.3	Differentiate between living and nonliving things.	High
SC.1.L.16.1	Make observations that plants and animals closely resemble their parents, but variations exist among individuals within a population.	Low
SC.1.L.17.1	Through observation, recognize that all plants and animals, including humans, need the basic necessities of air, water, food, and space.	Low
SC.1.N.1.1	Raise questions about the natural world, investigate them in teams through free exploration, and generate appropriate explanations based on those explorations.	High
SC.1.N.1.2	Using the five senses as tools, make careful observations, describe objects in terms of number, shape, texture, size, weight, color, and motion, and compare their observations with others.	Moderate
SC.1.N.1.3	Keep records as appropriate - such as pictorial and written records - of investigations conducted.	Moderate
SC.1.N.1.4	Ask "how do you know?" in appropriate situations.	Moderate
SC.1.P.8.1	Sort objects by observable properties, such as size, shape, color, temperature (hot or cold), weight (heavy or light), texture, and whether objects sink or float.	Moderate
SC.1.P.12.1	Demonstrate and describe the various ways that objects can move, such as in a straight line, zigzag, back-and-forth, round-and-round, fast, and slow.	Moderate
SC.1.P.13.1	Demonstrate that the way to change the motion of an object is by applying a push or a pull.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES PreK-5

Course Number: 5020030
Course Title: Science - Grade Two
Course Length: Year
Course Status: State Board Approved

RELATED BENCHMARKS (30) :

Scheme	Descriptor	Cognitive Complexity
SC.2.E.6.1	Recognize that Earth is made up of rocks. Rocks come in many sizes and shapes.	Moderate
SC.2.E.6.2	Describe how small pieces of rock and dead plant and animal parts can be the basis of soil and explain the process by which soil is formed.	High
SC.2.E.6.3	Classify soil types based on color, texture (size of particles), the ability to retain water, and the ability to support the growth of plants.	High
SC.2.E.7.1	Compare and describe changing patterns in nature that repeat themselves, such as weather conditions including temperature and precipitation, day to day and season to season.	Moderate
SC.2.E.7.2	Investigate by observing and measuring, that the Sun's energy directly and indirectly warms the water, land, and air.	High
SC.2.E.7.3	Investigate, observe and describe how water left in an open container disappears (evaporates), but water in a closed container does not disappear (evaporate).	High
SC.2.E.7.4	Investigate that air is all around us and that moving air is	High

wind.

SC.2.E.7.5	State the importance of preparing for severe weather, lightning, and other weather related events.	Low
SC.2.L.14.1	Distinguish human body parts (brain, heart, lungs, stomach, muscles, and skeleton) and their basic functions.	Moderate
SC.2.L.16.1	Observe and describe major stages in the life cycles of plants and animals, including beans and butterflies.	Moderate
SC.2.L.17.1	Compare and contrast the basic needs that all living things, including humans, have for survival.	Moderate
SC.2.L.17.2	Recognize and explain that living things are found all over Earth, but each is only able to live in habitats that meet its basic needs.	Moderate
SC.2.N.1.1	Raise questions about the natural world, investigate them in teams through free exploration and systematic observations, and generate appropriate explanations based on those explorations.	High
SC.2.N.1.2	Compare the observations made by different groups using the same tools.	Moderate
SC.2.N.1.3	Ask "how do you know?" in appropriate situations and attempt reasonable answers when asked the same question by others.	High
SC.2.N.1.4	Explain how particular scientific investigations should yield similar conclusions when repeated.	High
SC.2.N.1.5	Distinguish between empirical observation (what you see, hear, feel, smell, or taste) and ideas or inferences (what you think).	Moderate
SC.2.N.1.6	Explain how scientists alone or in groups are always investigating new ways to solve problems.	Moderate
SC.2.P.8.1	Observe and measure objects in terms of their properties,	Low

including size, shape, color, temperature, weight, texture, sinking or floating in water, and attraction and repulsion of magnets.

SC.2.P.8.2	Identify objects and materials as solid, liquid, or gas.	Low
SC.2.P.8.3	Recognize that solids have a definite shape and that liquids and gases take the shape of their container.	Low
SC.2.P.8.4	Observe and describe water in its solid, liquid, and gaseous states.	Low
SC.2.P.8.5	Measure and compare temperatures taken every day at the same time.	Moderate
SC.2.P.8.6	Measure and compare the volume of liquids using containers of various shapes and sizes.	Moderate
SC.2.P.9.1	Investigate that materials can be altered to change some of their properties, but not all materials respond the same way to any one alteration.	High
SC.2.P.10.1	Discuss that people use electricity or other forms of energy to cook their food, cool or warm their homes, and power their cars.	Low
SC.2.P.13.1	Investigate the effect of applying various pushes and pulls on different objects.	High
SC.2.P.13.2	Demonstrate that magnets can be used to make some things move without touching them.	Low
SC.2.P.13.3	Recognize that objects are pulled toward the ground unless something holds them up.	Low
SC.2.P.13.4	Demonstrate that the greater the force (push or pull) applied to an object, the greater the change in motion of the object.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES PreK-5

Course Number:	5020040
Course Title:	Science - Grade Three
Course Length:	Year
Course Status:	State Board Approved

RELATED BENCHMARKS (32) :

Scheme	Descriptor	Cognitive Complexity
SC.3.E.5.1	Explain that stars can be different; some are smaller, some are larger, and some appear brighter than others; all except the Sun are so far away that they look like points of light.	High
SC.3.E.5.2	Identify the Sun as a star that emits energy; some of it in the form of light.	Moderate
SC.3.E.5.3	Recognize that the Sun appears large and bright because it is the closest star to Earth.	High
SC.3.E.5.4	Explore the Law of Gravity by demonstrating that gravity is a force that can be overcome.	High
SC.3.E.5.5	Investigate that the number of stars that can be seen through telescopes is dramatically greater than those seen by the unaided eye.	Moderate
SC.3.E.6.1	Demonstrate that radiant energy from the Sun can heat objects and when the Sun is not present, heat may be lost.	High
SC.3.L.14.1	Describe structures in plants and their roles in food production, support, water and nutrient transport, and reproduction.	Moderate
SC.3.L.14.2	Investigate and describe how plants respond to stimuli (heat,	High

light, gravity), such as the way plant stems grow toward light and their roots grow downward in response to gravity.

SC.3.L.15.1	Classify animals into major groups (mammals, birds, reptiles, amphibians, fish, arthropods, vertebrates and invertebrates, those having live births and those which lay eggs) according to their physical characteristics and behaviors.	Moderate
SC.3.L.15.2	Classify flowering and non-flowering plants into major groups such as those that produce seeds, or those like ferns and mosses that produce spores, according to their physical characteristics.	Moderate
SC.3.L.17.1	Describe how animals and plants respond to changing seasons.	Moderate
SC.3.L.17.2	Recognize that plants use energy from the Sun, air, and water to make their own food.	Low
SC.3.N.1.1	Raise questions about the natural world, investigate them individually and in teams through free exploration and systematic investigations, and generate appropriate explanations based on those explorations.	High
SC.3.N.1.2	Compare the observations made by different groups using the same tools and seek reasons to explain the differences across groups.	High
SC.3.N.1.3	Keep records as appropriate, such as pictorial, written, or simple charts and graphs, of investigations conducted.	Moderate
SC.3.N.1.4	Recognize the importance of communication among scientists.	Moderate
SC.3.N.1.5	Recognize that scientists question, discuss, and check each other's evidence and explanations.	Moderate
SC.3.N.1.6	Infer based on observation.	High
SC.3.N.1.7	Explain that empirical evidence is information, such as	High

observations or measurements that is used to help validate explanations of natural phenomena.

SC.3.N.3.1	Recognize that words in science can have different or more specific meanings than their use in everyday language; for example, energy, cell, heat/cold, and evidence.	Moderate
SC.3.N.3.2	Recognize that scientists use models to help understand and explain how things work.	Low
SC.3.N.3.3	Recognize that all models are approximations of natural phenomena; as such, they do not perfectly account for all observations.	Moderate
SC.3.P.8.1	Measure and compare temperatures of various samples of solids and liquids.	Moderate
SC.3.P.8.2	Measure and compare the mass and volume of solids and liquids.	Moderate
SC.3.P.8.3	Compare materials and objects according to properties such as size, shape, color, texture, and hardness.	Moderate
SC.3.P.9.1	Describe the changes water undergoes when it changes state through heating and cooling by using familiar scientific terms such as melting, freezing, boiling, evaporation, and condensation.	Moderate
SC.3.P.10.1	Identify some basic forms of energy such as light, heat, sound, electrical, and mechanical.	Low
SC.3.P.10.2	Recognize that energy has the ability to cause motion or create change.	Low
SC.3.P.10.3	Demonstrate that light travels in a straight line until it strikes an object or travels from one medium to another.	Moderate
SC.3.P.10.4	Demonstrate that light can be reflected, refracted, and absorbed.	Moderate
SC.3.P.11.1	Investigate, observe, and explain that things that give off	High

light often also give off heat.

SC.3.P.11.2 Investigate, observe, and explain that heat is produced when one object rubs against another, such as rubbing one's hands together. High

Florida Department of Education

COURSE DESCRIPTION GRADES PreK-5

Course Number: 5020050
Course Title: Science - Grade Four
Course Length: Year
Course Status: State Board Approved

RELATED BENCHMARKS (42) :

Scheme	Descriptor	Cognitive Complexity
SC.4.E.5.1	Observe that the patterns of stars in the sky stay the same although they appear to shift across the sky nightly, and different stars can be seen in different seasons.	High
SC.4.E.5.2	Describe the changes in the observable shape of the moon over the course of about a month.	Moderate
SC.4.E.5.3	Recognize that Earth revolves around the Sun in a year and rotates on its axis in a 24-hour day.	Moderate
SC.4.E.5.4	Relate that the rotation of Earth (day and night) and apparent movements of the Sun, Moon, and stars are connected.	High
SC.4.E.5.5	Investigate and report the effects of space research and exploration on the economy and culture of Florida.	High
SC.4.E.6.1	Identify the three categories of rocks: igneous, (formed from molten rock); sedimentary (pieces of other rocks and fossilized organisms); and metamorphic (formed from heat and pressure).	Low
SC.4.E.6.2	Identify the physical properties of common earth-forming minerals, including hardness, color, luster, cleavage, and streak color, and recognize the role of minerals in the formation of rocks.	Moderate

SC.4.E.6.3	Recognize that humans need resources found on Earth and that these are either renewable or nonrenewable.	Moderate
SC.4.E.6.4	Describe the basic differences between physical weathering (breaking down of rock by wind, water, ice, temperature change, and plants) and erosion (movement of rock by gravity, wind, water, and ice).	Moderate
SC.4.E.6.5	Investigate how technology and tools help to extend the ability of humans to observe very small things and very large things.	High
SC.4.E.6.6	Identify resources available in Florida (water, phosphate, oil, limestone, silicon, wind, and solar energy).	Low
SC.4.L.16.1	Identify processes of sexual reproduction in flowering plants, including pollination, fertilization (seed production), seed dispersal, and germination.	Moderate
SC.4.L.16.2	Explain that although characteristics of plants and animals are inherited, some characteristics can be affected by the environment.	High
SC.4.L.16.3	Recognize that animal behaviors may be shaped by heredity and learning.	High
SC.4.L.16.4	Compare and contrast the major stages in the life cycles of Florida plants and animals, such as those that undergo incomplete and complete metamorphosis, and flowering and nonflowering seed-bearing plants.	Moderate
SC.4.L.17.1	Compare the seasonal changes in Florida plants and animals to those in other regions of the country.	Moderate
SC.4.L.17.2	Explain that animals, including humans, cannot make their own food and that when animals eat plants or other animals, the energy stored in the food source is passed to them.	Moderate
SC.4.L.17.3	Trace the flow of energy from the Sun as it is transferred along the food chain through the producers to the consumers.	Moderate

SC.4.L.17.4	Recognize ways plants and animals, including humans, can impact the environment.	High
SC.4.N.1.1	Raise questions about the natural world, use appropriate reference materials that support understanding to obtain information (identifying the source), conduct both individual and team investigations through free exploration and systematic investigations, and generate appropriate explanations based on those explorations.	High
SC.4.N.1.2	Compare the observations made by different groups using multiple tools and seek reasons to explain the differences across groups.	High
SC.4.N.1.3	Explain that science does not always follow a rigidly defined method ("the scientific method") but that science does involve the use of observations and empirical evidence.	Moderate
SC.4.N.1.4	Attempt reasonable answers to scientific questions and cite evidence in support.	High
SC.4.N.1.5	Compare the methods and results of investigations done by other classmates.	Moderate
SC.4.N.1.6	Keep records that describe observations made, carefully distinguishing actual observations from ideas and inferences about the observations.	High
SC.4.N.1.7	Recognize and explain that scientists base their explanations on evidence.	Moderate
SC.4.N.1.8	Recognize that science involves creativity in designing experiments.	Moderate
SC.4.N.2.1	Explain that science focuses solely on the natural world.	Moderate
SC.4.N.3.1	Explain that models can be three dimensional, two dimensional, an explanation in your mind, or a computer model.	Moderate

SC.4.P.8.1	Measure and compare objects and materials based on their physical properties including: mass, shape, volume, color, hardness, texture, odor, taste, attraction to magnets.	Moderate
SC.4.P.8.2	Identify properties and common uses of water in each of its states.	Low
SC.4.P.8.3	Explore the Law of Conservation of Mass by demonstrating that the mass of a whole object is always the same as the sum of the masses of its parts.	Moderate
SC.4.P.8.4	Investigate and describe that magnets can attract magnetic materials and attract and repel other magnets.	High
SC.4.P.9.1	Identify some familiar changes in materials that result in other materials with different characteristics, such as decaying animal or plant matter, burning, rusting, and cooking.	Low
SC.4.P.10.1	Observe and describe some basic forms of energy, including light, heat, sound, electrical, and the energy of motion.	Moderate
SC.4.P.10.2	Investigate and describe that energy has the ability to cause motion or create change.	Moderate
SC.4.P.10.3	Investigate and explain that sound is produced by vibrating objects and that pitch depends on how fast or slow the object vibrates.	High
SC.4.P.10.4	Describe how moving water and air are sources of energy and can be used to move things.	Moderate
SC.4.P.11.1	Recognize that heat flows from a hot object to a cold object and that heat flow may cause materials to change temperature.	Low
SC.4.P.11.2	Identify common materials that conduct heat well or poorly.	Low
SC.4.P.12.1	Recognize that an object in motion always changes its position and may change its direction.	Low

SC.4.P.12.2 Investigate and describe that the speed of an object is determined by the distance it travels in a unit of time and that Moderate objects can move at different speeds.

Florida Department of Education

COURSE DESCRIPTION GRADES PreK-5

Course Number: 5020060
Course Title: Science - Grade Five
Course Length: Year
Course Status: State Board Approved

RELATED BENCHMARKS (37) :

Scheme	Descriptor	Cognitive Complexity
SC.5.E.5.1	Recognize that a galaxy consists of gas, dust, and many stars, including any objects orbiting the stars. Identify our home galaxy as the Milky Way.	Low
SC.5.E.5.2	Recognize the major common characteristics of all planets and compare/contrast the properties of inner and outer planets.	Moderate
SC.5.E.5.3	Distinguish among the following objects of the Solar System -- Sun, planets, moons, asteroids, comets -- and identify Earth's position in it.	High
SC.5.E.7.1	Create a model to explain the parts of the water cycle. Water can be a gas, a liquid, or a solid and can go back and forth from one state to another.	High
SC.5.E.7.2	Recognize that the ocean is an integral part of the water cycle and is connected to all of Earth's water reservoirs via evaporation and precipitation processes.	Moderate
SC.5.E.7.3	Recognize how air temperature, barometric pressure, humidity, wind speed and direction, and precipitation determine the weather in a particular place and time.	Moderate

SC.5.E.7.4	Distinguish among the various forms of precipitation (rain, snow, sleet, and hail), making connections to the weather in a particular place and time.	High
SC.5.E.7.5	Recognize that some of the weather-related differences, such as temperature and humidity, are found among different environments, such as swamps, deserts, and mountains.	Moderate
SC.5.E.7.6	Describe characteristics (temperature and precipitation) of different climate zones as they relate to latitude, elevation, and proximity to bodies of water.	High
SC.5.E.7.7	Design a family preparedness plan for natural disasters and identify the reasons for having such a plan.	Moderate
SC.5.L.14.1	Identify the organs in the human body and describe their functions, including the skin, brain, heart, lungs, stomach, liver, intestines, pancreas, muscles and skeleton, reproductive organs, kidneys, bladder, and sensory organs.	Moderate
SC.5.L.14.2	Compare and contrast the function of organs and other physical structures of plants and animals, including humans, for example: some animals have skeletons for support -- some with internal skeletons others with exoskeletons -- while some plants have stems for support.	Moderate
SC.5.L.15.1	Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.	High
SC.5.L.17.1	Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics.	Moderate
SC.5.N.1.1	Define a problem, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types such as: systematic observations, experiments requiring the identification of variables, collecting and organizing data, interpreting data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	High

SC.5.N.1.2	Explain the difference between an experiment and other types of scientific investigation.	Moderate
SC.5.N.1.3	Recognize and explain the need for repeated experimental trials.	Moderate
SC.5.N.1.4	Identify a control group and explain its importance in an experiment.	Moderate
SC.5.N.1.5	Recognize and explain that authentic scientific investigation frequently does not parallel the steps of "the scientific method."	Moderate
SC.5.N.1.6	Recognize and explain the difference between personal opinion/interpretation and verified observation.	Moderate
SC.5.N.2.1	Recognize and explain that science is grounded in empirical observations that are testable; explanation must always be linked with evidence.	Moderate
SC.5.N.2.2	Recognize and explain that when scientific investigations are carried out, the evidence produced by those investigations should be replicable by others.	Moderate
SC.5.P.8.1	Compare and contrast the basic properties of solids, liquids, and gases, such as mass, volume, color, texture, and temperature.	Moderate
SC.5.P.8.2	Investigate and identify materials that will dissolve in water and those that will not and identify the conditions that will speed up or slow down the dissolving process.	High
SC.5.P.8.3	Demonstrate and explain that mixtures of solids can be separated based on observable properties of their parts such as particle size, shape, color, and magnetic attraction.	Moderate
SC.5.P.8.4	Explore the scientific theory of atoms (also called atomic theory) by recognizing that all matter is composed of parts that are too small to be seen without magnification.	Low

SC.5.P.9.1	Investigate and describe that many physical and chemical changes are affected by temperature.	High
SC.5.P.10.1	Investigate and describe some basic forms of energy, including light, heat, sound, electrical, chemical, and mechanical.	Moderate
SC.5.P.10.2	Investigate and explain that energy has the ability to cause motion or create change.	High
SC.5.P.10.3	Investigate and explain that an electrically-charged object can attract an uncharged object and can either attract or repel another charged object without any contact between the objects.	High
SC.5.P.10.4	Investigate and explain that electrical energy can be transformed into heat, light, and sound energy, as well as the energy of motion.	High
SC.5.P.11.1	Investigate and illustrate the fact that the flow of electricity requires a closed circuit (a complete loop).	Moderate
SC.5.P.11.2	Identify and classify materials that conduct electricity and materials that do not.	Moderate
SC.5.P.13.1	Identify familiar forces that cause objects to move, such as pushes or pulls, including gravity acting on falling objects.	Low
SC.5.P.13.2	Investigate and describe that the greater the force applied to it, the greater the change in motion of a given object.	Moderate
SC.5.P.13.3	Investigate and describe that the more mass an object has, the less effect a given force will have on the object's motion.	Moderate
SC.5.P.13.4	Investigate and explain that when a force is applied to an object but it does not move, it is because another opposing force is being applied by something in the environment so that the forces are balanced.	High

Florida Department of Education

COURSE DESCRIPTION GRADES 6-8

Course Number: 2000220
Course Title: M/J Science Transfer
Course Length: TBD
Course Level: 2
Course Status: State Board Approved

Florida Department of Education
COURSE DESCRIPTION GRADES 6-8

Course Number: 2000010
Course Title: M/J Life Science
Course Length: Year
Course Status: State Board Approved

General Notes: *Laboratory investigations, which include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures, are an integral part of this course.*

RELATED BENCHMARKS (61) :

Scheme	Descriptor	Cognitive Complexity
HE.6.C.1.4	Recognize how heredity can affect personal health.	
HE.6.C.1.8	Explain how body systems are impacted by hereditary factors and infectious agents.	
LA.6.2.2.3	The student will organize information to show understanding (e.g., representing main ideas within text through charting, mapping, paraphrasing, summarizing, or comparing/contrasting);	
LA.6.4.2.2	The student will record information (e.g., observations, notes, lists, charts, legends) related to a topic, including visual aids to organize and record information and include a list of sources used;	
MA.6.A.3.6	Construct and analyze tables, graphs, and equations to describe linear functions and other simple relations using both common language and algebraic notation.	High
MA.6.S.6.2	Select and analyze the measures of central tendency or variability to represent, describe, analyze, and/or summarize a data set for the purposes of answering questions appropriately.	High

SC.6.L.14.1	Describe and identify patterns in the hierarchical organization of organisms from atoms to molecules and cells to tissues to organs to organ systems to organisms.	Low
SC.6.L.14.2	Investigate and explain the components of the scientific theory of cells (cell theory): all organisms are composed of cells (single-celled or multi-cellular), all cells come from pre-existing cells, and cells are the basic unit of life.	Moderate
SC.6.L.14.3	Recognize and explore how cells of all organisms undergo similar processes to maintain homeostasis, including extracting energy from food, getting rid of waste, and reproducing.	Moderate
SC.6.L.14.4	Compare and contrast the structure and function of major organelles of plant and animal cells, including cell wall, cell membrane, nucleus, cytoplasm, chloroplasts, mitochondria, and vacuoles.	Moderate
SC.6.L.14.5	Identify and investigate the general functions of the major systems of the human body (digestive, respiratory, circulatory, reproductive, excretory, immune, nervous, and musculoskeletal) and describe ways these systems interact with each other to maintain homeostasis.	High
SC.6.L.14.6	Compare and contrast types of infectious agents that may infect the human body, including viruses, bacteria, fungi, and parasites.	Moderate
SC.6.L.15.1	Analyze and describe how and why organisms are classified according to shared characteristics with emphasis on the Linnaean system combined with the concept of Domains.	High
SC.6.N.1.1	Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	High
SC.6.N.1.2	Explain why scientific investigations should be replicable.	High
SC.6.N.1.3	Explain the difference between an experiment and other types of scientific investigation, and explain the relative benefits and limitations of each.	High

SC.6.N.1.4	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.	High
SC.6.N.1.5	Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.	Moderate
SC.6.N.2.1	Distinguish science from other activities involving thought.	Moderate
SC.6.N.2.2	Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered.	Moderate
SC.6.N.2.3	Recognize that scientists who make contributions to scientific knowledge come from all kinds of backgrounds and possess varied talents, interests, and goals.	Low
SC.6.N.3.1	Recognize and explain that a scientific theory is a well-supported and widely accepted explanation of nature and is not simply a claim posed by an individual. Thus, the use of the term theory in science is very different from how it is used in everyday life.	Moderate
SC.6.N.3.2	Recognize and explain that a scientific law is a description of a specific relationship under given conditions in the natural world. Thus, scientific laws are different from societal laws.	Moderate
SC.6.N.3.3	Give several examples of scientific laws.	Low
SC.6.N.3.4	Identify the role of models in the context of the sixth grade science benchmarks.	Moderate
SC.7.L.15.1	Recognize that fossil evidence is consistent with the scientific theory of evolution that living things evolved from earlier species.	Moderate
SC.7.L.15.2	Explore the scientific theory of evolution by recognizing and explaining ways in which genetic variation and environmental factors contribute to evolution by natural selection and diversity of organisms.	High
SC.7.L.15.3	Explore the scientific theory of evolution by relating how the inability of a species to adapt within a changing environment may contribute to the extinction of that species.	High

SC.7.L.16.1	Understand and explain that every organism requires a set of instructions that specifies its traits, which this hereditary information (DNA) contains genes located in the chromosomes of each cell, and that heredity is the passage of these instructions from one generation to another.	High
SC.7.L.16.2	Determine the probabilities for genotype and phenotype combinations using Punnett Squares and pedigrees.	Moderate
SC.7.L.16.3	Compare and contrast the general processes of sexual reproduction requiring meiosis and asexual reproduction requiring mitosis.	Moderate
SC.7.L.16.4	Recognize and explore the impact of biotechnology (cloning, genetic engineering, artificial selection) on the individual, society and the environment.	High
SC.7.L.17.1	Explain and illustrate the roles of and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web.	High
SC.7.L.17.2	Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism.	Moderate
SC.7.L.17.3	Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites.	High
SC.7.N.1.1	Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	High
SC.7.N.1.2	Differentiate replication (by others) from repetition (multiple trials).	Moderate
SC.7.N.1.3	Distinguish between an experiment (which must involve the identification and control of variables) and other forms of scientific investigation and explain that not all scientific knowledge is derived from experimentation.	Moderate

SC.7.N.1.4	Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment.	Low
SC.7.N.1.5	Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.	Moderate
SC.7.N.1.6	Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based.	Moderate
SC.7.N.1.7	Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.	Moderate
SC.7.N.2.1	Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered.	Low
SC.7.N.3.1	Recognize and explain the difference between theories and laws and give several examples of scientific theories and the evidence that supports them.	High
SC.7.N.3.2	Identify the benefits and limitations of the use of scientific models.	Moderate
SC.8.L.18.1	Describe and investigate the process of photosynthesis, such as the roles of light, carbon dioxide, water, and chlorophyll; production of food; release of oxygen.	High
SC.8.L.18.2	Describe and investigate how cellular respiration breaks down food to provide energy and releases carbon dioxide.	High
SC.8.L.18.3	Construct a scientific model of the carbon cycle to show how matter and energy are continuously transferred within and between organisms and their physical environment.	High
SC.8.L.18.4	Cite evidence that living systems follow the Laws of Conservation of Mass and Energy.	High
SC.8.N.1.1	Define a problem from the eighth grade curriculum using appropriate reference materials to support scientific understanding,	High

plan and carry out scientific investigations of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.

SC.8.N.1.2	Design and conduct a study using repeated trials and replication.	High
SC.8.N.1.3	Use phrases such as "results support" or "fail to support" in science, understanding that science does not offer conclusive 'proof' of a knowledge claim.	Moderate
SC.8.N.1.4	Explain how hypotheses are valuable if they lead to further investigations, even if they turn out not to be supported by the data.	High
SC.8.N.1.5	Analyze the methods used to develop a scientific explanation as seen in different fields of science.	High
SC.8.N.1.6	Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations, and models to make sense of the collected evidence.	Moderate
SC.8.N.2.1	Distinguish between scientific and pseudoscientific ideas.	Moderate
SC.8.N.2.2	Discuss what characterizes science and its methods.	Moderate
SC.8.N.3.1	Select models useful in relating the results of their own investigations.	High
SC.8.N.3.2	Explain why theories may be modified but are rarely discarded.	High
SC.8.N.4.1	Explain that science is one of the processes that can be used to inform decision making at the community, state, national, and international levels.	Moderate
SC.8.N.4.2	Explain how political, social, and economic concerns can affect science, and vice versa.	High

Florida Department of Education
COURSE DESCRIPTION GRADES 6-8

Course Number: 2000020
Course Title: M/J Life Science Advance
Course Length: Year
Course Status: State Board Approved

General Notes: *Laboratory investigations which include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course*

RELATED BENCHMARKS (73) :

Scheme	Descriptor	Cognitive Complexity
HE.6.C.1.4	Recognize how heredity can affect personal health.	
HE.6.C.1.8	Explain how body systems are impacted by hereditary factors and infectious agents.	
LA.6.2.2.3	The student will organize information to show understanding (e.g., representing main ideas within text through charting, mapping, paraphrasing, summarizing, or comparing/contrasting);	
LA.6.4.2.2	The student will record information (e.g., observations, notes, lists, charts, legends) related to a topic, including visual aids to organize and record information and include a list of sources used;	
MA.6.A.3.6	Construct and analyze tables, graphs, and equations to describe linear functions and other simple relations using both common language and algebraic notation.	High
MA.6.S.6.2	Select and analyze the measures of central tendency or variability to represent, describe, analyze, and/or summarize a data set for the purposes of answering questions appropriately.	High

SC.6.L.14.1	Describe and identify patterns in the hierarchical organization of organisms from atoms to molecules and cells to tissues to organs to organ systems to organisms.	Low
SC.6.L.14.2	Investigate and explain the components of the scientific theory of cells (cell theory): all organisms are composed of cells (single-celled or multi-cellular), all cells come from pre-existing cells, and cells are the basic unit of life.	Moderate
SC.6.L.14.3	Recognize and explore how cells of all organisms undergo similar processes to maintain homeostasis, including extracting energy from food, getting rid of waste, and reproducing.	Moderate
SC.6.L.14.4	Compare and contrast the structure and function of major organelles of plant and animal cells, including cell wall, cell membrane, nucleus, cytoplasm, chloroplasts, mitochondria, and vacuoles.	Moderate
SC.6.L.14.5	Identify and investigate the general functions of the major systems of the human body (digestive, respiratory, circulatory, reproductive, excretory, immune, nervous, and musculoskeletal) and describe ways these systems interact with each other to maintain homeostasis.	High
SC.6.L.14.6	Compare and contrast types of infectious agents that may infect the human body, including viruses, bacteria, fungi, and parasites.	Moderate
SC.6.L.15.1	Analyze and describe how and why organisms are classified according to shared characteristics with emphasis on the Linnaean system combined with the concept of Domains.	High
SC.6.N.1.1	Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	High
SC.6.N.1.2	Explain why scientific investigations should be replicable.	High

SC.6.N.1.3	Explain the difference between an experiment and other types of scientific investigation, and explain the relative benefits and limitations of each.	High
SC.6.N.1.4	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.	High
SC.6.N.1.5	Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.	Moderate
SC.6.N.2.1	Distinguish science from other activities involving thought.	Moderate
SC.6.N.2.2	Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered.	Moderate
SC.6.N.2.3	Recognize that scientists who make contributions to scientific knowledge come from all kinds of backgrounds and possess varied talents, interests, and goals.	Low
SC.6.N.3.1	Recognize and explain that a scientific theory is a well-supported and widely accepted explanation of nature and is not simply a claim posed by an individual. Thus, the use of the term theory in science is very different than how it is used in everyday life.	Moderate
SC.6.N.3.2	Recognize and explain that a scientific law is a description of a specific relationship under given conditions in the natural world. Thus, scientific laws are different from societal laws.	Moderate
SC.6.N.3.3	Give several examples of scientific laws.	Low
SC.6.N.3.4	Identify the role of models in the context of the sixth grade science benchmarks.	Moderate
SC.7.L.15.1	Recognize that fossil evidence is consistent with the scientific theory of evolution that living things evolved from earlier species.	Moderate

SC.7.L.15.2	Explore the scientific theory of evolution by recognizing and explaining ways in which genetic variation and environmental factors contribute to evolution by natural selection and diversity of organisms.	High
SC.7.L.15.3	Explore the scientific theory of evolution by relating how the inability of a species to adapt within a changing environment may contribute to the extinction of that species.	High
SC.7.L.16.1	Understand and explain that every organism requires a set of instructions that specifies its traits, that this hereditary information (DNA) contains genes located in the chromosomes of each cell, and that heredity is the passage of these instructions from one generation to another.	High
SC.7.L.16.2	Determine the probabilities for genotype and phenotype combinations using Punnett Squares and pedigrees.	Moderate
SC.7.L.16.3	Compare and contrast the general processes of sexual reproduction requiring meiosis and asexual reproduction requiring mitosis.	Moderate
SC.7.L.16.4	Recognize and explore the impact of biotechnology (cloning, genetic engineering, artificial selection) on the individual, society and the environment.	High
SC.7.L.17.1	Explain and illustrate the roles of and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web.	High
SC.7.L.17.2	Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism.	Moderate
SC.7.L.17.3	Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites.	High
SC.7.N.1.1	Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of	High

various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.

SC.7.N.1.2	Differentiate replication (by others) from repetition (multiple trials).	Moderate
SC.7.N.1.3	Distinguish between an experiment (which must involve the identification and control of variables) and other forms of scientific investigation and explain that not all scientific knowledge is derived from experimentation.	Moderate
SC.7.N.1.4	Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment.	Low
SC.7.N.1.5	Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.	Moderate
SC.7.N.1.6	Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based.	Moderate
SC.7.N.1.7	Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.	Moderate
SC.7.N.2.1	Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered.	Low
SC.7.N.3.1	Recognize and explain the difference between theories and laws and give several examples of scientific theories and the evidence that supports them.	High
SC.7.N.3.2	Identify the benefits and limitations of the use of scientific models.	Moderate
SC.8.L.18.1	Describe and investigate the process of photosynthesis, such as the roles of light, carbon dioxide, water and chlorophyll; production of food; release of oxygen.	High

SC.8.L.18.2	Describe and investigate how cellular respiration breaks down food to provide energy and releases carbon dioxide.	High
SC.8.L.18.3	Construct a scientific model of the carbon cycle to show how matter and energy are continuously transferred within and between organisms and their physical environment.	High
SC.8.L.18.4	Cite evidence that living systems follow the Laws of Conservation of Mass and Energy.	High
SC.8.N.1.1	Define a problem from the eighth grade curriculum using appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	High
SC.8.N.1.2	Design and conduct a study using repeated trials and replication.	High
SC.8.N.1.3	Use phrases such as "results support" or "fail to support" in science, understanding that science does not offer conclusive 'proof' of a knowledge claim.	Moderate
SC.8.N.1.4	Explain how hypotheses are valuable if they lead to further investigations, even if they turn out not to be supported by the data.	High
SC.8.N.1.5	Analyze the methods used to develop a scientific explanation as seen in different fields of science.	High
SC.8.N.1.6	Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence.	Moderate
SC.8.N.2.1	Distinguish between scientific and pseudoscientific ideas.	Moderate
SC.8.N.2.2	Discuss what characterizes science and its methods.	Moderate

SC.8.N.3.1	Select models useful in relating the results of their own investigations.	High
SC.8.N.3.2	Explain why theories may be modified but are rarely discarded.	High
SC.8.N.4.1	Explain that science is one of the processes that can be used to inform decision making at the community, state, national, and international levels.	Moderate
SC.8.N.4.2	Explain how political, social, and economic concerns can affect science, and vice versa.	High
SC.912.L.14.2	Relate structure to function for the components of plant and animal cells. Explain the role of cell membranes as a highly selective barrier (passive and active transport).	Moderate
SC.912.L.14.3	Compare and contrast the general structures of plant and animal cells. Compare and contrast the general structures of prokaryotic and eukaryotic cells.	Moderate
SC.912.L.15.6	Discuss distinguishing characteristics of the domains and kingdoms of living organisms.	Moderate
SC.912.L.15.13	Describe the conditions required for natural selection, including: overproduction of offspring, inherited variation, and the struggle to survive, which result in differential reproductive success.	Moderate
SC.912.L.16.2	Discuss observed inheritance patterns caused by various modes of inheritance, including dominant, recessive, co-dominant, sex-linked, polygenic, and multiple alleles.	High
SC.912.L.16.14	Describe the cell cycle, including the process of mitosis. Explain the role of mitosis in the formation of new cells and its importance in maintaining chromosome number during asexual reproduction.	Moderate
SC.912.L.16.16	Describe the process of meiosis, including independent assortment and crossing over. Explain how reduction division results in the formation of haploid gametes or spores.	Moderate

SC.912.L.17.6	Compare and contrast the relationships among organisms, including predation, parasitism, competition, commensalism, and mutualism.	Moderate
SC.912.L.17.9	Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels.	Moderate
SC.912.L.18.7	Identify the reactants, products, and basic functions of photosynthesis.	Moderate
SC.912.L.18.8	Identify the reactants, products, and basic functions of aerobic and anaerobic cellular respiration.	Moderate
SC.912.L.18.9	Explain the interrelated nature of photosynthesis and cellular respiration.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 6-8

Course Number: 2001010
Course Title: M/J Earth/Space Science
Course Length: Year
Course Level: 2
Course Status: State Board Approved

General Notes: *Laboratory investigations which include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course*

RELATED BENCHMARKS (69) :

Scheme	Descriptor	Cognitive Complexity
HE.6.C.1.3	Identify environmental factors that affect personal health.	
LA.6.2.2.3	The student will organize information to show understanding (e.g., representing main ideas within text through charting, mapping, paraphrasing, summarizing, or comparing/contrasting);	
LA.6.4.2.2	The student will record information (e.g., observations, notes, lists, charts, legends) related to a topic, including visual aids to organize and record information and include a list of sources used;	
MA.6.A.3.6	Construct and analyze tables, graphs, and equations to describe linear functions and other simple relations using both common language and algebraic notation.	High
MA.6.S.6.2	Select and analyze the measures of central tendency or variability to represent, describe, analyze, and/or summarize a data set for the purposes of answering questions appropriately.	High

SC.6.E.6.1	Describe and give examples of ways in which Earth's surface is built up and torn down by physical and chemical weathering, erosion, and deposition.	Moderate
SC.6.E.6.2	Recognize that there are a variety of different landforms on Earth's surface such as coastlines, dunes, rivers, mountains, glaciers, deltas, and lakes and relate these landforms as they apply to Florida.	Moderate
SC.6.E.7.1	Differentiate among radiation, conduction, and convection, the three mechanisms by which heat is transferred through Earth's system.	Moderate
SC.6.E.7.2	Investigate and apply how the cycling of water between the atmosphere and hydrosphere has an effect on weather patterns and climate.	High
SC.6.E.7.3	Describe how global patterns such as the jet stream and ocean currents influence local weather in measurable terms such as temperature, air pressure, wind direction and speed, and humidity and precipitation.	High
SC.6.E.7.4	Differentiate and show interactions among the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere.	High
SC.6.E.7.5	Explain how energy provided by the sun influences global patterns of atmospheric movement and the temperature differences between air, water, and land.	High
SC.6.E.7.6	Differentiate between weather and climate.	Moderate
SC.6.E.7.7	Investigate how natural disasters have affected human life in Florida.	High
SC.6.E.7.8	Describe ways human beings protect themselves from hazardous weather and sun exposure.	Moderate
SC.6.E.7.9	Describe how the composition and structure of the atmosphere protects life and insulates the planet.	Moderate

SC.6.N.1.1	Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	High
SC.6.N.1.2	Explain why scientific investigations should be replicable.	High
SC.6.N.1.3	Explain the difference between an experiment and other types of scientific investigation, and explain the relative benefits and limitations of each.	High
SC.6.N.1.4	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.	High
SC.6.N.1.5	Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.	Moderate
SC.6.N.2.1	Distinguish science from other activities involving thought.	Moderate
SC.6.N.2.2	Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered.	Moderate
SC.6.N.2.3	Recognize that scientists who make contributions to scientific knowledge come from all kinds of backgrounds and possess varied talents, interests, and goals.	Low
SC.6.N.3.1	Recognize and explain that a scientific theory is a well-supported and widely accepted explanation of nature and is not simply a claim posed by an individual. Thus, the use of the term theory in science is very different than how it is used in everyday life.	Moderate
SC.6.N.3.2	Recognize and explain that a scientific law is a description of a specific relationship under given conditions in the natural world. Thus, scientific laws are different from societal laws.	Moderate
SC.6.N.3.3	Give several examples of scientific laws.	Low

SC.6.N.3.4	Identify the role of models in the context of the sixth grade science benchmarks.	Moderate
SC.7.E.6.1	Describe the layers of the solid Earth, including the lithosphere, the hot convecting mantle, and the dense metallic liquid and solid cores.	Moderate
SC.7.E.6.2	Identify the patterns within the rock cycle and relate them to surface events (weathering and erosion) and sub-surface events (plate tectonics and mountain building).	High
SC.7.E.6.3	Identify current methods for measuring the age of Earth and its parts, including the law of superposition and radioactive dating.	Moderate
SC.7.E.6.4	Explain and give examples of how physical evidence supports scientific theories that Earth has evolved over geologic time due to natural processes.	High
SC.7.E.6.5	Explore the scientific theory of plate tectonics by describing how the movement of Earth's crustal plates causes both slow and rapid changes in Earth's surface, including volcanic eruptions, earthquakes, and mountain building.	Moderate
SC.7.E.6.6	Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.	Moderate
SC.7.E.6.7	Recognize that heat flow and movement of material within Earth causes earthquakes and volcanic eruptions, and creates mountains and ocean basins.	Moderate
SC.7.N.1.1	Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	High
SC.7.N.1.2	Differentiate replication (by others) from repetition (multiple	Moderate

trials).

SC.7.N.1.3	Distinguish between an experiment (which must involve the identification and control of variables) and other forms of scientific investigation and explain that not all scientific knowledge is derived from experimentation.	Moderate
SC.7.N.1.4	Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment.	Low
SC.7.N.1.5	Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.	Moderate
SC.7.N.1.6	Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based.	Moderate
SC.7.N.1.7	Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.	Moderate
SC.7.N.2.1	Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered.	Low
SC.7.N.3.1	Recognize and explain the difference between theories and laws and give several examples of scientific theories and the evidence that supports them.	High
SC.7.N.3.2	Identify the benefits and limitations of the use of scientific models.	Moderate
SC.8.E.5.1	Recognize that there are enormous distances between objects in space and apply our knowledge of light and space travel to understand this distance.	Moderate
SC.8.E.5.2	Recognize that the universe contains many billions of galaxies and that each galaxy contains many billions of stars.	Low
SC.8.E.5.3	Distinguish the hierarchical relationships between planets and other astronomical bodies relative to solar system, galaxy, and	High

universe, including distance, size, and composition.

SC.8.E.5.4	Explore the Law of Universal Gravitation by explaining the role that gravity plays in the formation of planets, stars, and solar systems and in determining their motions.	High
SC.8.E.5.5	Describe and classify specific physical properties of stars: apparent magnitude (brightness), temperature (color), size, and luminosity (absolute brightness).	Moderate
SC.8.E.5.6	Create models of solar properties including: rotation, structure of the Sun, convection, sunspots, solar flares, and prominences.	Low
SC.8.E.5.7	Compare and contrast the properties of objects in the Solar System including the Sun, planets, and moons to those of Earth, such as gravitational force, distance from the Sun, speed, movement, temperature, and atmospheric conditions.	Moderate
SC.8.E.5.8	Compare various historical models of the Solar System, including geocentric and heliocentric.	Moderate
	Explain the impact of objects in space on each other including:	
SC.8.E.5.9	<ol style="list-style-type: none">1. the Sun on the Earth including seasons and gravitational attraction2. the Moon on the Earth, including phases, tides, and eclipses, and the relative position of each body.	High
SC.8.E.5.10	Assess how technology is essential to science for such purposes as access to outer space and other remote locations, sample collection, measurement, data collection and storage, computation, and communication of information.	High
SC.8.E.5.11	Identify and compare characteristics of the electromagnetic spectrum such as wavelength, frequency, use, and hazards and recognize its application to an understanding of planetary images and satellite photographs.	High
SC.8.E.5.12	Summarize the effects of space exploration on the economy	Moderate

and culture of Florida.

SC.8.N.1.1	Define a problem from the eighth grade curriculum using appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	High
SC.8.N.1.2	Design and conduct a study using repeated trials and replication.	High
SC.8.N.1.3	Use phrases such as "results support" or "fail to support" in science, understanding that science does not offer conclusive 'proof' of a knowledge claim.	Moderate
SC.8.N.1.4	Explain how hypotheses are valuable if they lead to further investigations, even if they turn out not to be supported by the data.	High
SC.8.N.1.5	Analyze the methods used to develop a scientific explanation as seen in different fields of science.	High
SC.8.N.1.6	Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence.	Moderate
SC.8.N.2.1	Distinguish between scientific and pseudoscientific ideas.	Moderate
SC.8.N.2.2	Discuss what characterizes science and its methods.	Moderate
SC.8.N.3.1	Select models useful in relating the results of their own investigations.	High
SC.8.N.3.2	Explain why theories may be modified but are rarely discarded.	High
SC.8.N.4.1	Explain that science is one of the processes that can be used to	Moderate

inform decision making at the community, state, national, and international levels.

SC.8.N.4.2 Explain how political, social, and economic concerns can affect science, and vice versa. High

Florida Department of Education
COURSE DESCRIPTION GRADES 6-8

Course Number:	2001020
Course Title:	M/J Earth/Space Science Advance
Course Length:	Year
Course Level:	3
Course Status:	State Board Approved
General Notes:	<i>Laboratory investigations which include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course</i>

RELATED BENCHMARKS (76) :

Scheme	Descriptor	Cognitive Complexity
HE.6.C.1.3	Identify environmental factors that affect personal health.	
LA.6.2.2.3	The student will organize information to show understanding (e.g., representing main ideas within text through charting, mapping, paraphrasing, summarizing, or comparing/contrasting);	
LA.6.4.2.2	The student will record information (e.g., observations, notes, lists, charts, legends) related to a topic, including visual aids to organize and record information and include a list of sources used;	
MA.6.A.3.6	Construct and analyze tables, graphs, and equations to describe linear functions and other simple relations using both common language and algebraic notation.	High
MA.6.S.6.2	Select and analyze the measures of central tendency or variability to represent, describe, analyze, and/or summarize	High

a data set for the purposes of answering questions appropriately.

SC.6.E.6.1	Describe and give examples of ways in which Earth's surface is built up and torn down by physical and chemical weathering, erosion, and deposition.	Moderate
SC.6.E.6.2	Recognize that there are a variety of different landforms on Earth's surface such as coastlines, dunes, rivers, mountains, glaciers, deltas, and lakes and relate these landforms as they apply to Florida.	Moderate
SC.6.E.7.1	Differentiate among radiation, conduction, and convection, the three mechanisms by which heat is transferred through Earth's system.	Moderate
SC.6.E.7.2	Investigate and apply how the cycling of water between the atmosphere and hydrosphere has an effect on weather patterns and climate.	High
SC.6.E.7.3	Describe how global patterns such as the jet stream and ocean currents influence local weather in measurable terms such as temperature, air pressure, wind direction and speed, and humidity and precipitation.	High
SC.6.E.7.4	Differentiate and show interactions among the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere.	High
SC.6.E.7.5	Explain how energy provided by the sun influences global patterns of atmospheric movement and the temperature differences between air, water, and land.	High
SC.6.E.7.6	Differentiate between weather and climate.	Moderate
SC.6.E.7.7	Investigate how natural disasters have affected human life in Florida.	High
SC.6.E.7.8	Describe ways human beings protect themselves from hazardous weather and sun exposure.	Moderate
SC.6.E.7.9	Describe how the composition and structure of the	Moderate

atmosphere protects life and insulates the planet.

SC.6.N.1.1	Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	High
SC.6.N.1.2	Explain why scientific investigations should be replicable.	High
SC.6.N.1.3	Explain the difference between an experiment and other types of scientific investigation, and explain the relative benefits and limitations of each.	High
SC.6.N.1.4	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.	High
SC.6.N.1.5	Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.	Moderate
SC.6.N.2.1	Distinguish science from other activities involving thought.	Moderate
SC.6.N.2.2	Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered.	Moderate
SC.6.N.2.3	Recognize that scientists who make contributions to scientific knowledge come from all kinds of backgrounds and possess varied talents, interests, and goals.	Low
SC.6.N.3.1	Recognize and explain that a scientific theory is a well-supported and widely accepted explanation of nature and is not simply a claim posed by an individual. Thus, the use of the term theory in science is very different than how it is used in everyday life.	Moderate
SC.6.N.3.2	Recognize and explain that a scientific law is a description of a specific relationship under given conditions in the	Moderate

natural world. Thus, scientific laws are different from societal laws.

SC.6.N.3.3	Give several examples of scientific laws.	Low
SC.6.N.3.4	Identify the role of models in the context of the sixth grade science benchmarks.	Moderate
SC.7.E.6.1	Describe the layers of the solid Earth, including the lithosphere, the hot convecting mantle, and the dense metallic liquid and solid cores.	Moderate
SC.7.E.6.2	Identify the patterns within the rock cycle and relate them to surface events (weathering and erosion) and sub-surface events (plate tectonics and mountain building).	High
SC.7.E.6.3	Identify current methods for measuring the age of Earth and its parts, including the law of superposition and radioactive dating.	Moderate
SC.7.E.6.4	Explain and give examples of how physical evidence supports scientific theories that Earth has evolved over geologic time due to natural processes.	High
SC.7.E.6.5	Explore the scientific theory of plate tectonics by describing how the movement of Earth's crustal plates causes both slow and rapid changes in Earth's surface, including volcanic eruptions, earthquakes, and mountain building.	Moderate
SC.7.E.6.6	Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.	Moderate
SC.7.E.6.7	Recognize that heat flow and movement of material within Earth causes earthquakes and volcanic eruptions, and creates mountains and ocean basins.	Moderate
SC.7.N.1.1	Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data,	High

interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.

SC.7.N.1.2	Differentiate replication (by others) from repetition (multiple trials).	Moderate
SC.7.N.1.3	Distinguish between an experiment (which must involve the identification and control of variables) and other forms of scientific investigation and explain that not all scientific knowledge is derived from experimentation.	Moderate
SC.7.N.1.4	Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment.	Low
SC.7.N.1.5	Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.	Moderate
SC.7.N.1.6	Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based.	Moderate
SC.7.N.1.7	Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.	Moderate
SC.7.N.2.1	Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered.	Low
SC.7.N.3.1	Recognize and explain the difference between theories and laws and give several examples of scientific theories and the evidence that supports them.	High
SC.7.N.3.2	Identify the benefits and limitations of the use of scientific models.	Moderate
SC.8.E.5.1	Recognize that there are enormous distances between objects in space and apply our knowledge of light and space travel to understand this distance.	Moderate
SC.8.E.5.2	Recognize that the universe contains many billions of	Low

galaxies and that each galaxy contains many billions of stars.

SC.8.E.5.3	Distinguish the hierarchical relationships between planets and other astronomical bodies relative to solar system, galaxy, and universe, including distance, size, and composition.	High
SC.8.E.5.4	Explore the Law of Universal Gravitation by explaining the role that gravity plays in the formation of planets, stars, and solar systems and in determining their motions.	High
SC.8.E.5.5	Describe and classify specific physical properties of stars: apparent magnitude (brightness), temperature (color), size, and luminosity (absolute brightness).	Moderate
SC.8.E.5.6	Create models of solar properties including: rotation, structure of the Sun, convection, sunspots, solar flares, and prominences.	Low
SC.8.E.5.7	Compare and contrast the properties of objects in the Solar System including the Sun, planets, and moons to those of Earth, such as gravitational force, distance from the Sun, speed, movement, temperature, and atmospheric conditions.	Moderate
SC.8.E.5.8	Compare various historical models of the Solar System, including geocentric and heliocentric.	Moderate
	Explain the impact of objects in space on each other including:	
SC.8.E.5.9	<ol style="list-style-type: none">1. the Sun on the Earth including seasons and gravitational attraction2. the Moon on the Earth, including phases, tides, and eclipses, and the relative position of each body.	High
SC.8.E.5.10	Assess how technology is essential to science for such purposes as access to outer space and other remote locations, sample collection, measurement, data collection and storage, computation, and communication of information.	High
SC.8.E.5.11	Identify and compare characteristics of the electromagnetic	High

	spectrum such as wavelength, frequency, use, and hazards and recognize its application to an understanding of planetary images and satellite photographs.	
SC.8.E.5.12	Summarize the effects of space exploration on the economy and culture of Florida.	Moderate
SC.8.N.1.1	Define a problem from the eighth grade curriculum using appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	High
SC.8.N.1.2	Design and conduct a study using repeated trials and replication.	High
SC.8.N.1.3	Use phrases such as "results support" or "fail to support" in science, understanding that science does not offer conclusive 'proof' of a knowledge claim.	Moderate
SC.8.N.1.4	Explain how hypotheses are valuable if they lead to further investigations, even if they turn out not to be supported by the data.	High
SC.8.N.1.5	Analyze the methods used to develop a scientific explanation as seen in different fields of science.	High
SC.8.N.1.6	Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence.	Moderate
SC.8.N.2.1	Distinguish between scientific and pseudoscientific ideas.	Moderate
SC.8.N.2.2	Discuss what characterizes science and its methods.	Moderate
SC.8.N.3.1	Select models useful in relating the results of their own investigations.	High

SC.8.N.3.2	Explain why theories may be modified but are rarely discarded.	High
SC.8.N.4.1	Explain that science is one of the processes that can be used to inform decision making at the community, state, national, and international levels.	Moderate
SC.8.N.4.2	Explain how political, social, and economic concerns can affect science, and vice versa.	High
SC.912.E.5.4	Explain the physical properties of the Sun and its dynamic nature and connect them to conditions and events on Earth.	High
SC.912.E.6.1	Describe and differentiate the layers of Earth and the interactions among them.	Moderate
SC.912.E.6.2	Connect surface features to surface processes that are responsible for their formation.	Moderate
SC.912.E.6.3	Analyze the scientific theory of plate tectonics and identify related major processes and features as a result of moving plates.	High
SC.912.E.7.3	Differentiate and describe the various interactions among Earth systems, including: atmosphere, hydrosphere, cryosphere, geosphere, and biosphere.	High
SC.912.E.7.5	Predict future weather conditions based on present observations and conceptual models and recognize limitations and uncertainties of such predictions.	High
SC.912.E.7.6	Relate the formation of severe weather to the various physical factors.	Moderate

Florida Department of Education
COURSE DESCRIPTION GRADES 6-8

Course Number: 2002040
Course Title: M/J Comprehensive Science 1
Course Length: Year
Course Level: 2
Course Status: State Board Approved
General Notes: *Laboratory investigations, which include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures, are an integral part of this course.*

RELATED BENCHMARKS (41) :

Scheme	Descriptor	Cognitive Complexity
HE.6.C.1.3	Identify environmental factors that affect personal health.	
HE.6.C.1.8	Explain how body systems are impacted by hereditary factors and infectious agents.	
LA.6.2.2.3	The student will organize information to show understanding (e.g., representing main ideas within text through charting, mapping, paraphrasing, summarizing, or comparing/contrasting);	
LA.6.4.2.2	The student will record information (e.g., observations, notes, lists, charts, legends) related to a topic, including visual aids to organize and record information and include a list of sources used;	
MA.6.A.3.6	Construct and analyze tables, graphs, and equations to describe linear functions and other simple relations using both common language and algebraic notation.	High

MA.6.S.6.2	Select and analyze the measures of central tendency or variability to represent, describe, analyze, and/or summarize a data set for the purposes of answering questions appropriately.	High
SC.6.E.6.1	Describe and give examples of ways in which Earth's surface is built up and torn down by physical and chemical weathering, erosion, and deposition.	Moderate
SC.6.E.6.2	Recognize that there are a variety of different landforms on Earth's surface such as coastlines, dunes, rivers, mountains, glaciers, deltas, and lakes and relate these landforms as they apply to Florida.	Moderate
SC.6.E.7.1	Differentiate among radiation, conduction, and convection, the three mechanisms by which heat is transferred through Earth's system.	Moderate
SC.6.E.7.2	Investigate and apply how the cycling of water between the atmosphere and hydrosphere has an effect on weather patterns and climate.	High
SC.6.E.7.3	Describe how global patterns such as the jet stream and ocean currents influence local weather in measurable terms such as temperature, air pressure, wind direction and speed, and humidity and precipitation.	High
SC.6.E.7.4	Differentiate and show interactions among the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere.	High
SC.6.E.7.5	Explain how energy provided by the sun influences global patterns of atmospheric movement and the temperature differences between air, water, and land.	High
SC.6.E.7.6	Differentiate between weather and climate.	Moderate
SC.6.E.7.7	Investigate how natural disasters have affected human life in Florida.	High
SC.6.E.7.8	Describe ways human beings protect themselves from hazardous weather and sun exposure.	Moderate

SC.6.E.7.9	Describe how the composition and structure of the atmosphere protects life and insulates the planet.	Moderate
SC.6.L.14.1	Describe and identify patterns in the hierarchical organization of organisms from atoms to molecules and cells to tissues to organs to organ systems to organisms.	Low
SC.6.L.14.2	Investigate and explain the components of the scientific theory of cells (cell theory): all organisms are composed of cells (single-celled or multi-cellular), all cells come from pre-existing cells, and cells are the basic unit of life.	Moderate
SC.6.L.14.3	Recognize and explore how cells of all organisms undergo similar processes to maintain homeostasis, including extracting energy from food, getting rid of waste, and reproducing.	Moderate
SC.6.L.14.4	Compare and contrast the structure and function of major organelles of plant and animal cells, including cell wall, cell membrane, nucleus, cytoplasm, chloroplasts, mitochondria, and vacuoles.	Moderate
SC.6.L.14.5	Identify and investigate the general functions of the major systems of the human body (digestive, respiratory, circulatory, reproductive, excretory, immune, nervous, and musculoskeletal) and describe ways these systems interact with each other to maintain homeostasis.	High
SC.6.L.14.6	Compare and contrast types of infectious agents that may infect the human body, including viruses, bacteria, fungi, and parasites.	Moderate
SC.6.L.15.1	Analyze and describe how and why organisms are classified according to shared characteristics with emphasis on the Linnaean system combined with the concept of Domains.	High
SC.6.N.1.1	Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	High

SC.6.N.1.2	Explain why scientific investigations should be replicable.	High
SC.6.N.1.3	Explain the difference between an experiment and other types of scientific investigation, and explain the relative benefits and limitations of each.	High
SC.6.N.1.4	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.	High
SC.6.N.1.5	Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.	Moderate
SC.6.N.2.1	Distinguish science from other activities involving thought.	Moderate
SC.6.N.2.2	Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered.	Moderate
SC.6.N.2.3	Recognize that scientists who make contributions to scientific knowledge come from all kinds of backgrounds and possess varied talents, interests, and goals.	Low
SC.6.N.3.1	Recognize and explain that a scientific theory is a well-supported and widely accepted explanation of nature and is not simply a claim posed by an individual. Thus, the use of the term theory in science is very different than how it is used in everyday life.	Moderate
SC.6.N.3.2	Recognize and explain that a scientific law is a description of a specific relationship under given conditions in the natural world. Thus, scientific laws are different from societal laws.	Moderate
SC.6.N.3.3	Give several examples of scientific laws.	Low
SC.6.N.3.4	Identify the role of models in the context of the sixth grade science benchmarks.	Moderate

- SC.6.P.11.1 Explore the Law of Conservation of Energy by differentiating between potential and kinetic energy. Identify situations where kinetic energy is transformed into potential energy and vice versa. Moderate
- SC.6.P.12.1 Measure and graph distance versus time for an object moving at a constant speed. Interpret this relationship. High
- SC.6.P.13.1 Investigate and describe types of forces including contact forces and forces acting at a distance, such as electrical, magnetic, and gravitational. Moderate
- SC.6.P.13.2 Explore the Law of Gravity by recognizing that every object exerts gravitational force on every other object and that the force depends on how much mass the objects have and how far apart they are. Low
- SC.6.P.13.3 Investigate and describe that an unbalanced force acting on an object changes its speed, or direction of motion, or both. Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 6-8

Course Number: 2002050
Course Title: M/J Comprehensive Science 1 Advanced
Course Length: Year
Course Level: 3
Course Status: State Board Approved
Laboratory investigations, which include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures, are an integral part of this course.

RELATED BENCHMARKS (48) :

Scheme	Descriptor	Cognitive Complexity
HE.6.C.1.3	Identify environmental factors that affect personal health.	
HE.6.C.1.8	Explain how body systems are impacted by hereditary factors and infectious agents.	
LA.6.2.2.3	The student will organize information to show understanding (e.g., representing main ideas within text through charting, mapping, paraphrasing, summarizing, or comparing/contrasting);	
LA.6.4.2.2	The student will record information (e.g., observations, notes, lists, charts, legends) related to a topic, including visual aids to organize and record information and include a list of sources used;	
MA.6.A.3.6	Construct and analyze tables, graphs, and equations to describe linear functions and other simple relations using both common language and algebraic notation.	High
MA.6.S.6.2	Select and analyze the measures of central tendency or variability to represent, describe, analyze, and/or	High

summarize a data set for the purposes of answering questions appropriately.

SC.6.E.6.1	Describe and give examples of ways in which Earth's surface is built up and torn down by physical and chemical weathering, erosion, and deposition.	Moderate
SC.6.E.6.2	Recognize that there are a variety of different landforms on Earth's surface such as coastlines, dunes, rivers, mountains, glaciers, deltas, and lakes and relate these landforms as they apply to Florida.	Moderate
SC.6.E.7.1	Differentiate among radiation, conduction, and convection, the three mechanisms by which heat is transferred through Earth's system.	Moderate
SC.6.E.7.2	Investigate and apply how the cycling of water between the atmosphere and hydrosphere has an effect on weather patterns and climate.	High
SC.6.E.7.3	Describe how global patterns such as the jet stream and ocean currents influence local weather in measurable terms such as temperature, air pressure, wind direction and speed, and humidity and precipitation.	High
SC.6.E.7.4	Differentiate and show interactions among the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere.	High
SC.6.E.7.5	Explain how energy provided by the sun influences global patterns of atmospheric movement and the temperature differences between air, water, and land.	High
SC.6.E.7.6	Differentiate between weather and climate.	Moderate
SC.6.E.7.7	Investigate how natural disasters have affected human life in Florida.	High
SC.6.E.7.8	Describe ways human beings protect themselves from hazardous weather and sun exposure.	Moderate

SC.6.E.7.9	Describe how the composition and structure of the atmosphere protects life and insulates the planet.	Moderate
SC.6.L.14.1	Describe and identify patterns in the hierarchical organization of organisms from atoms to molecules and cells to tissues to organs to organ systems to organisms.	Low
SC.6.L.14.2	Investigate and explain the components of the scientific theory of cells (cell theory): all organisms are composed of cells (single-celled or multi-cellular), all cells come from pre-existing cells, and cells are the basic unit of life.	Moderate
SC.6.L.14.3	Recognize and explore how cells of all organisms undergo similar processes to maintain homeostasis, including extracting energy from food, getting rid of waste, and reproducing.	Moderate
SC.6.L.14.4	Compare and contrast the structure and function of major organelles of plant and animal cells, including cell wall, cell membrane, nucleus, cytoplasm, chloroplasts, mitochondria, and vacuoles.	Moderate
SC.6.L.14.5	Identify and investigate the general functions of the major systems of the human body (digestive, respiratory, circulatory, reproductive, excretory, immune, nervous, and musculoskeletal) and describe ways these systems interact with each other to maintain homeostasis.	High
SC.6.L.14.6	Compare and contrast types of infectious agents that may infect the human body, including viruses, bacteria, fungi, and parasites.	Moderate
SC.6.L.15.1	Analyze and describe how and why organisms are classified according to shared characteristics with emphasis on the Linnaean system combined with the concept of Domains.	High
SC.6.N.1.1	Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data,	High

interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.

SC.6.N.1.2	Explain why scientific investigations should be replicable.	High
SC.6.N.1.3	Explain the difference between an experiment and other types of scientific investigation, and explain the relative benefits and limitations of each.	High
SC.6.N.1.4	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.	High
SC.6.N.1.5	Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.	Moderate
SC.6.N.2.1	Distinguish science from other activities involving thought.	Moderate
SC.6.N.2.2	Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered.	Moderate
SC.6.N.2.3	Recognize that scientists who make contributions to scientific knowledge come from all kinds of backgrounds and possess varied talents, interests, and goals.	Low
SC.6.N.3.1	Recognize and explain that a scientific theory is a well-supported and widely accepted explanation of nature and is not simply a claim posed by an individual. Thus, the use of the term theory in science is very different than how it is used in everyday life.	Moderate
SC.6.N.3.2	Recognize and explain that a scientific law is a description of a specific relationship under given conditions in the natural world. Thus, scientific laws are different from societal laws.	Moderate
SC.6.N.3.3	Give several examples of scientific laws.	Low

SC.6.N.3.4	Identify the role of models in the context of the sixth grade science benchmarks.	Moderate
SC.6.P.11.1	Explore the Law of Conservation of Energy by differentiating between potential and kinetic energy. Identify situations where kinetic energy is transformed into potential energy and vice versa.	Moderate
SC.6.P.12.1	Measure and graph distance versus time for an object moving at a constant speed. Interpret this relationship.	High
SC.6.P.13.1	Investigate and describe types of forces including contact forces and forces acting at a distance, such as electrical, magnetic, and gravitational.	Moderate
SC.6.P.13.2	Explore the Law of Gravity by recognizing that every object exerts gravitational force on every other object and that the force depends on how much mass the objects have and how far apart they are.	Low
SC.6.P.13.3	Investigate and describe that an unbalanced force acting on an object changes its speed, or direction of motion, or both.	Moderate
SC.912.E.7.3	Differentiate and describe the various interactions among Earth systems, including: atmosphere, hydrosphere, cryosphere, geosphere, and biosphere.	High
SC.912.E.7.5	Predict future weather conditions based on present observations and conceptual models and recognize limitations and uncertainties of such predictions.	High
SC.912.E.7.6	Relate the formation of severe weather to the various physical factors.	Moderate
SC.912.L.14.2	Relate structure to function for the components of plant and animal cells. Explain the role of cell membranes as a highly selective barrier (passive and active transport).	Moderate
SC.912.L.14.3	Compare and contrast the general structures of plant and animal cells. Compare and contrast the general structures of prokaryotic and eukaryotic cells.	Moderate

SC.912.L.16.14	Describe the cell cycle, including the process of mitosis. Explain the role of mitosis in the formation of new cells and its importance in maintaining chromosome number during asexual reproduction.	Moderate
SC.912.P.10.4	Describe heat as the energy transferred by convection, conduction, and radiation, and explain the connection of heat to change in temperature or states of matter.	High

Florida Department of Education
COURSE DESCRIPTION GRADES 6-8

Course Number: 2002070
Course Title: M/J Comprehensive Science 2
Course Length: Year
Course Level: 2
Course Status: State Board Approved

General Notes: *Laboratory investigations which include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course*

RELATED BENCHMARKS (39) :

Scheme	Descriptor	Cognitive Complexity
HE.7.C.1.4	Describe how heredity can affect personal health.	
LA.7.2.2.3	The student will organize information to show understanding (e.g., representing main ideas within text through charting, mapping, paraphrasing, summarizing, or comparing/contrasting);	
LA.7.4.2.2	The student will record information (e.g., observations, notes, lists, charts, legends) related to a topic, including visual aids to organize and record information, as appropriate, and attribute sources of information;	
MA.6.A.3.6	Construct and analyze tables, graphs, and equations to describe linear functions and other simple relations using both common language and algebraic notation.	High
MA.6.S.6.2	Select and analyze the measures of central tendency or variability to represent, describe, analyze, and/or summarize a data set for the purposes of answering questions appropriately.	High

SC.7.E.6.1	Describe the layers of the solid Earth, including the lithosphere, the hot convecting mantle, and the dense metallic liquid and solid cores.	Moderate
SC.7.E.6.2	Identify the patterns within the rock cycle and relate them to surface events (weathering and erosion) and sub-surface events (plate tectonics and mountain building).	High
SC.7.E.6.3	Identify current methods for measuring the age of Earth and its parts, including the law of superposition and radioactive dating.	Moderate
SC.7.E.6.4	Explain and give examples of how physical evidence supports scientific theories that Earth has evolved over geologic time due to natural processes.	High
SC.7.E.6.5	Explore the scientific theory of plate tectonics by describing how the movement of Earth's crustal plates causes both slow and rapid changes in Earth's surface, including volcanic eruptions, earthquakes, and mountain building.	Moderate
SC.7.E.6.6	Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.	Moderate
SC.7.E.6.7	Recognize that heat flow and movement of material within Earth causes earthquakes and volcanic eruptions, and creates mountains and ocean basins.	Moderate
SC.7.L.15.1	Recognize that fossil evidence is consistent with the scientific theory of evolution that living things evolved from earlier species.	Moderate
SC.7.L.15.2	Explore the scientific theory of evolution by recognizing and explaining ways in which genetic variation and environmental factors contribute to evolution by natural selection and diversity of organisms.	High
SC.7.L.15.3	Explore the scientific theory of evolution by relating how the inability of a species to adapt within a changing environment may contribute to the extinction of that species.	High
SC.7.L.16.1	Understand and explain that every organism requires a set of instructions that specifies its traits, that this hereditary information	High

(DNA) contains genes located in the chromosomes of each cell, and that heredity is the passage of these instructions from one generation to another.

SC.7.L.16.2	Determine the probabilities for genotype and phenotype combinations using Punnett Squares and pedigrees.	Moderate
SC.7.L.16.3	Compare and contrast the general processes of sexual reproduction requiring meiosis and asexual reproduction requiring mitosis.	Moderate
SC.7.L.16.4	Recognize and explore the impact of biotechnology (cloning, genetic engineering, artificial selection) on the individual, society and the environment.	High
SC.7.L.17.1	Explain and illustrate the roles of and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web.	High
SC.7.L.17.2	Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism.	Moderate
SC.7.L.17.3	Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites.	High
SC.7.N.1.1	Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	High
SC.7.N.1.2	Differentiate replication (by others) from repetition (multiple trials).	Moderate
SC.7.N.1.3	Distinguish between an experiment (which must involve the identification and control of variables) and other forms of scientific investigation and explain that not all scientific knowledge is derived from experimentation.	Moderate
SC.7.N.1.4	Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment.	Low

SC.7.N.1.5	Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.	Moderate
SC.7.N.1.6	Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based.	Moderate
SC.7.N.1.7	Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.	Moderate
SC.7.N.2.1	Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered.	Low
SC.7.N.3.1	Recognize and explain the difference between theories and laws and give several examples of scientific theories and the evidence that supports them.	High
SC.7.N.3.2	Identify the benefits and limitations of the use of scientific models.	Moderate
SC.7.P.10.1	Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible, and ultraviolet, and that white light is made up of a spectrum of many different colors.	Low
SC.7.P.10.2	Observe and explain that light can be reflected, refracted, and/or absorbed.	High
SC.7.P.10.3	Recognize that light waves, sound waves, and other waves move at different speeds in different materials.	Low
SC.7.P.11.1	Recognize that adding heat to or removing heat from a system may result in a temperature change and possibly a change of state.	Low
SC.7.P.11.2	Investigate and describe the transformation of energy from one form to another.	Moderate
SC.7.P.11.3	Cite evidence to explain that energy cannot be created nor destroyed, only changed from one form to another.	High

SC.7.P.11.4 Observe and describe that heat flows in predictable ways, moving from warmer objects to cooler ones until they reach the same temperature. Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES PreK-5

Course Number: 2002080
Course Title: M/J Comprehensive Science 2 Advance
Course Section: Grades PreK to 12 Education Courses
Abbreviated Title: M/J Comprehensive Science 2
Course Length: Year
Course Level: 3
Course Status: State Board Approved
Laboratory investigations which include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course

RELATED BENCHMARKS (50) :

Scheme	Descriptor	Cognitive Complexity
HE.7.C.1.4	Describe how heredity can affect personal health.	
LA.7.2.2.3	The student will organize information to show understanding (e.g., representing main ideas within text through charting, mapping, paraphrasing, summarizing, or comparing/contrasting);	
LA.7.4.2.2	The student will record information (e.g., observations, notes, lists, charts, legends) related to a topic, including visual aids to organize and record information, as appropriate, and attribute sources of information;	
MA.6.A.3.6	Construct and analyze tables, graphs, and equations to describe linear functions and other simple relations using both common language and algebraic notation.	High

MA.6.S.6.2	Select and analyze the measures of central tendency or variability to represent, describe, analyze, and/or summarize a data set for the purposes of answering questions appropriately.	High
SC.7.E.6.1	Describe the layers of the solid Earth, including the lithosphere, the hot convecting mantle, and the dense metallic liquid and solid cores.	Moderate
SC.7.E.6.2	Identify the patterns within the rock cycle and relate them to surface events (weathering and erosion) and sub-surface events (plate tectonics and mountain building).	High
SC.7.E.6.3	Identify current methods for measuring the age of Earth and its parts, including the law of superposition and radioactive dating.	Moderate
SC.7.E.6.4	Explain and give examples of how physical evidence supports scientific theories that Earth has evolved over geologic time due to natural processes.	High
SC.7.E.6.5	Explore the scientific theory of plate tectonics by describing how the movement of Earth's crustal plates causes both slow and rapid changes in Earth's surface, including volcanic eruptions, earthquakes, and mountain building.	Moderate
SC.7.E.6.6	Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.	Moderate
SC.7.E.6.7	Recognize that heat flow and movement of material within Earth causes earthquakes and volcanic eruptions, and creates mountains and ocean basins.	Moderate
SC.7.L.15.1	Recognize that fossil evidence is consistent with the scientific theory of evolution that living things evolved from earlier species.	Moderate
SC.7.L.15.2	Explore the scientific theory of evolution by recognizing and explaining ways in which genetic variation and environmental factors contribute to evolution by natural	High

selection and diversity of organisms.

SC.7.L.15.3	Explore the scientific theory of evolution by relating how the inability of a species to adapt within a changing environment may contribute to the extinction of that species.	High
SC.7.L.16.1	Understand and explain that every organism requires a set of instructions that specifies its traits, that this hereditary information (DNA) contains genes located in the chromosomes of each cell, and that heredity is the passage of these instructions from one generation to another.	High
SC.7.L.16.2	Determine the probabilities for genotype and phenotype combinations using Punnett Squares and pedigrees.	Moderate
SC.7.L.16.3	Compare and contrast the general processes of sexual reproduction requiring meiosis and asexual reproduction requiring mitosis.	Moderate
SC.7.L.16.4	Recognize and explore the impact of biotechnology (cloning, genetic engineering, artificial selection) on the individual, society and the environment.	High
SC.7.L.17.1	Explain and illustrate the roles of and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web.	High
SC.7.L.17.2	Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism.	Moderate
SC.7.L.17.3	Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites.	High
SC.7.N.1.1	Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data,	High

interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.

SC.7.N.1.2	Differentiate replication (by others) from repetition (multiple trials).	Moderate
SC.7.N.1.3	Distinguish between an experiment (which must involve the identification and control of variables) and other forms of scientific investigation and explain that not all scientific knowledge is derived from experimentation.	Moderate
SC.7.N.1.4	Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment.	Low
SC.7.N.1.5	Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.	Moderate
SC.7.N.1.6	Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based.	Moderate
SC.7.N.1.7	Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.	Moderate
SC.7.N.2.1	Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered.	Low
SC.7.N.3.1	Recognize and explain the difference between theories and laws and give several examples of scientific theories and the evidence that supports them.	High
SC.7.N.3.2	Identify the benefits and limitations of the use of scientific models.	Moderate
SC.7.P.10.1	Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible, and ultraviolet, and that white light is made up of a spectrum of many different colors.	Low

SC.7.P.10.2	Observe and explain that light can be reflected, refracted, and/or absorbed.	High
SC.7.P.10.3	Recognize that light waves, sound waves, and other waves move at different speeds in different materials.	Low
SC.7.P.11.1	Recognize that adding heat to or removing heat from a system may result in a temperature change and possibly a change of state.	Low
SC.7.P.11.2	Investigate and describe the transformation of energy from one form to another.	Moderate
SC.7.P.11.3	Cite evidence to explain that energy cannot be created nor destroyed, only changed from one form to another.	High
SC.7.P.11.4	Observe and describe that heat flows in predictable ways, moving from warmer objects to cooler ones until they reach the same temperature.	Moderate
SC.912.E.6.1	Describe and differentiate the layers of Earth and the interactions among them.	Moderate
SC.912.E.6.2	Connect surface features to surface processes that are responsible for their formation.	Moderate
SC.912.E.6.3	Analyze the scientific theory of plate tectonics and identify related major processes and features as a result of moving plates.	High
SC.912.L.15.6	Discuss distinguishing characteristics of the domains and kingdoms of living organisms.	Moderate
SC.912.L.15.13	Describe the conditions required for natural selection, including: overproduction of offspring, inherited variation, and the struggle to survive, which result in differential reproductive success.	Moderate
SC.912.L.16.2	Discuss observed inheritance patterns caused by various modes of inheritance, including dominant, recessive, codominant, sex-linked, polygenic, and multiple alleles.	High

SC.912.L.16.16	Describe the process of meiosis, including independent assortment and crossing over. Explain how reduction division results in the formation of haploid gametes or spores.	Moderate
SC.912.L.17.6	Compare and contrast the relationships among organisms, including predation, parasitism, competition, commensalism, and mutualism.	Moderate
SC.912.L.17.9	Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels.	Moderate
SC.912.P.10.1	Differentiate among the various forms of energy and recognize that they can be transformed from one form to others.	Moderate
SC.912.P.10.5	Relate temperature to the average molecular kinetic energy.	Moderate

Florida Department of Education
COURSE DESCRIPTION GRADES 6-8

Course Number: 2002100
Course Title: M/J Comprehensive Science 3
Course Length: Year
Course Level: 2
Course Status: State Board Approved
General Notes: *Laboratory investigations which include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course*

RELATED BENCHMARKS (44) :

Scheme	Descriptor	Cognitive Complexity
LA.8.2.2.3	The student will organize information to show understanding or relationships among facts, ideas, and events (e.g., representing key points within text through charting, mapping, paraphrasing, summarizing, or comparing/contrasting);	
LA.8.4.2.2	The student will record information (e.g., observations, notes, lists, charts, legends) related to a topic, including visual aids to organize and record information, as appropriate, and attribute sources of information;	
MA.6.A.3.6	Construct and analyze tables, graphs, and equations to describe linear functions and other simple relations using both common language and algebraic notation.	High
MA.6.S.6.2	Select and analyze the measures of central tendency or variability to represent, describe, analyze, and/or summarize a data set for the purposes of answering questions appropriately.	High

SC.8.E.5.1	Recognize that there are enormous distances between objects in space and apply our knowledge of light and space travel to understand this distance.	Moderate
SC.8.E.5.2	Recognize that the universe contains many billions of galaxies and that each galaxy contains many billions of stars.	Low
SC.8.E.5.3	Distinguish the hierarchical relationships between planets and other astronomical bodies relative to solar system, galaxy, and universe, including distance, size, and composition.	High
SC.8.E.5.4	Explore the Law of Universal Gravitation by explaining the role that gravity plays in the formation of planets, stars, and solar systems and in determining their motions.	High
SC.8.E.5.5	Describe and classify specific physical properties of stars: apparent magnitude (brightness), temperature (color), size, and luminosity (absolute brightness).	Moderate
SC.8.E.5.6	Create models of solar properties including: rotation, structure of the Sun, convection, sunspots, solar flares, and prominences.	Low
SC.8.E.5.7	Compare and contrast the properties of objects in the Solar System including the Sun, planets, and moons to those of Earth, such as gravitational force, distance from the Sun, speed, movement, temperature, and atmospheric conditions.	Moderate
SC.8.E.5.8	Compare various historical models of the Solar System, including geocentric and heliocentric.	Moderate
	Explain the impact of objects in space on each other including:	
SC.8.E.5.9	<ol style="list-style-type: none"> 1. The Sun on the Earth including seasons and gravitational attraction 2. The Moon on the Earth, including phases, tides, and eclipses, and the relative position of each body. 	High
SC.8.E.5.10	Assess how technology is essential to science for such purposes as access to outer space and other remote locations,	High

sample collection, measurement, data collection and storage, computation, and communication of information.

SC.8.E.5.11	Identify and compare characteristics of the electromagnetic spectrum such as wavelength, frequency, use, and hazards and recognize its application to an understanding of planetary images and satellite photographs.	High
SC.8.E.5.12	Summarize the effects of space exploration on the economy and culture of Florida.	Moderate
SC.8.L.18.1	Describe and investigate the process of photosynthesis, such as the roles of light, carbon dioxide, water and chlorophyll; production of food; release of oxygen.	High
SC.8.L.18.2	Describe and investigate how cellular respiration breaks down food to provide energy and releases carbon dioxide.	High
SC.8.L.18.3	Construct a scientific model of the carbon cycle to show how matter and energy are continuously transferred within and between organisms and their physical environment.	High
SC.8.L.18.4	Cite evidence that living systems follow the Laws of Conservation of Mass and Energy.	High
SC.8.N.1.1	Define a problem from the eighth grade curriculum using appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	High
SC.8.N.1.2	Design and conduct a study using repeated trials and replication.	High
SC.8.N.1.3	Use phrases such as "results support" or "fail to support" in science, understanding that science does not offer conclusive 'proof' of a knowledge claim.	Moderate

SC.8.N.1.4	Explain how hypotheses are valuable if they lead to further investigations, even if they turn out not to be supported by the data.	High
SC.8.N.1.5	Analyze the methods used to develop a scientific explanation as seen in different fields of science.	High
SC.8.N.1.6	Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence.	Moderate
SC.8.N.2.1	Distinguish between scientific and pseudoscientific ideas.	Moderate
SC.8.N.2.2	Discuss what characterizes science and its methods.	Moderate
SC.8.N.3.1	Select models useful in relating the results of their own investigations.	High
SC.8.N.3.2	Explain why theories may be modified but are rarely discarded.	High
SC.8.N.4.1	Explain that science is one of the processes that can be used to inform decision making at the community, state, national, and international levels.	Moderate
SC.8.N.4.2	Explain how political, social, and economic concerns can affect science, and vice versa.	High
SC.8.P.8.1	Explore the scientific theory of atoms (also known as atomic theory) by using models to explain the motion of particles in solids, liquids, and gases.	Moderate
SC.8.P.8.2	Differentiate between weight and mass recognizing that weight is the amount of gravitational pull on an object and is distinct from, though proportional to, mass.	Moderate
SC.8.P.8.3	Explore and describe the densities of various materials through measurement of their masses and volumes.	Moderate

SC.8.P.8.4	Classify and compare substances on the basis of characteristic physical properties that can be demonstrated or measured; for example, density, thermal or electrical conductivity, solubility, magnetic properties, melting and boiling points, and know that these properties are independent of the amount of the sample.	Moderate
SC.8.P.8.5	Recognize that there are a finite number of elements and that their atoms combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter.	Low
SC.8.P.8.6	Recognize that elements are grouped in the periodic table according to similarities of their properties.	Low
SC.8.P.8.7	Explore the scientific theory of atoms (also known as atomic theory) by recognizing that atoms are the smallest unit of an element and are composed of sub-atomic particles (electrons surrounding a nucleus containing protons and neutrons).	Low
SC.8.P.8.8	Identify basic examples of and compare and classify the properties of compounds, including acids, bases, and salts.	Moderate
SC.8.P.8.9	Distinguish among mixtures (including solutions) and pure substances.	Moderate
SC.8.P.9.1	Explore the Law of Conservation of Mass by demonstrating and concluding that mass is conserved when substances undergo physical and chemical changes.	High
SC.8.P.9.2	Differentiate between physical changes and chemical changes.	Moderate
SC.8.P.9.3	Investigate and describe how temperature influences chemical changes.	High

Florida Department of Education

COURSE DESCRIPTION GRADES 6-8

Course Number: 2002110

Course Title: M/J Comprehensive Science 3 Advanced

Course Length: Year

Course Level: 3

Course Status: State Board Approved

General Notes: *Laboratory investigations which include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course*

RELATED BENCHMARKS (54) :

Scheme	Descriptor	Cognitive Complexity
LA.8.2.2.3	The student will organize information to show understanding or relationships among facts, ideas, and events (e.g., representing key points within text through charting, mapping, paraphrasing, summarizing, or comparing/contrasting);	
LA.8.4.2.2	The student will record information (e.g., observations, notes, lists, charts, legends) related to a topic, including visual aids to organize and record information, as appropriate, and attribute sources of information;	
MA.6.A.3.6	Construct and analyze tables, graphs, and equations to describe linear functions and other simple relations using both common language and algebraic notation.	High
MA.6.S.6.2	Select and analyze the measures of central tendency or variability to represent, describe, analyze, and/or summarize a data set for the purposes of answering questions appropriately.	High

SC.8.E.5.1	Recognize that there are enormous distances between objects in space and apply our knowledge of light and space travel to understand this distance.	Moderate
SC.8.E.5.2	Recognize that the universe contains many billions of galaxies and that each galaxy contains many billions of stars.	Low
SC.8.E.5.3	Distinguish the hierarchical relationships between planets and other astronomical bodies relative to solar system, galaxy, and universe, including distance, size, and composition.	High
SC.8.E.5.4	Explore the Law of Universal Gravitation by explaining the role that gravity plays in the formation of planets, stars, and solar systems and in determining their motions.	High
SC.8.E.5.5	Describe and classify specific physical properties of stars: apparent magnitude (brightness), temperature (color), size, and luminosity (absolute brightness).	Moderate
SC.8.E.5.6	Create models of solar properties including: rotation, structure of the Sun, convection, sunspots, solar flares, and prominences.	Low
SC.8.E.5.7	Compare and contrast the properties of objects in the Solar System including the Sun, planets, and moons to those of Earth, such as gravitational force, distance from the Sun, speed, movement, temperature, and atmospheric conditions.	Moderate
SC.8.E.5.8	Compare various historical models of the Solar System, including geocentric and heliocentric.	Moderate
SC.8.E.5.9	<p>Explain the impact of objects in space on each other including:</p> <ol style="list-style-type: none"> 1. The Sun on the Earth including seasons and gravitational attraction 2. The Moon on the Earth, including phases, tides, and eclipses, and the relative position of each body. 	High

SC.8.E.5.10	Assess how technology is essential to science for such purposes as access to outer space and other remote locations, sample collection, measurement, data collection and storage, computation, and communication of information.	High
SC.8.E.5.11	Identify and compare characteristics of the electromagnetic spectrum such as wavelength, frequency, use, and hazards and recognize its application to an understanding of planetary images and satellite photographs.	High
SC.8.E.5.12	Summarize the effects of space exploration on the economy and culture of Florida.	Moderate
SC.8.L.18.1	Describe and investigate the process of photosynthesis, such as the roles of light, carbon dioxide, water and chlorophyll; production of food; release of oxygen.	High
SC.8.L.18.2	Describe and investigate how cellular respiration breaks down food to provide energy and releases carbon dioxide.	High
SC.8.L.18.3	Construct a scientific model of the carbon cycle to show how matter and energy are continuously transferred within and between organisms and their physical environment.	High
SC.8.L.18.4	Cite evidence that living systems follow the Laws of Conservation of Mass and Energy.	High
SC.8.N.1.1	Define a problem from the eighth grade curriculum using appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	High
SC.8.N.1.2	Design and conduct a study using repeated trials and replication.	High
SC.8.N.1.3	Use phrases such as "results support" or "fail to support" in science, understanding that science does not offer conclusive 'proof' of a knowledge claim.	Moderate

SC.8.N.1.4	Explain how hypotheses are valuable if they lead to further investigations, even if they turn out not to be supported by the data.	High
SC.8.N.1.5	Analyze the methods used to develop a scientific explanation as seen in different fields of science.	High
SC.8.N.1.6	Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence.	Moderate
SC.8.N.2.1	Distinguish between scientific and pseudoscientific ideas.	Moderate
SC.8.N.2.2	Discuss what characterizes science and its methods.	Moderate
SC.8.N.3.1	Select models useful in relating the results of their own investigations.	High
SC.8.N.3.2	Explain why theories may be modified but are rarely discarded.	High
SC.8.N.4.1	Explain that science is one of the processes that can be used to inform decision making at the community, state, national, and international levels.	Moderate
SC.8.N.4.2	Explain how political, social, and economic concerns can affect science, and vice versa.	High
SC.8.P.8.1	Explore the scientific theory of atoms (also known as atomic theory) by using models to explain the motion of particles in solids, liquids, and gases.	Moderate
SC.8.P.8.2	Differentiate between weight and mass recognizing that weight is the amount of gravitational pull on an object and is distinct from, though proportional to, mass.	Moderate
SC.8.P.8.3	Explore and describe the densities of various materials through measurement of their masses and volumes.	Moderate

SC.8.P.8.4	Classify and compare substances on the basis of characteristic physical properties that can be demonstrated or measured; for example, density, thermal or electrical conductivity, solubility, magnetic properties, melting and boiling points, and know that these properties are independent of the amount of the sample.	Moderate
SC.8.P.8.5	Recognize that there are a finite number of elements and that their atoms combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter.	Low
SC.8.P.8.6	Recognize that elements are grouped in the periodic table according to similarities of their properties.	Low
SC.8.P.8.7	Explore the scientific theory of atoms (also known as atomic theory) by recognizing that atoms are the smallest unit of an element and are composed of sub-atomic particles (electrons surrounding a nucleus containing protons and neutrons).	Low
SC.8.P.8.8	Identify basic examples of and compare and classify the properties of compounds, including acids, bases, and salts.	Moderate
SC.8.P.8.9	Distinguish among mixtures (including solutions) and pure substances.	Moderate
SC.8.P.9.1	Explore the Law of Conservation of Mass by demonstrating and concluding that mass is conserved when substances undergo physical and chemical changes.	High
SC.8.P.9.2	Differentiate between physical changes and chemical changes.	Moderate
SC.8.P.9.3	Investigate and describe how temperature influences chemical changes.	High
SC.912.E.5.4	Explain the physical properties of the Sun and its dynamic nature and connect them to conditions and events on Earth.	High

SC.912.L.18.7	Identify the reactants, products, and basic functions of photosynthesis.	Moderate
SC.912.L.18.8	Identify the reactants, products, and basic functions of aerobic and anaerobic cellular respiration.	Moderate
SC.912.L.18.9	Explain the interrelated nature of photosynthesis and cellular respiration.	Moderate
SC.912.P.8.1	Differentiate among the four states of matter.	Moderate
SC.912.P.8.2	Differentiate between physical and chemical properties and physical and chemical changes of matter.	Moderate
SC.912.P.8.4	Explore the scientific theory of atoms (also known as atomic theory) by describing the structure of atoms in terms of protons, neutrons and electrons, and differentiate among these particles in terms of their mass, electrical charges and locations within the atom.	High
SC.912.P.8.5	Relate properties of atoms and their position in the periodic table to the arrangement of their electrons.	Moderate
SC.912.P.8.7	Interpret formula representations of molecules and compounds in terms of composition and structure.	Moderate
SC.912.P.8.11	Relate acidity and basicity to hydronium and hydroxyl ion concentration and pH.	Moderate

Florida Department of Education
COURSE DESCRIPTION GRADES 6-8

Course Number: 2003010
Course Title: M/J Physical Science
Course Length: Year
Course Level: 2
Course Status: State Board Approved

General Notes: *Laboratory investigations which include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course*

RELATED BENCHMARKS (62) :

Scheme	Descriptor	Cognitive Complexity
LA.6.2.2.3	The student will organize information to show understanding (e.g., representing main ideas within text through charting, mapping, paraphrasing, summarizing, or comparing/contrasting);	
LA.6.4.2.2	The student will record information (e.g., observations, notes, lists, charts, legends) related to a topic, including visual aids to organize and record information and include a list of sources used;	
MA.6.A.3.6	Construct and analyze tables, graphs, and equations to describe linear functions and other simple relations using both common language and algebraic notation.	High
MA.6.S.6.2	Select and analyze the measures of central tendency or variability to represent, describe, analyze, and/or summarize a data set for the purposes of answering questions appropriately.	High

SC.6.N.1.1	Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	High
SC.6.N.1.2	Explain why scientific investigations should be replicable.	High
SC.6.N.1.3	Explain the difference between an experiment and other types of scientific investigation, and explain the relative benefits and limitations of each.	High
SC.6.N.1.4	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.	High
SC.6.N.1.5	Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.	Moderate
SC.6.N.2.1	Distinguish science from other activities involving thought.	Moderate
SC.6.N.2.2	Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered.	Moderate
SC.6.N.2.3	Recognize that scientists who make contributions to scientific knowledge come from all kinds of backgrounds and possess varied talents, interests, and goals.	Low
SC.6.N.3.1	Recognize and explain that a scientific theory is a well-supported and widely accepted explanation of nature and is not simply a claim posed by an individual. Thus, the use of the term theory in science is very different than how it is used in everyday life.	Moderate
SC.6.N.3.2	Recognize and explain that a scientific law is a description of a specific relationship under given conditions in the natural world. Thus, scientific laws are different from societal laws.	Moderate

SC.6.N.3.3	Give several examples of scientific laws.	Low
SC.6.N.3.4	Identify the role of models in the context of the sixth grade science benchmarks.	Moderate
SC.6.P.11.1	Explore the Law of Conservation of Energy by differentiating between potential and kinetic energy. Identify situations where kinetic energy is transformed into potential energy and vice versa.	Moderate
SC.6.P.12.1	Measure and graph distance versus time for an object moving at a constant speed. Interpret this relationship.	High
SC.6.P.13.1	Investigate and describe types of forces including contact forces and forces acting at a distance, such as electrical, magnetic, and gravitational.	Moderate
SC.6.P.13.2	Explore the Law of Gravity by recognizing that every object exerts gravitational force on every other object and that the force depends on how much mass the objects have and how far apart they are.	Low
SC.6.P.13.3	Investigate and describe that an unbalanced force acting on an object changes its speed, or direction of motion, or both.	Moderate
SC.7.N.1.1	Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	High
SC.7.N.1.2	Differentiate replication (by others) from repetition (multiple trials).	Moderate
SC.7.N.1.3	Distinguish between an experiment (which must involve the identification and control of variables) and other forms of scientific investigation and explain that not all scientific knowledge is derived from experimentation.	Moderate

SC.7.N.1.4	Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment.	Low
SC.7.N.1.5	Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.	Moderate
SC.7.N.1.6	Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based.	Moderate
SC.7.N.1.7	Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.	Moderate
SC.7.N.2.1	Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered.	Low
SC.7.N.3.1	Recognize and explain the difference between theories and laws and give several examples of scientific theories and the evidence that supports them.	High
SC.7.N.3.2	Identify the benefits and limitations of the use of scientific models.	Moderate
SC.7.P.10.1	Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible, and ultraviolet, and that white light is made up of a spectrum of many different colors.	Low
SC.7.P.10.2	Observe and explain that light can be reflected, refracted, and/or absorbed.	High
SC.7.P.10.3	Recognize that light waves, sound waves, and other waves move at different speeds in different materials.	Low
SC.7.P.11.1	Recognize that adding heat to or removing heat from a system may result in a temperature change and possibly a change of state.	Low

SC.7.P.11.2	Investigate and describe the transformation of energy from one form to another.	Moderate
SC.7.P.11.3	Cite evidence to explain that energy cannot be created nor destroyed, only changed from one form to another.	High
SC.7.P.11.4	Observe and describe that heat flows in predictable ways, moving from warmer objects to cooler ones until they reach the same temperature.	Moderate
SC.8.N.1.1	Define a problem from the eighth grade curriculum using appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	High
SC.8.N.1.2	Design and conduct a study using repeated trials and replication.	High
SC.8.N.1.3	Use phrases such as "results support" or "fail to support" in science, understanding that science does not offer conclusive 'proof' of a knowledge claim.	Moderate
SC.8.N.1.4	Explain how hypotheses are valuable if they lead to further investigations, even if they turn out not to be supported by the data.	High
SC.8.N.1.5	Analyze the methods used to develop a scientific explanation as seen in different fields of science.	High
SC.8.N.1.6	Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence.	Moderate
SC.8.N.2.1	Distinguish between scientific and pseudoscientific ideas.	Moderate
SC.8.N.2.2	Discuss what characterizes science and its methods.	Moderate

SC.8.N.3.1	Select models useful in relating the results of their own investigations.	High
SC.8.N.3.2	Explain why theories may be modified but are rarely discarded.	High
SC.8.N.4.1	Explain that science is one of the processes that can be used to inform decision making at the community, state, national, and international levels.	Moderate
SC.8.N.4.2	Explain how political, social, and economic concerns can affect science, and vice versa.	High
SC.8.P.8.1	Explore the scientific theory of atoms (also known as atomic theory) by using models to explain the motion of particles in solids, liquids, and gases.	Moderate
SC.8.P.8.2	Differentiate between weight and mass recognizing that weight is the amount of gravitational pull on an object and is distinct from, though proportional to, mass.	Moderate
SC.8.P.8.3	Explore and describe the densities of various materials through measurement of their masses and volumes.	Moderate
SC.8.P.8.4	Classify and compare substances on the basis of characteristic physical properties that can be demonstrated or measured; for example, density, thermal or electrical conductivity, solubility, magnetic properties, melting and boiling points, and know that these properties are independent of the amount of the sample.	Moderate
SC.8.P.8.5	Recognize that there are a finite number of elements and that their atoms combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter.	Low
SC.8.P.8.6	Recognize that elements are grouped in the periodic table according to similarities of their properties.	Low
SC.8.P.8.7	Explore the scientific theory of atoms (also known as atomic theory) by recognizing that atoms are the smallest unit of an	Low

element and are composed of sub-atomic particles (electrons surrounding a nucleus containing protons and neutrons).

SC.8.P.8.8	Identify basic examples of and compare and classify the properties of compounds, including acids, bases, and salts.	Moderate
SC.8.P.8.9	Distinguish among mixtures (including solutions) and pure substances.	Moderate
SC.8.P.9.1	Explore the Law of Conservation of Mass by demonstrating and concluding that mass is conserved when substances undergo physical and chemical changes.	High
SC.8.P.9.2	Differentiate between physical changes and chemical changes.	Moderate
SC.8.P.9.3	Investigate and describe how temperature influences chemical changes.	High

Florida Department of Education
COURSE DESCRIPTION GRADES 6-8

Course Number: 2003020
Course Title: M/J Physical Science Advance
Course Length: Year
Course Level: 3
Course Status: State Board Approved
General Notes: Laboratory investigations which include the use of scientific inquiry

RELATED BENCHMARKS (71) :

Scheme	Descriptor	Cognitive Complexity
LA.6.2.2.3	The student will organize information to show understanding (e.g., representing main ideas within text through charting, mapping, paraphrasing, summarizing, or comparing/contrasting);	
LA.6.4.2.2	The student will record information (e.g., observations, notes, lists, charts, legends) related to a topic, including visual aids to organize and record information and include a list of sources used;	
MA.6.A.3.6	Construct and analyze tables, graphs, and equations to describe linear functions and other simple relations using both common language and algebraic notation.	High
MA.6.S.6.2	Select and analyze the measures of central tendency or variability to represent, describe, analyze, and/or summarize a data set for the purposes of answering questions appropriately.	High
SC.6.N.1.1	Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific	High

	understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	
SC.6.N.1.2	Explain why scientific investigations should be replicable.	High
SC.6.N.1.3	Explain the difference between an experiment and other types of scientific investigation, and explain the relative benefits and limitations of each.	High
SC.6.N.1.4	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.	High
SC.6.N.1.5	Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.	Moderate
SC.6.N.2.1	Distinguish science from other activities involving thought.	Moderate
SC.6.N.2.2	Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered.	Moderate
SC.6.N.2.3	Recognize that scientists who make contributions to scientific knowledge come from all kinds of backgrounds and possess varied talents, interests, and goals.	Low
SC.6.N.3.1	Recognize and explain that a scientific theory is a well-supported and widely accepted explanation of nature and is not simply a claim posed by an individual. Thus, the use of the term theory in science is very different than how it is used in everyday life.	Moderate
SC.6.N.3.2	Recognize and explain that a scientific law is a description of a specific relationship under given conditions in the natural world. Thus, scientific laws are different from societal laws.	Moderate
SC.6.N.3.3	Give several examples of scientific laws.	Low

SC.6.N.3.4	Identify the role of models in the context of the sixth grade science benchmarks.	Moderate
SC.6.P.11.1	Explore the Law of Conservation of Energy by differentiating between potential and kinetic energy. Identify situations where kinetic energy is transformed into potential energy and vice versa.	Moderate
SC.6.P.12.1	Measure and graph distance versus time for an object moving at a constant speed. Interpret this relationship.	High
SC.6.P.13.1	Investigate and describe types of forces including contact forces and forces acting at a distance, such as electrical, magnetic, and gravitational.	Moderate
SC.6.P.13.2	Explore the Law of Gravity by recognizing that every object exerts gravitational force on every other object and that the force depends on how much mass the objects have and how far apart they are.	Low
SC.6.P.13.3	Investigate and describe that an unbalanced force acting on an object changes its speed, or direction of motion, or both.	Moderate
SC.7.N.1.1	Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	High
SC.7.N.1.2	Differentiate replication (by others) from repetition (multiple trials).	Moderate
SC.7.N.1.3	Distinguish between an experiment (which must involve the identification and control of variables) and other forms of scientific investigation and explain that not all scientific knowledge is derived from experimentation.	Moderate
SC.7.N.1.4	Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment.	Low

SC.7.N.1.5	Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.	Moderate
SC.7.N.1.6	Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based.	Moderate
SC.7.N.1.7	Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.	Moderate
SC.7.N.2.1	Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered.	Low
SC.7.N.3.1	Recognize and explain the difference between theories and laws and give several examples of scientific theories and the evidence that supports them.	High
SC.7.N.3.2	Identify the benefits and limitations of the use of scientific models.	Moderate
SC.7.P.10.1	Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible, and ultraviolet, and that white light is made up of a spectrum of many different colors.	Low
SC.7.P.10.2	Observe and explain that light can be reflected, refracted, and/or absorbed.	High
SC.7.P.10.3	Recognize that light waves, sound waves, and other waves move at different speeds in different materials.	Low
SC.7.P.11.1	Recognize that adding heat to or removing heat from a system may result in a temperature change and possibly a change of state.	Low
SC.7.P.11.2	Investigate and describe the transformation of energy from one form to another.	Moderate

SC.7.P.11.3	Cite evidence to explain that energy cannot be created nor destroyed, only changed from one form to another.	High
SC.7.P.11.4	Observe and describe that heat flows in predictable ways, moving from warmer objects to cooler ones until they reach the same temperature.	Moderate
SC.8.N.1.1	Define a problem from the eighth grade curriculum using appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.	High
SC.8.N.1.2	Design and conduct a study using repeated trials and replication.	High
SC.8.N.1.3	Use phrases such as "results support" or "fail to support" in science, understanding that science does not offer conclusive 'proof' of a knowledge claim.	Moderate
SC.8.N.1.4	Explain how hypotheses are valuable if they lead to further investigations, even if they turn out not to be supported by the data.	High
SC.8.N.1.5	Analyze the methods used to develop a scientific explanation as seen in different fields of science.	High
SC.8.N.1.6	Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence.	Moderate
SC.8.N.2.1	Distinguish between scientific and pseudoscientific ideas.	Moderate
SC.8.N.2.2	Discuss what characterizes science and its methods.	Moderate
SC.8.N.3.1	Select models useful in relating the results of their own investigations.	High

SC.8.N.3.2	Explain why theories may be modified but are rarely discarded.	High
SC.8.N.4.1	Explain that science is one of the processes that can be used to inform decision making at the community, state, national, and international levels.	Moderate
SC.8.N.4.2	Explain how political, social, and economic concerns can affect science, and vice versa.	High
SC.8.P.8.1	Explore the scientific theory of atoms (also known as atomic theory) by using models to explain the motion of particles in solids, liquids, and gases.	Moderate
SC.8.P.8.2	Differentiate between weight and mass recognizing that weight is the amount of gravitational pull on an object and is distinct from, though proportional to, mass.	Moderate
SC.8.P.8.3	Explore and describe the densities of various materials through measurement of their masses and volumes.	Moderate
SC.8.P.8.4	Classify and compare substances on the basis of characteristic physical properties that can be demonstrated or measured; for example, density, thermal or electrical conductivity, solubility, magnetic properties, melting and boiling points, and know that these properties are independent of the amount of the sample.	Moderate
SC.8.P.8.5	Recognize that there are a finite number of elements and that their atoms combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter.	Low
SC.8.P.8.6	Recognize that elements are grouped in the periodic table according to similarities of their properties.	Low
SC.8.P.8.7	Explore the scientific theory of atoms (also known as atomic theory) by recognizing that atoms are the smallest unit of an element and are composed of sub-atomic particles (electrons surrounding a nucleus containing protons and neutrons).	Low

SC.8.P.8.8	Identify basic examples of and compare and classify the properties of compounds, including acids, bases, and salts.	Moderate
SC.8.P.8.9	Distinguish among mixtures (including solutions) and pure substances.	Moderate
SC.8.P.9.1	Explore the Law of Conservation of Mass by demonstrating and concluding that mass is conserved when substances undergo physical and chemical changes.	High
SC.8.P.9.2	Differentiate between physical changes and chemical changes.	Moderate
SC.8.P.9.3	Investigate and describe how temperature influences chemical changes.	High
SC.912.P.8.1	Differentiate among the four states of matter.	Moderate
SC.912.P.8.2	Differentiate between physical and chemical properties and physical and chemical changes of matter.	Moderate
SC.912.P.8.4	Explore the scientific theory of atoms (also known as atomic theory) by describing the structure of atoms in terms of protons, neutrons and electrons, and differentiate among these particles in terms of their mass, electrical charges and locations within the atom.	High
SC.912.P.8.5	Relate properties of atoms and their position in the periodic table to the arrangement of their electrons.	Moderate
SC.912.P.8.7	Interpret formula representations of molecules and compounds in terms of composition and structure.	Moderate
SC.912.P.8.11	Relate acidity and basicity to hydronium and hydroxyl ion concentration and pH.	Moderate
SC.912.P.10.1	Differentiate among the various forms of energy and recognize that they can be transformed from one form to others.	Moderate

Describe heat as the energy transferred by convection,
SC.912.P.10.4 conduction, and radiation, and explain the connection of High
heat to change in temperature or states of matter.

SC.912.P.10.5 Relate temperature to the average molecular kinetic energy. Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number: 2000990
Course Title: Science Transfer
Course Status: State Board Approved

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number: 2002330
Course Title: Space Technology and Engineering
Number of Credits: One credit (1)
Course Length: Year
Course Type: Core
Course Level: 2
Course Status: State Board Approved
Laboratory investigations which include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course

RELATED BENCHMARKS (42) :

Scheme	Descriptor	Cognitive Complexity
LA.910.2.2.3	The student will organize information to show understanding or relationships among facts, ideas, and events (e.g., representing key points within text through charting, mapping, paraphrasing, summarizing, comparing, contrasting, or outlining);	
LA.910.4.2.2	The student will record information and ideas from primary and/or secondary sources accurately and coherently, noting the validity and reliability of these sources and attributing sources of information;	
MA.912.S.1.2	Determine appropriate and consistent standards of measurement for the data to be collected in a survey or experiment.	Moderate
MA.912.S.3.2	Collect, organize, and analyze data sets, determine the best format for the data and present visual summaries	High

from the following:

- bar graphs
- line graphs
- stem and leaf plots
- circle graphs
- histograms
- box and whisker plots
- scatter plots
- cumulative frequency (ogive) graphs

SC.912.E.5.6	Develop logical connections through physical principles, including Kepler's and Newton's Laws about the relationships and the effects of Earth, Moon, and Sun on each other.	High
SC.912.E.5.7	Relate the history of and explain the justification for future space exploration and continuing technology development.	High
SC.912.E.5.8	Connect the concepts of radiation and the electromagnetic spectrum to the use of historical and newly-developed observational tools.	High
SC.912.E.5.9	Analyze the broad effects of space exploration on the economy and culture of Florida.	High
SC.912.E.5.10	Describe and apply the coordinate system used to locate objects in the sky.	Moderate
SC.912.E.5.11	Distinguish the various methods of measuring astronomical distances and apply each in appropriate situations.	High
SC.912.E.7.6	Relate the formation of severe weather to the various physical factors.	Moderate
SC.912.N.1.1	Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following:	High
	1. pose questions about the natural world,	

2. conduct systematic observations,
3. examine books and other sources of information to see what is already known,
4. review what is known in light of empirical evidence,
5. plan investigations,
6. use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs),
7. pose answers, explanations, or descriptions of events,
8. generate explanations that explicate or describe natural phenomena (inferences),
9. use appropriate evidence and reasoning to justify these explanations to others,
10. communicate results of scientific investigations, and
11. evaluate the merits of the explanations produced by others.

SC.912.N.1.2	Describe and explain what characterizes science and its methods.	Moderate
SC.912.N.1.3	Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on critical and logical thinking, and the active consideration of alternative scientific explanations to explain the data presented.	Low
SC.912.N.1.4	Identify sources of information and assess their reliability according to the strict standards of scientific investigation.	High
SC.912.N.1.5	Describe and provide examples of how similar investigations conducted in many parts of the world result in the same outcome.	Moderate
SC.912.N.1.6	Describe how scientific inferences are drawn from scientific observations, and provide examples from the content being studied.	Moderate

SC.912.N.1.7	Recognize the role of creativity in constructing scientific questions, methods and explanations.	Low
SC.912.N.2.1	Identify what is science, what clearly is not science, and what superficially resembles science (but fails to meet the criteria for science).	High
SC.912.N.2.2	Identify which questions can be answered through science and which questions are outside the boundaries of scientific investigation, such as questions addressed by other ways of knowing, such as art, philosophy, and religion.	High
SC.912.N.2.3	Identify examples of pseudoscience (such as astrology, phrenology) in society.	Low
SC.912.N.2.4	Explain that scientific knowledge is both durable and robust, and open to change. Scientific knowledge can change because it is often examined and re-examined by new investigations and scientific argumentation. Because of these frequent examinations, scientific knowledge becomes stronger, leading to its durability.	High
SC.912.N.2.5	Describe instances in which scientists' varied backgrounds, talents, interests, and goals influence the inferences, and thus the explanations that they make about observations of natural phenomena and describe that competing interpretations (explanations) of scientists are a strength of science as they are a source of new, testable ideas that have the potential to add new evidence to support one or another of the explanations.	High
SC.912.N.3.1	Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence concerning a substantial range of phenomena; thus, a scientific theory represents the most powerful explanation scientists have to offer.	High
SC.912.N.3.2	Describe the role consensus plays in the historical development of a theory in any one of the disciplines of science.	Moderate

SC.912.N.3.3	Explain that scientific laws are descriptions of specific relationships under given conditions in nature, but do not offer explanations for those relationships.	Moderate
SC.912.N.3.4	Recognize that theories do not become laws, nor do laws become theories; theories are well supported explanations and laws are well supported descriptions.	Moderate
SC.912.N.3.5	Describe the function of models in science, and identify the wide range of models used in science.	Moderate
SC.912.N.4.1	Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making.	Moderate
SC.912.N.4.2	Weigh the merits of alternative strategies for solving a specific societal problem by comparing a number of different costs and benefits, such as human, economic, and environmental.	High
SC.912.P.10.1	Differentiate among the various forms of energy and recognize that they can be transformed from one form to others.	Moderate
SC.912.P.10.2	Explore the Law of Conservation of Energy by differentiating among open, closed, and isolated systems and explain that the total energy in an isolated system is a conserved quantity.	High
SC.912.P.10.4	Describe heat as the energy transferred by convection, conduction, and radiation, and explain the connection of heat to change in temperature or states of matter.	High
SC.912.P.10.11	Explain and compare nuclear reactions (radioactive decay, fission and fusion), the energy changes associated with them and their associated safety issues.	High
SC.912.P.10.14	Differentiate among conductors, semiconductors, and insulators.	Moderate

SC.912.P.10.15	Investigate and explain the relationships among current, voltage, resistance, and power.	High
SC.912.P.10.16	Explain the relationship between moving charges and magnetic fields, as well as changing magnetic fields and electric fields, and their application to modern technologies.	High
SC.912.P.10.19	Explain that all objects emit and absorb electromagnetic radiation and distinguish between objects that are blackbody radiators and those that are not.	High
SC.912.P.12.3	Interpret and apply Newton's three laws of motion.	High
SC.912.P.12.4	Describe how the gravitational force between two objects depends on their masses and the distance between them.	Moderate
SC.912.P.12.7	Recognize that nothing travels faster than the speed of light in vacuum which is the same for all observers no matter how they or the light source are moving.	Low
SC.912.P.12.8	Recognize that Newton's Laws are a limiting case of Einstein's Special Theory of Relativity at speeds that are much smaller than the speed of light.	Low

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number: 2002340
Course Title: Experimental Science 1
Course Length: Year
Course Status: State Board Approved

General Notes: *Laboratory investigations which include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course*

RELATED BENCHMARKS (13) :

Scheme	Descriptor	Cognitive Complexity
LA.910.2.2.3	The student will organize information to show understanding or relationships among facts, ideas, and events (e.g., representing key points within text through charting, mapping, paraphrasing, summarizing, comparing, contrasting, or outlining);	
LA.910.4.2.2	The student will record information and ideas from primary and/or secondary sources accurately and coherently, noting the validity and reliability of these sources and attributing sources of information;	
MA.912.S.1.2	Determine appropriate and consistent standards of measurement for the data to be collected in a survey or experiment.	Moderate
MA.912.S.3.2	Collect, organize, and analyze data sets, determine the best format for the data and present visual summaries from the following: <ul style="list-style-type: none">• bar graphs• line graphs• stem and leaf plots	High

- circle graphs
- histograms
- box and whisker plots
- scatter plots
- cumulative frequency (ogive) graphs

SC.912.N.1.2	Describe and explain what characterizes science and its methods.	Moderate
SC.912.N.1.3	Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on critical and logical thinking, and the active consideration of alternative scientific explanations to explain the data presented.	Low
SC.912.N.1.6	Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied.	Moderate
SC.912.N.2.4	Explain that scientific knowledge is both durable and robust and open to change. Scientific knowledge can change because it is often examined and re-examined by new investigations and scientific argumentation. Because of these frequent examinations, scientific knowledge becomes stronger, leading to its durability.	High
SC.912.N.2.5	Describe instances in which scientists' varied backgrounds, talents, interests, and goals influence the inferences and thus the explanations that they make about observations of natural phenomena and describe that competing interpretations (explanations) of scientists are a strength of science as they are a source of new, testable ideas that have the potential to add new evidence to support one or another of the explanations.	High
SC.912.N.3.1	Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence concerning a substantial range of phenomena; thus, a scientific theory represents the most powerful explanation scientists have to offer.	High

- SC.912.N.3.2 Describe the role consensus plays in the historical development of a theory in any one of the disciplines of science. Moderate
- SC.912.N.3.5 Describe the function of models in science, and identify the wide range of models used in science. Moderate
- SC.912.N.4.1 Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making. Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number: 2002350
Course Title: Experimental Science 2
Course Length: Year
Course Status: State Board Approved

General Notes: *Laboratory investigations which include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course*

RELATED BENCHMARKS (13) :

Scheme	Descriptor	Cognitive Complexity
LA.910.2.2.3	The student will organize information to show understanding or relationships among facts, ideas, and events (e.g., representing key points within text through charting, mapping, paraphrasing, summarizing, comparing, contrasting, or outlining);	
LA.910.4.2.2	The student will record information and ideas from primary and/or secondary sources accurately and coherently, noting the validity and reliability of these sources and attributing sources of information;	
MA.912.S.1.2	Determine appropriate and consistent standards of measurement for the data to be collected in a survey or experiment.	Moderate
MA.912.S.3.2	Collect, organize, and analyze data sets, determine the best format for the data and present visual summaries from the following: <ul style="list-style-type: none">• bar graphs• line graphs• stem and leaf plots	High

- circle graphs
- histograms
- box and whisker plots
- scatter plots
- cumulative frequency (ogive) graphs

SC.912.N.1.2	Describe and explain what characterizes science and its methods.	Moderate
SC.912.N.1.3	Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on critical and logical thinking, and the active consideration of alternative scientific explanations to explain the data presented.	Low
SC.912.N.1.6	Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied.	Moderate
SC.912.N.2.4	Explain that scientific knowledge is both durable and robust and open to change. Scientific knowledge can change because it is often examined and re-examined by new investigations and scientific argumentation. Because of these frequent examinations, scientific knowledge becomes stronger, leading to its durability.	High
SC.912.N.2.5	Describe instances in which scientists' varied backgrounds, talents, interests, and goals influence the inferences and thus the explanations that they make about observations of natural phenomena and describe that competing interpretations (explanations) of scientists are a strength of science as they are a source of new, testable ideas that have the potential to add new evidence to support one or another of the explanations.	High
SC.912.N.3.1	Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence concerning a substantial range of phenomena; thus, a scientific theory represents the most powerful explanation scientists have to offer.	High

- SC.912.N.3.2 Describe the role consensus plays in the historical development of a theory in any one of the disciplines of science. Moderate
- SC.912.N.3.5 Describe the function of models in science, and identify the wide range of models used in science. Moderate
- SC.912.N.4.1 Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making. Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number: 2002360

Course Title: Experimental Science 3

Course Length: Year

Course Status: State Board Approved

Laboratory investigations which include the use of scientific inquiry, research, measurement, problem

General Notes: *solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course*

RELATED BENCHMARKS (20) :

Scheme	Descriptor	Cognitive Complexity
LA.910.2.2.3	The student will organize information to show understanding or relationships among facts, ideas, and events (e.g., representing key points within text through charting, mapping, paraphrasing, summarizing, comparing, contrasting, or outlining);	
LA.910.4.2.2	The student will record information and ideas from primary and/or secondary sources accurately and coherently, noting the validity and reliability of these sources and attributing sources of information;	
MA.912.S.1.2	Determine appropriate and consistent standards of measurement for the data to be collected in a survey or experiment.	Moderate
MA.912.S.3.2	Collect, organize, and analyze data sets, determine the best format for the data and present visual summaries from the following: <ul style="list-style-type: none">• bar graphs• line graphs• stem and leaf plots• circle graphs	High

- histograms
- box and whisker plots
- scatter plots
- cumulative frequency (ogive) graphs

SC.8.L.18.4	Cite evidence that living systems follow the Laws of Conservation of Mass and Energy.	High
SC.912.E.7.1	Analyze the movement of matter and energy through the different biogeochemical cycles, including water and carbon.	High
SC.912.E.7.3	Differentiate and describe the various interactions among Earth systems, including: atmosphere, hydrosphere, cryosphere, geosphere, and biosphere.	High
SC.912.E.7.8	Explain how various atmospheric, oceanic, and hydrologic conditions in Florida have influenced and can influence human behavior, both individually and collectively.	High
SC.912.E.7.9	Cite evidence that the ocean has had a significant influence on climate change by absorbing, storing, and moving heat, carbon, and water.	High
SC.912.L.17.7	Characterize the biotic and abiotic components that define freshwater systems, marine systems and terrestrial systems.	Moderate
SC.912.L.17.10	Diagram and explain the biogeochemical cycles of an ecosystem, including water, carbon, and nitrogen cycle.	Moderate
SC.912.N.1.2	Describe and explain what characterizes science and its methods.	Moderate
SC.912.N.1.3	Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on critical and logical thinking, and the active consideration of alternative scientific explanations to explain the data presented.	Low

SC.912.N.1.6	Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied.	Moderate
SC.912.N.2.4	Explain that scientific knowledge is both durable and robust and open to change. Scientific knowledge can change because it is often examined and re-examined by new investigations and scientific argumentation. Because of these frequent examinations, scientific knowledge becomes stronger, leading to its durability.	High
SC.912.N.2.5	Describe instances in which scientists' varied backgrounds, talents, interests, and goals influence the inferences and thus the explanations that they make about observations of natural phenomena and describe that competing interpretations (explanations) of scientists are a strength of science as they are a source of new, testable ideas that have the potential to add new evidence to support one or another of the explanations.	High
SC.912.N.3.1	Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence concerning a substantial range of phenomena; thus, a scientific theory represents the most powerful explanation scientists have to offer.	High
SC.912.N.3.2	Describe the role consensus plays in the historical development of a theory in any one of the disciplines of science.	Moderate
SC.912.N.3.5	Describe the function of models in science, and identify the wide range of models used in science.	Moderate
SC.912.N.4.1	Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making.	Moderate

Florida Department of Education

COURSE DESCRIPTION GRADES 9-12

Course Number: 2002370
Course Title: Experimental Science 4
Course Length: Year
Course Status: State Board Approved

General Notes: *Laboratory investigations which include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course*

RELATED BENCHMARKS (14) :

Scheme	Descriptor	Cognitive Complexity
LA.910.2.2.3	The student will organize information to show understanding or relationships among facts, ideas, and events (e.g., representing key points within text through charting, mapping, paraphrasing, summarizing, comparing, contrasting, or outlining);	
LA.910.4.2.2	The student will record information and ideas from primary and/or secondary sources accurately and coherently, noting the validity and reliability of these sources and attributing sources of information;	
MA.912.S.1.2	Determine appropriate and consistent standards of measurement for the data to be collected in a survey or experiment.	Moderate
MA.912.S.3.2	Collect, organize, and analyze data sets, determine the best format for the data and present visual summaries from the following: <ul style="list-style-type: none"> • bar graphs • line graphs • stem and leaf plots 	High

- circle graphs
- histograms
- box and whisker plots
- scatter plots
- cumulative frequency (ogive) graphs

SC.912.N.1.2	Describe and explain what characterizes science and its methods.	Moderate
SC.912.N.1.3	Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on critical and logical thinking, and the active consideration of alternative scientific explanations to explain the data presented.	Low
SC.912.N.1.6	Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied.	Moderate
SC.912.N.2.4	Explain that scientific knowledge is both durable and robust and open to change. Scientific knowledge can change because it is often examined and re-examined by new investigations and scientific argumentation. Because of these frequent examinations, scientific knowledge becomes stronger, leading to its durability.	High
SC.912.N.2.5	Describe instances in which scientists' varied backgrounds, talents, interests, and goals influence the inferences and thus the explanations that they make about observations of natural phenomena and describe that competing interpretations (explanations) of scientists are a strength of science as they are a source of new, testable ideas that have the potential to add new evidence to support one or another of the explanations.	High
SC.912.N.3.1	Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence concerning a substantial range of phenomena; thus, a scientific theory represents the most powerful explanation scientists have to offer.	High
SC.912.N.3.2	Describe the role consensus plays in the historical	Moderate

development of a theory in any one of the disciplines of science.

SC.912.N.3.5 Describe the function of models in science, and identify the wide range of models used in science. Moderate

SC.912.N.4.1 Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making. Moderate

SC.912.N.4.2 Weigh the merits of alternative strategies for solving a specific societal problem by comparing a number of different costs and benefits, such as human, economic, and environmental. High