Course: 2001010 M/J Earth/Space Science

Direct link to this page:http://www.floridastandards.org/Courses/PublicPreviewCourse62.aspx?ct=1

BASIC INFORMATION

Course Number:	2001010
Course Title:	M/J Earth/Space Science
Course Abbreviated Title:	M/J EARTH/SPA SCI
Course Path:	**Section:** Grades PreK to 12 Education Courses » **Grade Group:** Grades 6 to 8 Education Courses » **Subject:** Science » **SubSubject:** Earth/Space Sciences »
Course Length:	Year
Status:	State Board Approved

STANDARDS (69)

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.
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.
SC.6.E.6.1:	Describe and give examples of ways in which Earth's surface is built up and torn down by physical and chemical weathering, erosion, and deposition.
SC.6.E.6.2:	Recognize that there are a variety of different landforms on Earth's surface such as coastlines, dunes, rivers, mountains, glaciers, deltas, and lakes and relate these landforms as they apply to Florida.
SC.6.E.7.1:	Differentiate among radiation, conduction, and convection, the three mechanisms by which heat is transferred through Earth's system.
SC.6.E.7.2:	Investigate and apply how the cycling of water between the atmosphere and hydrosphere has an effect on weather patterns and climate.
SC.6.E.7.3:	Describe how global patterns such as the jet stream and ocean currents influence local weather in measurable terms such as temperature, air pressure, wind direction and speed, and humidity and precipitation.

SC.6.E.7.4:	Differentiate and show interactions among the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere.
SC.6.E.7.5:	Explain how energy provided by the sun influences global patterns of atmospheric movement and the temperature differences between air, water, and land.
SC.6.E.7.6:	Differentiate between weather and climate.
SC.6.E.7.7:	Investigate how natural disasters have affected human life in Florida.
SC.6.E.7.8:	Describe ways human beings protect themselves from hazardous weather and sun exposure.
SC.6.E.7.9:	Describe how the composition and structure of the atmosphere protects life and insulates the planet.
SC.6.N.1.1:	Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
SC.6.N.1.2:	Explain why scientific investigations should be replicable.

SC.6.N.1.3:	Explain the difference between an experiment and other types of scientific investigation, and explain the relative benefits and limitations of each.
SC.6.N.1.4:	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.
SC.6.N.1.5:	Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.
SC.6.N.2.1:	Distinguish science from other activities involving thought.
SC.6.N.2.2:	Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered.
SC.6.N.2.3:	Recognize that scientists who make contributions to scientific knowledge come from all kinds of backgrounds and possess varied talents, interests, and goals.
SC.6.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.
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.

SC.6.N.3.3:	Give several examples of scientific laws.
SC.6.N.3.4:	Identify the role of models in the context of the sixth grade science benchmarks.
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.
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).
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.
SC.7.E.6.4:	Explain and give examples of how physical evidence supports scientific theories that Earth has evolved over geologic time due to natural processes.
SC.7.E.6.5:	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.
SC.7.E.6.6:	Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.

SC.7.E.6.7:	Recognize that heat flow and movement of material within Earth causes earthquakes and volcanic eruptions, and creates mountains and ocean basins.
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.
SC.7.N.1.2:	Differentiate replication (by others) from repetition (multiple trials).
SC.7.N.1.3:	Distinguish between an experiment (which must involve the identification and control of variables) and other forms of scientific investigation and explain that not all scientific knowledge is derived from experimentation.
SC.7.N.1.4:	Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment.
SC.7.N.1.5:	Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.
SC.7.N.1.6:	Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based.

SC.7.N.1.7:	Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.
SC.7.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.
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.
SC.7.N.3.2:	Identify the benefits and limitations of the use of scientific models.
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.
SC.8.E.5.2:	Recognize that the universe contains many billions of 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.
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.

SC.8.E.5.5:	Describe and classify specific physical properties of stars: apparent magnitude (brightness), temperature (color), size, and luminosity (absolute brightness).
SC.8.E.5.6:	Create models of solar properties including: rotation, structure of the Sun, convection, sunspots, solar flares, and prominences.
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.
SC.8.E.5.8:	Compare various historical models of the Solar System, including geocentric and heliocentric.
SC.8.E.5.9:	Explain the impact of objects in space on each other including: 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.
SC.8.E.5.10:	Assess how technology is essential to science for such purposes as access to outer space and other remote locations, sample collection, measurement, data collection and storage, computation, and communication of information.

SC.8.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.
SC.8.E.5.12:	Summarize the effects of space exploration on the economy 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.
SC.8.N.1.2:	Design and conduct a study using repeated trials and replication.
SC.8.N.1.3:	Use phrases such as "results support" or "fail to support" in science, understanding that science does not offer conclusive 'proof' of a knowledge claim.
SC.8.N.1.4:	Explain how hypotheses are valuable if they lead to further investigations, even if they turn out not to be supported by the data.
SC.8.N.1.5:	Analyze the methods used to develop a scientific explanation as seen in different fields of science.

SC.8.N.1.6:	Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence.
SC.8.N.2.1:	Distinguish between scientific and pseudoscientific ideas.
SC.8.N.2.2:	Discuss what characterizes science and its methods.
SC.8.N.3.1:	Select models useful in relating the results of their own investigations.
SC.8.N.3.2:	Explain why theories may be modified but are rarely discarded.
SC.8.N.4.1:	Explain that science is one of the processes that can be used to inform decision making at the community, state, national, and international levels.
SC.8.N.4.2:	Explain how political, social, and economic concerns can affect science, and vice versa.

RELATED GLOSSARY TERM DEFINITIONS (70)

Central tendency:	A measure used to describe data (e.g., mean, mode, median).
Equation:	A mathematical sentence stating that the two expressions have the same value. Also read the definition of equality.

Line:	A collection of an infinite number of points in a straight pathway with unlimited length and having no width.
Linear function:	A relationship between two variables such that for a fixed change in one variable, there is fixed change in the other variable. If there is one independent variable (e.g. f(x)=mx+b), then the graph of the function will be a line. If there are two independent variables (e.g. f(x,y)=ax+by+c) then the graph of the function will be a plane.
Mean:	There are several statistical quantities called means, e.g., harmonic mean, arithmetic mean, and geometric mean. However, “mean” commonly refers to the arithmetic mean that is also called arithmetic average. Arithmetic mean is a mathematical representation of the typical value of a series of numbers, computed as the sum of all the numbers in the series divided by the count of all numbers in the series. Arithmetic mean is the balance point if the numbers are considered as weights on a beam.
Median:	When the numbers are arranged from least to greatest, the middle number of a set of numbers, or the mean of two middle numbers when the set has two middle numbers is called median. Half of the numbers are above the median and half are below it.
Mode:	The most frequent value(s) of a set of data. A data set may have more than one mode if two or more data values appear the most. When no data value occurs more than once in a data set, there is no mode.
Outlier:	An outlier is a data point that lies outside the overall pattern of a distribution. An outlier is usually a point which falls more than 1.5 times the interquartile range above the third quartile or below the first quartile. Outliers can also be identified on a scatter plot.

Relation:	A relation from A to B is any subset of the cross product (Cartesian product) of A and B.
Set:	A set is a finite or infinite collection of distinct objects in which order has no significance.
Table:	A data display that organizes information about a topic into categories using rows and columns.
Atmosphere:	The layers of gas that surround Earth, other planets, or stars.
Attraction :	The electric or magnetic force exerted by oppositely charged particles, tending to draw or hold the particles together.
Biosphere:	The part of the earth and its atmosphere in which living organisms exist or that is capable of supporting life.
Conduction:	The transmission of heat through a medium and without the motion of the medium.
Convection:	Heat transfer in a gas or liquid by the circulation of currents from one region to another.
Current :	The amount of electric charge flowing past a specified circuit point per unit time.
Deforestation:	The cutting down and removal of all or most of the trees in a forested area.
Delta:	A usually triangular mass of sediment, especially silt and sand, deposited at the mouth of a river. Deltas form when a river flows into a body of standing water, such as a sea or lake, and deposits large quantities of sediment.
Dependent variable:	Factor being measured or observed in an experiment.
Deposition:	The process by which sediment is carried by forces (e.g., wind, rain, or water currents) and left in a certain area.
Desertification:	The transformation of arable or habitable land to desert, as by a change in climate or destructive land use.

Dune:	A hill or ridge of sand piled up by the wind.
Earthquake:	The shaking of the ground caused by a sudden release of energy in Earth's crust.
Eclipse:	The partial or total blocking of light of one celestial object by another.
Electromagnetic spectrum:	The entire range of electromagnetic radiation. At one end of the spectrum are gamma rays, which have the shortest wavelengths and high frequencies. At the other end are radio waves, which have the longest wavelengths and low frequencies. Visible light is near the center of the spectrum.
Energy:	The capacity to do work.
Erosion:	The wearing away of Earth's surface by the breakdown and transportation of rock and soil.
Experiment:	A procedure that is carried out and repeated under controlled conditions in order to discover, demonstrate, or test a hypothesis.
Force:	A vector quantity that exists between two objects and, when unbalanced by another force, causes changes in velocity of objects in the direction of its application; a push or pull.
Frequency:	The number of cycles or waves per unit time.
Galaxy:	A large collection of stars, gases, and dust that are part of the universe (e.g., the Milky Way galaxy) bound together by gravitational forces.
Geocentric:	Relating to a model of the solar system or universe having the Earth as the center.
Geosphere:	The solid part of the earth consisting of the crust and outer mantle.
Glacier:	A huge mass of ice slowly flowing over a land mass, formed from compacted snow in an area where snow accumulation exceeds melting and sublimation.

Gravity:	The force of attraction between any two objects.
Heat:	Energy that transfers between substances because of a temperature difference between the substances; the transfer of energy is always from the warmer substance to the cooler substance
Heliocentric:	Relating to a model of the solar system or universe having the Sun as the center.
Humidity:	The amount of water vapor in the atmosphere, usually expressed as either absolute humidity or relative humidity.
Hydrosphere:	All of the Earth's water, including surface water (water in oceans, lakes, and rivers), groundwater (water in soil and beneath the Earth's surface), snowcover, ice, and water in the atmosphere, including water vapor.
Hypothesis :	A tentative explanation for an observation, phenomenon, or scientific problem that can be tested by further investigation.
Independent variable:	The factor that is changed in an experiment in order to study changes in the dependent variable.
Investigation :	A systematic process that uses various types of data and logic and reasoning to better understand something or answer a question.
Law :	A statement that describes invariable relationships among phenomena under a specified set of conditions.
Light:	Electromagnetic radiation that lies within the visible range.
Liquid:	One of the fundamental states of matter with a definite volume but no definite shape.

Lithosphere:	The outer part of the solid earth composed of rock essentially like that exposed at the surface, consisting of the crust and outermost layer of the mantle, and usually considered to be about 60 miles (100 kilometers) in thickness.
Model :	A systematic description of an object or phenomenon that shares important characteristics with the object or phenomenon. Scientific models can be material, visual, mathematical, or computational and are often used in the construction of scientific theories.
Moon:	A natural satellite that revolves around a planet.
Observation :	What one has observed using senses or instruments.
Planet:	A large body in space that orbits a star and does not produce light of its own.
Plate tectonics:	Theory of global dynamics in which Earth’s crust is divided into a smaller number of large, rigid plates whose movements cause seismic activity along their borders.
Precipitation:	In meteorology, a form of water, such as rain, snow, or sleet that condenses from the atmosphere, becomes too heavy to remain suspended, and falls to the Earth's surface.
Pseudoscientific:	A theory, methodology, or practice that is considered to be without scientific foundation.
Radiation:	Emission of energy in the form of rays or waves.
Radioactive dating:	Measurement of the amount of radioactive material (usually carbon 14) that an object contains; can be used to estimate the age of the object.
Replication:	In scientific research, conducting an experiment to confirm findings or to ensure accuracy. In molecular biology, the process by which genetic material is copied in cells.

Scientist:	A person with expert knowledge of one or more sciences, that engages in processes to acquire and communicate knowledge.
Season:	One of four natural divisions of the year—spring, summer, autumn, and winter—in temperate zones. Each season has its own characteristic weather and lasts approximately three months. The change in the seasons is brought about by the shift in the angle at which the Sun's rays strike the Earth. This angle changes as the Earth orbits in its yearly cycle around the Sun due to the tilt of the Earth's axis.
Sense:	Any of the faculties by which stimuli from outside or inside the body are received and felt, as the faculties of hearing, sight, smell, touch, taste, and equilibrium.
Solar system:	A star and all the planets and other bodies that orbit it; the region in space where these bodies move.
Solid:	Having a definite shape and a definite volume; one of the fundamental states of matter.
Space:	The limitless expanse where all objects and events occur. Outer space is the region of the universe beyond Earth's atmosphere.
Speed:	Amount of distance traveled divided by time taken; the time-rate at which any physical process takes place.
Sun:	The closest star to Earth and the center of our solar system.
Superposition:	The principle that in a group of stratified sedimentary rocks the lowest were the earliest to be deposited.

Theory :	A set of statements or principles devised to explain a group of facts or phenomena, especially one that has been repeatedly tested or is widely accepted and can be used to make predictions about natural phenomena.
Tide:	The regular rise and fall in the surface level of the Earth's oceans, seas, and bays caused by the gravitational attraction of the Moon and to a lesser extent of the Sun.
Variable:	An event, condition, or factor that can be changed or controlled in order to study or test a hypothesis in a scientific experiment.
Wavelength:	The distance between crests of a wave.