



Earth/Space Science Honors (#2001320)

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Course Number: 2001320	Course Path: Section: Grades PreK to 12 Education Courses > Grade Group: Grades 9 to 12 and Adult Education Courses > Subject: Science > SubSubject: Earth/Space Sciences > Abbreviated Title: EARTH/SPA SCI HON
Number of Credits: One (1) credit	Course Length: Year (Y)
Course Type: Core Academic Course	Course Attributes: <ul style="list-style-type: none">• Honors
Course Status: Course Approved	Course Level: 3
Graduation Requirement: Equally Rigorous Science	

GENERAL NOTES

While the content focus of this course is consistent with the Earth/Space Science course, students will explore these concepts in greater depth. In general, the academic pace and rigor will be greatly increased for honors level course work. Laboratory investigations that 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. The National Science Teachers Association (NSTA) recommends that at the high school level, all students should be in the science lab or field, collecting data every week. School laboratory investigations (labs) are defined by the National Research Council (NRC) as an experience in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC, 2006, p. 3). Laboratory investigations in the high school classroom should help all students develop a growing understanding of the complexity and ambiguity of empirical work, as well as the skills to calibrate and troubleshoot equipment used to make observations. Learners should understand measurement error; and have the skills to aggregate, interpret, and present the resulting data (National Research Council, 2006, p.77; NSTA, 2007).

Special Notes:

Instructional Practices

Teaching from a range of complex text is optimized when teachers in all subject areas implement the following strategies on a routine basis:

1. Ensuring wide reading from complex text that varies in length.
2. Making close reading and rereading of texts central to lessons.
3. Emphasizing text-specific complex questions, and cognitively complex tasks, reinforce focus on the text and cultivate independence.
4. Emphasizing students supporting answers based upon evidence from the text.
5. Providing extensive research and writing opportunities (claims and evidence).

Science and Engineering Practices (NRC Framework for K-12 Science Education, 2010)

- Asking questions (for science) and defining problems (for engineering).
- Developing and using models.
- Planning and carrying out investigations.
- Analyzing and interpreting data.
- Using mathematics, information and computer technology, and computational thinking.
- Constructing explanations (for science) and designing solutions (for engineering).
- Engaging in argument from evidence.
- Obtaining, evaluating, and communicating information.

Literacy Standards in Science

Secondary science courses include reading standards for literacy in science and technical subjects 6-12 and writing standards for literacy in history/social studies, science, and technical subjects 6-12. The courses also include speaking and listening standards. For a complete list of standards required for this course click on the blue tile labeled course standards. You may also download the complete course including all required standards and notes sections using the export function located at the top of this page.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Science. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link:

<http://www.cpalms.org/uploads/docs/standards/eld/SC.pdf>

For additional information on the development and implementation of the ELD standards, please contact the Bureau of Student Achievement through Language Acquisition at sala@fldoe.org.

Course Standards

Integrate Standards for Mathematical Practice (MP) as applicable.

- MAFS.K12.MP.1.1 Make sense of problems and persevere in solving them.
- MAFS.K12.MP.2.1 Reason abstractly and quantitatively.
- MAFS.K12.MP.3.1 Construct viable arguments and critique the reasoning of others.
- MAFS.K12.MP.4.1 Model with mathematics.
- MAFS.K12.MP.5.1 Use appropriate tools strategically.
- MAFS.K12.MP.6.1 Attend to precision.
- MAFS.K12.MP.7.1 Look for and make use of structure.
- MAFS.K12.MP.8.1 Look for and express regularity in repeated reasoning.

Name	Description
SC.912.E.5.1:	<p>Cite evidence used to develop and verify the scientific theory of the Big Bang (also known as the Big Bang Theory) of the origin...</p> <p>Remarks/Examples: Explain evidence to support the formation of the universe, which has been expanding for approximately 15 billion year (e.g. ratio of gases, red-shift from distant galaxies, and cosmic background radiation).</p>
SC.912.E.5.2:	<p>Identify patterns in the organization and distribution of matter in the universe and the forces that determine them.</p> <p>Remarks/Examples: Identify patterns that influence the formation, hierarchy, and motions of the various kinds of objects in the solar system and the role of gravity and inertia on these motions (include the Sun, Earth, and Moon, planets, satellites, comets, asteroids, star clusters, galaxies, galaxy clusters). Recognize that the universe contains many billions of galaxies, and each galaxy contains many billions of stars. Recognize that constellations are contrived associations of stars that do not reflect functional relationships in space.</p> <p>Florida Standards Connections: MAFS.K12.MP.7: Look for and make use of structure.</p>
SC.912.E.5.3:	<p>Describe and predict how the initial mass of a star determines its evolution.</p> <p>Remarks/Examples: Compare and contrast the evolution of stars of different masses (include the three outcomes of stellar evolution based on mass: black hole, neutron star, white dwarf). Differentiate between the different types of stars found on the Hertzsprung-Russell diagram and the balance between gravitational collapse and nuclear fusion in determining the color, brightness, and life span of a star.</p>
SC.912.E.5.4:	<p>Explain the physical properties of the Sun and its dynamic nature and connect them to conditions and events on Earth.</p> <p>Remarks/Examples: Describe the physical properties of the Sun (sunspot cycles, solar flares, prominences, layers of the Sun, coronal mass ejections, and nuclear reactions) and the impact of the Sun as the main source of external energy for the Earth.</p>
SC.912.E.5.5:	<p>Explain the formation of planetary systems based on our knowledge of our Solar System and apply this knowledge to newly...</p> <p>Remarks/Examples: Describe how evidence from the study of our Solar System and newly discovered extra solar planetary systems supports the Nebular theory of the formation of planetary systems.</p>
SC.912.E.5.6:	<p>Develop logical connections through physical principles, including Kepler's and Newton's Laws about the relationships and the...</p> <p>Remarks/Examples: Explain that Kepler's laws determine the orbits of objects in the solar system and recognize that Kepler's laws are a direct consequence of Newton's Law of Universal Gravitation and Laws of Motion.</p>
SC.912.E.5.7:	<p>Relate the history of and explain the justification for future space exploration and continuing technology development.</p> <p>Remarks/Examples: Identify examples of historical space exploration (e.g. telescopes, high altitude balloons, lunar landers, deep-space probes, space station) that had significant impact on current space exploration and recognize the importance of continued exploration in space.</p>
SC.912.E.5.8:	<p>Connect the concepts of radiation and the electromagnetic spectrum to the use of historical and newly-developed observational...</p> <p>Remarks/Examples: Describe how frequency is related to the characteristics of electromagnetic radiation and recognize how spectroscopy is used to detect and interpret information from electromagnetic radiation sources.</p>
SC.912.E.5.9:	<p>Analyze the broad effects of space exploration on the economy and culture of Florida.</p> <p>Remarks/Examples: Recognize the economic, technical and social benefits of spinoff technology developed through the space program.</p>
SC.912.E.5.10:	<p>Describe and apply the coordinate system used to locate objects in the sky.</p> <p>Remarks/Examples: Discuss how scientists determine the location of constellations, celestial spheres, and sky maps. Compare and contrast the celestial coordinate system (equatorial system) to the use of latitude and longitude to specify locations on Earth. Recognize the use of right ascension and declination in the location of objects in space, including stars and constellations.</p>
SC.912.E.5.11:	<p>Distinguish the various methods of measuring astronomical distances and apply each in appropriate situations.</p> <p>Remarks/Examples: Determine which units of measurement are appropriate to describe distance (e.g. astronomical units, parallax, and light years).</p> <p>Florida Standards Connections: MAFS.K12.MP.5: Use appropriate tools strategically; and MAFS.K12.MP.6: Attend to precision.</p>
SC.912.E.6.1:	<p>Describe and differentiate the layers of Earth and the interactions among them.</p> <p>Remarks/Examples: Recognize the importance of the study of seismic wave data and how it can be used to determine the internal structure, density variations, and dynamic processes between Earth's layers.</p>
	<p>Connect surface features to surface processes that are responsible for their formation.</p> <p>Remarks/Examples:</p>

SC.912.E.6.2:	Identify various landforms (e.g. dunes, lakes, sinkholes, aquifers) and describe how they form (erosion, physical/chemical weathering, and deposition). Explain how sea level changes over time have exposed and inundated continental shelves, created and destroyed inland seas, and shaped the surface of the Earth.
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. Remarks/Examples: Discuss the development of plate tectonic theory, which is derived from the combination of two theories: continental drift and seafloor spreading. Compare and contrast the three primary types of plate boundaries (convergent, divergent, and transform). Explain the origin of geologic features and processes that result from plate tectonics (e.g. earthquakes, volcanoes, trenches, mid-ocean ridges, island arcs and chains, hot spots, earthquake distribution, tsunamis, mountain ranges).
SC.912.E.6.4:	Analyze how specific geologic processes and features are expressed in Florida and elsewhere. Remarks/Examples: Describe the effect of ocean and Gulf water currents, gravel mining, beach erosion, dune development, aquifers and ground water, salt water intrusion, springs, and sink holes on the formation of the Florida peninsula. Explain the effects of latitude, elevation, topography (land surface type), proximity to large bodies of water, and temperature of ocean currents, on climate in Florida.
SC.912.E.6.5:	Describe the geologic development of the present day oceans and identify commonly found features. Remarks/Examples: Describe the topography of the ocean floor and how it formed (e.g. plate tectonics, sea level changes).
SC.912.E.7.1:	Analyze the movement of matter and energy through the different biogeochemical cycles, including water and carbon. Remarks/Examples: Describe that the Earth system contains fixed amounts of each stable chemical element and that each element moves among reservoirs in the solid earth, oceans, atmosphere and living organisms as part of biogeochemical cycles (i.e., nitrogen, water, carbon, oxygen and phosphorus), which are driven by energy from within the Earth and from the Sun.
SC.912.E.7.2:	Analyze the causes of the various kinds of surface and deep water motion within the oceans and their impacts on the transfer of... Remarks/Examples: Explain how surface and deep-water circulation patterns (Coriolis effect, La Niña, El Niño, Southern Oscillation, upwelling, ocean surface cooling, freshwater influx, density differences, Labrador Current and Gulf Stream) impact energy transfer in the environment.
SC.912.E.7.3:	Differentiate and describe the various interactions among Earth systems, including: atmosphere, hydrosphere, cryosphere,... Remarks/Examples: Interactions include transfer of energy (biogeochemical cycles, water cycle, ground and surface waters, photosynthesis, radiation, plate tectonics, conduction, and convection), storms, winds, waves, erosion, currents, deforestation and wildfires, hurricanes, tsunamis, volcanoes.
SC.912.E.7.4:	Summarize the conditions that contribute to the climate of a geographic area, including the relationships to lakes and oceans. Remarks/Examples: Describe how latitude, altitude, topography, prevailing winds, proximity to large bodies of water, vegetation and ocean currents determine the climate of a geographic area.
SC.912.E.7.5:	Predict future weather conditions based on present observations and conceptual models and recognize limitations and uncertainties... Remarks/Examples: Use models, weather maps and other tools to predict weather conditions and differentiate between accuracy of short-range and long-range weather forecasts.
SC.912.E.7.6:	Relate the formation of severe weather to the various physical factors. Remarks/Examples: Identify the causes of severe weather. Compare and contrast physical factors that affect the formation of severe weather events (e.g. hurricanes, tornados, flash floods, thunderstorms, and drought).
SC.912.E.7.7:	Identify, analyze, and relate the internal (Earth system) and external (astronomical) conditions that contribute to global... Remarks/Examples: Explain the possible natural (e.g. increased global temperature, wildfires, volcanic dust) and anthropogenic mechanisms (e.g. air pollution, acid rain, greenhouse gases, burning of fossil fuels) and the effects of these mechanisms on global climate change.
SC.912.E.7.8:	Explain how various atmospheric, oceanic, and hydrologic conditions in Florida have influenced and can influence human behavior,... Remarks/Examples: Describe and discuss the conditions that bring about floods, droughts, wildfires, thunderstorms, hurricanes, rip currents, and tsunamis and how these conditions can influence human behavior (e.g. energy alternatives, conservation, migration, storm preparedness).
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,... Remarks/Examples: Explain how the oceans act as sources/sinks of heat energy, store carbon dioxide mostly as dissolved HCO ₃ ⁻ and CaCO ₃ as precipitate or biogenic carbonate deposits, which have an impact on climate change.
SC.912.L.15.1:	Explain how the scientific theory of evolution is supported by the fossil record, comparative anatomy, comparative embryology,... Remarks/Examples: Annually Assessed on Biology EOC. Also assesses SC.912.L.15.10; SC.912.N.1.3; SC.912.N.1.4; SC.912.N.1.6; SC.912.N.2.1; SC.912.N.3.1; and SC.912.N.3.4.
SC.912.L.15.8:	Describe the scientific explanations of the origin of life on Earth. Remarks/Examples: Annually assessed on Biology EOC. Also assesses SC.912.N.1.3, SC.912.N.1.4, and SC.912.N.2.1.
	Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do... Remarks/Examples: Florida Standards Connections for 6-12 Literacy in Science

	<p><u>For Students in Grades 9-10</u></p> <p>LAFS.910.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.</p> <p>LAFS.910.RST.1.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks attending to special cases or exceptions defined in the text.</p> <p>LAFS.910.RST.3.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.</p> <p>LAFS.910.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>LAFS.910.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research.</p> <p><u>For Students in Grades 11-12</u></p> <p>LAFS.1112.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.</p> <p>LAFS.1112.RST.1.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>LAFS.1112.RST.3.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.</p> <p>LAFS.1112.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>LAFS.1112.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research.</p> <p>Florida Standards Connections for Mathematical Practices</p> <ul style="list-style-type: none"> MAFS.K12.MP.1: Make sense of problems and persevere in solving them. MAFS.K12.MP.2: Reason abstractly and quantitatively. MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others. [Viable arguments include evidence.] MAFS.K12.MP.4: Model with mathematics. MAFS.K12.MP.5: Use appropriate tools strategically. MAFS.K12.MP.6: Attend to precision. MAFS.K12.MP.7: Look for and make use of structure. MAFS.K12.MP.8: Look for and express regularity in repeated reasoning.
SC.912.N.1.1:	<p>Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on...</p> <p>Remarks/Examples: Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions.</p> <p>Florida Standards Connections: MAFS.K12.MP.2: Reason abstractly and quantitatively; MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others</p>
SC.912.N.1.3:	<p>Identify sources of information and assess their reliability according to the strict standards of scientific investigation.</p> <p>Remarks/Examples: Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories. Strict standards of science include controlled variables, sufficient sample size, replication of results, empirical and measurable evidence, and the concept of falsification.</p> <p>Florida Standards Connections: LAFS.910.RST.1.1 / LAFS.1112.RST.1.1.</p>
SC.912.N.1.4:	<p>Describe and provide examples of how similar investigations conducted in many parts of the world result in the same outcome.</p> <p>Remarks/Examples: Recognize that contributions to science can be made and have been made by people from all over the world.</p>
SC.912.N.1.5:	<p>Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied.</p> <p>Remarks/Examples: Collect data/evidence and use tables/graphs to draw conclusions and make inferences based on patterns or trends in the data.</p> <p>Florida Standards Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them.</p>
SC.912.N.1.6:	<p>Identify what is science, what clearly is not science, and what superficially resembles science (but fails to meet the criteria...</p> <p>Remarks/Examples: Science is the systematic and organized inquiry that is derived from observations and experimentation that can be verified or tested by further investigation to explain natural phenomena (e.g. Science is testable, pseudo-science is not; science seeks falsifications, pseudo-science seeks confirmations.)</p>
SC.912.N.2.1:	<p>Identify which questions can be answered through science and which questions are outside the boundaries of scientific...</p> <p>Remarks/Examples: Identify scientific questions that can be disproved by experimentation/testing. Recognize that pseudoscience is a claim, belief, or practice which is presented as scientific, but does not adhere to strict standards of science (e.g. controlled variables, sample size, replicability, empirical and measurable evidence, and the concept of falsification).</p> <p>Florida Standards Connections: MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others.</p>
SC.912.N.2.2:	<p>Identify examples of pseudoscience (such as astrology, phrenology) in society.</p> <p>Remarks/Examples:</p>
SC.912.N.2.3:	

	Determine if the phenomenon (event) can be observed, measured, and tested through scientific experimentation.
SC.912.N.2.4:	<p>Explain that scientific knowledge is both durable and robust and open to change. Scientific knowledge can change because it is...</p> <p>Remarks/Examples: Recognize that ideas with the most durable explanatory power become established theories, but scientific explanations are continually subjected to change in the face of new evidence.</p> <p>Florida Standards Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them; MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others.</p>
SC.912.N.2.5:	<p>Describe instances in which scientists' varied backgrounds, talents, interests, and goals influence the inferences and thus the...</p> <p>Remarks/Examples: Recognize that scientific questions, observations, and conclusions may be influenced by the existing state of scientific knowledge, the social and cultural context of the researcher, and the observer's experiences and expectations. Identify possible bias in qualitative and quantitative data analysis.</p>
SC.912.N.3.1:	<p>Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence...</p> <p>Remarks/Examples: Explain that a scientific theory is a well-tested hypothesis supported by a preponderance of empirical evidence.</p> <p>Florida Standards Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them; and, MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others.</p>
SC.912.N.3.4:	<p>Recognize that theories do not become laws, nor do laws become theories; theories are well supported explanations and laws are...</p> <p>Remarks/Examples: Recognize that theories do not become laws, theories explain laws. Recognize that not all scientific laws have accompanying explanatory theories.</p>
SC.912.N.3.5:	<p>Describe the function of models in science, and identify the wide range of models used in science.</p> <p>Remarks/Examples: Describe how models are used by scientists to explain observations of nature.</p> <p>Florida Standards Connections: MAFS.K12.MP.4: Model with mathematics.</p>
SC.912.N.4.1:	<p>Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making.</p> <p>Remarks/Examples: Recognize that no single universal step-by-step scientific method captures the complexity of doing science. A number of shared values and perspectives characterize a scientific approach.</p> <p>MAFS.K12.MP.1: Make sense of problems and persevere in solving them, and MAFS.K12.MP.2: Reason abstractly and quantitatively.</p>
SC.912.N.4.2:	<p>Weigh the merits of alternative strategies for solving a specific societal problem by comparing a number of different costs and...</p> <p>Remarks/Examples: Identify examples of technologies, objects, and processes that have been modified to advance society, and explain why and how they were modified. Discuss ethics in scientific research to advance society (e.g. global climate change, historical development of medicine and medical practices).</p> <p>Florida Standards Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them, and MAFS.K12.MP.2: Reason abstractly and quantitatively.</p>
SC.912.P.10.4:	<p>Describe heat as the energy transferred by convection, conduction, and radiation, and explain the connection of heat to change in...</p> <p>Remarks/Examples: Explain the mechanisms (convection, conduction and radiation) of heat transfer. Explain how heat is transferred (energy in motion) from a region of higher temperature to a region of lower temperature until equilibrium is established. Solve problems involving heat flow and temperature changes by using known values of specific heat and/or phase change constants (latent heat). Explain the phase transitions and temperature changes demonstrated by a heating or cooling curve.</p>
SC.912.P.10.10:	<p>Compare the magnitude and range of the four fundamental forces (gravitational, electromagnetic, weak nuclear, strong nuclear).</p> <p>Remarks/Examples: Recognize and discuss the effect of each force on the structure of matter and the evidence for it.</p>
SC.912.P.10.11:	<p>Explain and compare nuclear reactions (radioactive decay, fission and fusion), the energy changes associated with them and their...</p> <p>Remarks/Examples: Identify the three main types of radioactive decay (alpha, beta, and gamma) and compare their properties (composition, mass, charge, and penetrating power). Explain the concept of half-life for an isotope (e.g. C-14 is used to determine the age of objects) and calculate the amount of a radioactive substance remaining after an integral number of half-lives have passed. Recognize that the energy release per gram of material is much larger in nuclear fusion or fission reactions than in chemical reactions due to the large amount of energy related to small amounts of mass by equation $E=mc^2$.</p>
SC.912.P.10.16:	<p>Explain the relationship between moving charges and magnetic fields, as well as changing magnetic fields and electric fields, and...</p> <p>Remarks/Examples: Explain that moving electric charges produce magnetic forces and moving magnets produce electric forces. Recognize the Lorentz force is the force on a point charge due to electromagnetic fields and occurs in many devices, including mass spectrometers.</p>
SC.912.P.10.18:	<p>Explore the theory of electromagnetism by comparing and contrasting the different parts of the electromagnetic spectrum in terms...</p> <p>Remarks/Examples: Describe the electromagnetic spectrum (i.e., radio waves, microwaves, infrared, visible light, ultraviolet, X-rays and gamma rays) in terms of frequency, wavelength and energy. Solve problems involving wavelength, frequency, and energy.</p>

<p>SC.912.P.10.19:</p>	<p>Explain that all objects emit and absorb electromagnetic radiation and distinguish between objects that are blackbody radiators...</p> <p>Remarks/Examples: Recognize the Planck function allows examination of the radiation emitted by an object as a function only of its temperature.</p>
<p>SC.912.P.10.20:</p>	<p>Describe the measurable properties of waves and explain the relationships among them and how these properties change when the...</p> <p>Remarks/Examples: Describe the measurable properties of waves (velocity, frequency, wavelength, amplitude, period, reflection and refraction) and explain the relationships among them. Recognize that the source of all waves is a vibration and waves carry energy from one place to another. Distinguish between transverse and longitudinal waves in mechanical media, such as springs and ropes, and on the earth (seismic waves). Describe sound as a longitudinal wave whose speed depends on the properties of the medium in which it propagates.</p>
<p>SC.912.P.12.2:</p>	<p>Analyze the motion of an object in terms of its position, velocity, and acceleration (with respect to a frame of reference) as...</p> <p>Remarks/Examples: Solve problems involving distance, velocity, speed, and acceleration. Create and interpret graphs of 1-dimensional motion, such as position versus time, distance versus time, speed versus time, velocity versus time, and acceleration versus time where acceleration is constant. Florida Standards Connections: MAFS.912.N-VM.1.3 (+) Solve problems involving velocity and other quantities that can be represented by vectors.</p>
<p>SC.912.P.12.4:</p>	<p>Describe how the gravitational force between two objects depends on their masses and the distance between them.</p> <p>Remarks/Examples: Describe Newton's law of universal gravitation in terms of the attraction between two objects, their masses, and the inverse square of the distance between them.</p>
<p>LAFS.910.RST.1.1:</p>	<p>Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of...</p>
<p>LAFS.910.RST.1.2:</p>	<p>Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon,...</p>
<p>LAFS.910.RST.1.3:</p>	<p>Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks,...</p>
<p>LAFS.910.RST.2.4:</p>	<p>Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific...</p>
<p>LAFS.910.RST.2.5:</p>	<p>Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force,...</p>
<p>LAFS.910.RST.2.6:</p>	<p>Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining...</p>
<p>LAFS.910.RST.3.7:</p>	<p>Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and...</p>
<p>LAFS.910.RST.3.8:</p>	<p>Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a...</p>
<p>LAFS.910.RST.3.9:</p>	<p>Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the...</p>
<p>LAFS.910.RST.4.10:</p>	<p>By the end of grade 10, read and comprehend science/technical texts in the grades 910 text complexity band independently and...</p>
<p>LAFS.910.SL.1.1:</p>	<p>Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with...</p>
<p>LAFS.910.SL.1.2:</p>	<p>Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally)...</p>
<p>LAFS.910.SL.1.3:</p>	<p>Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or...</p>
<p>LAFS.910.SL.2.4:</p>	<p>Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line...</p>
<p>LAFS.910.SL.2.5:</p>	<p>Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to...</p>
<p>LAFS.910.WHST.1.1:</p>	<p>Write arguments focused on discipline-specific content. Introduce precise claim(s), distinguish the claim(s) from alternate or...</p>
<p>LAFS.910.WHST.1.2:</p>	<p>Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or...</p>
<p>LAFS.910.WHST.2.4:</p>	<p>Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and...</p>
<p>LAFS.910.WHST.2.5:</p>	<p>Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on...</p>
<p>LAFS.910.WHST.2.6:</p>	<p>Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage...</p>
<p>LAFS.910.WHST.3.7:</p>	<p>Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a...</p>
<p>LAFS.910.WHST.3.8:</p>	<p>Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess...</p>
<p>LAFS.910.WHST.3.9:</p>	<p>Draw evidence from informational texts to support analysis, reflection, and research.</p>
<p>LAFS.910.WHST.4.10:</p>	<p>Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day...</p>
<p>MAFS.912.F-IF.2.4:</p>	<p>For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the...</p>
<p>MAFS.912.F-IF.3.7:</p>	<p>Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more...</p>
<p>MAFS.912.G-MG.1.2:</p>	<p>Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).</p>
<p>MAFS.912.N-Q.1.1:</p>	<p>Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units...</p>
<p>MAFS.912.N-Q.1.3:</p>	<p>Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.</p>
<p>MAFS.912.S-IC.2.6:</p>	<p>Evaluate reports based on data.</p>
<p>MAFS.912.S-ID.1.1:</p>	<p>Represent data with plots on the real number line (dot plots, histograms, and box plots).</p>
<p>MAFS.912.S-ID.1.1:</p>	<p>Remarks/Examples: In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.</p>
<p>MAFS.912.S-ID.1.2:</p>	<p>Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile...</p>
<p>MAFS.912.S-ID.1.2:</p>	<p>Remarks/Examples: In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.</p>
<p>MAFS.912.S-ID.1.3:</p>	<p>Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme...</p>
<p>MAFS.912.S-ID.1.3:</p>	<p>Remarks/Examples: In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.</p>
<p>MAFS.912.S-ID.1.4:</p>	<p>Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages...</p>
<p>MAFS.912.S-ID.2.5:</p>	<p>Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the...</p>
<p>MAFS.912.S-ID.2.6:</p>	<p>Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. Fit a function to the...</p>
<p>MAFS.912.S-ID.2.6:</p>	<p>Remarks/Examples: Students take a more sophisticated look at using a linear function to model the relationship between two numerical variables. In addition to fitting</p>

a line to data, students assess how well the model fits by analyzing residuals.

[ELD.K12.ELL.SC.1:](#) English language learners communicate information, ideas and concepts necessary for academic success in the content area of...

[ELD.K12.ELL.SI.1:](#) English language learners communicate for social and instructional purposes within the school setting.

Related Certifications

[Science \(Secondary Grades 7-12\)](#)

[Chemistry \(Grades 6-12\)](#)

[Physics \(Grades 6-12\)](#)

[Earth/Space Science \(Grades 6-12\)](#)

[Middle Grades General Science \(Middle Grades 5-9\)](#)

There are more than 1307 related instructional/educational resources available for this on CPALMS. Click on the following link to access them: <https://www.cpalms.org/Public/PreviewCourse/Preview/13094>