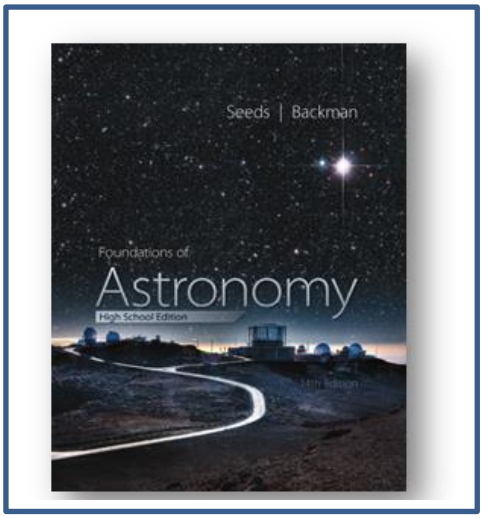


# FLORIDA Standards Correlations

## Next Generation Sunshine State Standards

| Astronomy Solar/Galactic, Foundations of Astronomy, 9-12 | | |
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| **STANDARD** | **STUDENT/TEACHER EDITION** | **MTRs and EEs** |
| 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. | Lesson 5-1, pages 79-83: Students learn about Newton's laws of motion and how these laws influence objects on earth and influence the relationships of the Earth, the Moon, and the Sun on each other. | MA.K12.MTR.7.1<br>ELA.K12.EE.2.1 |
| SC.912.E.5.7: Relate the history of and explain the justification for future space exploration and continuing technology development. | Lesson 4-1: Expanding Your Knowledge, page 77A: Students learn about the history of space exploration and how advances in space exploration technology contribute to other fields, such as medicine. | ELA.K12.EE.3.1 |
| SC.912.E.5.8: Connect the concepts of radiation and the electromagnetic spectrum to the use of historical and newly-developed observational tools. | Lesson 6-1 Radiation, Information from Space, pages 102-104: Student connect the concepts of radiation and the electromagnetic spectrum to the use of historical and newly developed observational tools. | MA.K12.MTR.4.1<br>ELA.K12.EE.3.1 |
| SC.912.E.5.9: Analyze the broad effects of space exploration on the economy and culture of Florida. | Expanding Your Knowledge 3-1: Astronomy Careers, page 51A: Students learn about different career opportunities in Astronomy. | ELA.K12.EE.2.1 |

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| SC.912.E.5.11: Distinguish the various methods of measuring astronomical distances and apply each in appropriate situations. | Lesson 16-2: Measuring the Properties of Galaxies pages 340-345: Students learn how to measure the properties of galaxies, such as distance from Earth, size, luminosity, and distance between galaxies. Students use mathematical equations to calculate these properties. | MA.K12.MTR.7.1<br>ELA.K12.EE.2.1 |
| SC.912.E.6.2: Connect surface features to surface processes that are responsible for their formation. | Lesson 21-2: Mars, pages 476-485: Students study the surface features of Mars and learn how surfaces processes have formed those surface features. | ELA.K12.EE.1.1 (review questions) |
| SC.912.E.7.7: Identify, analyze, and relate the internal (Earth system) and external (astronomical) conditions that contribute to global climate change. | Lesson 19-4 Earth's Atmosphere, pages 433-441: Students identify, analyze, and relate the internal (Earth system) and external (astronomical) conditions that contribute to global climate change. Students learn that humans contribute to climate change by adding CO2 to the atmosphere and destroying ozone. | MA.K12.MTR.5.1 (Problems and Sense of Proportion)<br>ELA.K12.EE.2.1 |
| 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: | Lesson 26-1: The Nature of Scientific Investigations, pages 598-599: Students study the process by which scientists employ the scientific method and evaluate their findings and findings made by other scientists. | MA.K12.MTR.1.1<br>ELA.K12.EE.2.1 |
| SC.912.N.1.2: Describe and explain what characterizes science and its methods. | Lesson 17-2: The Big Bang Theory, pages 368-375: Students study the big bang theory and learn how scientists employ methods to supply evidence to support the big bang theory. | ELA.K12.EE.4.1 (Review Questions) |
| 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. | Lesson 19-4 Earth's Atmosphere, pages 433-441: Students identify, analyze, and relate the internal (Earth system) and external (astronomical) conditions that contribute to global climate change. Students learn that humans contribute to climate change by adding CO2 to the atmosphere and destroying ozone. | MA.K12.MTR.5.1 (Problems and Sense of Proportion)<br>ELA.K12.EE.2.1 |
| SC.912.N.1.4: Identify sources of information and assess their reliability according to the strict standards of scientific investigation. | Lesson 3-1 How Do We Know? Page 39: Students understand the importance of creativity in the process of scientific investigation. | ELA.K12.EE.2.1 |
| 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. | Lesson 20-1 Expanding Your Knowledge, pages 463A-463B: Students learn about the race to the moon and how different countries developed technologies to get them into space. | ELA.K12.EE.4.1 |

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|---|---|---|
| SC.912.N.1.6: Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied. | Lesson 16-2: Measuring the Properties of Galaxies, pages 340-345. Students learn how to measure the properties of galaxies, such as distance from Earth, size, luminosity, and distance between galaxies. Students use mathematical equations to calculate these properties. | MA.K12.MTR.7.1<br>ELA.K12.EE.2.1 |
| SC.912.N.1.7: Recognize the role of creativity in constructing scientific questions, methods and explanations. | Lesson 3-1 How Do We Know? page 39: Students understand the importance of creativity in the process of scientific investigation. | ELA.K12.EE.2.1 |
| 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). | Lesson 2-2 How Do We Know? page 26: Students learn the difference between science and pseudoscience, including why pseudoscience is attractive but cannot be classified as science. | ELA.K12.EE.2.1 |
| 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. | Lesson 4-1 Roots of Astronomy pages 53-57: Students learn about the history of astronomy and how it developed from earlier modes of investigating, including philosophy and archeoastronomy. | ELA.K12.EE.2.1 |
| SC.912.N.2.3: Identify examples of pseudoscience (such as astrology, phrenology) in society. | Lesson 2-2 How Do We Know? page 26: Students learn about pseudoscience in society. Lesson discusses pyramid power and astrology and explains that despite scientific evidence to the contrary, some people believe in pseudoscience. | ELA.K12.EE.2.1 |
| 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. | Lesson 5-1 Galileo's and Newton's Two New Sciences, pages 79-83: Students learn about Newton's laws of motion and how these laws influence objects on earth and influence the relationships of the Earth, the Moon, and the Sun on each other. | MA.K12.MTR.1.1<br>ELA.K12.EE.2.1 |

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|---|---|---|
| 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. | Expanding Your Knowledge 4-1 pages 77A-77B: Students learn about the history of technological developments and how astronomy evolved into how it is practiced today. | ELD.K12.EEL.SI.1 |
| 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. | Lesson 5-2 Orbital Motion and Tides, pages 84-91: Students investigate how gravity affects different objects. Students study how ideas about gravity have changed over time. | MA.K12.MTR.3.1<br>ELA.K12.EE.2.1 |
| 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. | Lesson 19-4 Earth's Atmosphere, pages 433-441: Students learn about Earth's atmosphere and the human causes of climate change. | ELA.K12.EE.2.1 |
| 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. | Lesson 26-1 The Nature of Scientific Investigations pages 598-599: Students learn about the nature of scientific relationships and learn that scientists observe patterns in the relationships between objects and phenomena in nature. | MA.K12.MTR.6.1<br>ELA.K12.EE.5.1 |
| 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. | Lesson 4-2 How Do We Know? page 69. Students learn about hypotheses, theories, and laws. | ELA.K12.EE.2.1 |
| SC.912.N.3.5: Describe the function of models in science, and identify the wide range of models used in science. | Lesson 26-1 section 26-1e Models and Simulations, page 599: Students learn how important scientific models are in the process of investigation. | ELA.K12.EE.2.1 |

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|---|---|---|
| SC.912.N.4.1: Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making. | Lesson 4-1 Expanding Your Knowledge page 78: Students learn about the history of space exploration and how advances in space exploration technology contribute to other fields, such as medicine. | ELA.K12.EE.3.1 |
| SC.912.P.8.1: Differentiate among the four states of matter. | How Do We Know? Page 268, Solids: page 129 and 406-412, Liquids: page 140 and 268, Gas: page 5, Plasma: page 492B | ELA.K12.EE.2.1 |
| 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. | Lesson 7-1 Atoms pages 128-130: Students explore the theory of atoms including protons, neutrons, and electrons, and differentiate among particles in terms of their mass, electrical charges, and locations within the atom. | MA.K12.MTR.5.1<br>ELA.K12.EE.2.1 |
| 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. | Lesson 11-4, specifically 11-4b Energy Transport pages 231-232: Students study how heat is transferred among surfaces and changes temperature. | ELA.K12.EE.2.1 |
| SC.912.P.10.9: Describe the quantization of energy at the atomic level. | Lesson 3-1 Scientific Imagination, How Do We know? page 39 | ELA.K12.EE.2.1 |
| 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. | Lesson 8-3 Nuclear Fusion in the Sun pages 161-169: Students learn about the different types of nuclear reactions and the energy changes associated with them. | ELA.K12.EE.2.1 |
| SC.912.P.10.18: Explore the theory of electromagnetism by comparing and contrasting the different parts of the electromagnetic spectrum in terms of wavelength, frequency, and energy, and relate them to phenomena and applications. | Lesson 6-1b The Electromagnetic Spectrum pages 103-104: Students compare aspects of the electromagnetic spectrum, such as wavelength, frequency, and energy. Students learn how these aspects influence the natural world. | MA.K12.MTR.4.1<br>ELA.K12.EE.2.1 |

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|---|---|---|
| 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. | Lesson 7-2b Radiation from a Heated Object and 7-2c Two Blackbody Radiation Laws pages 132-134: Students learn what blackbody radiation is and which objects emit blackbody radiation and which do not. | ELA.K12.EE.2.1 |
| SC.912.P.10.20: Describe the measurable properties of waves and explain the relationships among them and how these properties change when the wave moves from one medium to another. | Lesson 7-3b Measuring Velocities: The Doppler Effect pages 138-139: Students study the measurable properties of waves and identify how waves change in different mediums. | MA.K12.MTR.7.1<br>ELA.K12.EE.2.1 |
| SC.912.P.10.21: Qualitatively describe the shift in frequency in sound or electromagnetic waves due to the relative motion of a source or a receiver. | Lesson 7-3b Measuring Velocities: The Doppler Effect pages 138-139: Students study the measurable properties of waves and identify how waves change in different mediums. | MA.K12.MTR.7.1<br>ELA.K12.EE.2.1 |
| SC.912.P.10.22: Construct ray diagrams and use thin lens and mirror equations to locate the images formed by lenses and mirrors. | Lesson 6-2 Telescopes pages 105-109: Students explore telescopes to calculate position of objects. | ELA.K12.EE.2.1 |
| SC.912.P.12.2: Analyze the motion of an object in terms of its position, velocity, and acceleration (with respect to a frame of reference) as functions of time. | Lesson 5-1b Newton's Laws of Motion pages 81-82: Students analyze the motion of an object in terms of position, velocity, and acceleration as functions of time. | MA.K12.MTR.2.1<br>ELA.K12.EE.2.1 |
| SC.912.P.12.4: Describe how the gravitational force between two objects depends on their masses and the distance between them. | Lesson 5-1c Mutual Gravitation page 82: Students learn how objects enact gravitational forces on each other and that that mutual gravitation is dependent on the masses of the objects and the distance between them. | ELA.K12.EE.2.1 |
| SC.912.P.12.6: Qualitatively apply the concept of angular momentum. | Lesson 5-2d Kepler's Laws Revisited pages 85 and 88: Students read about angular momentum and where it can be experienced in everyday events. | MA.K12.MTR.7.1<br>ELA.K12.EE.2.1 |
| 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. | Lesson 5-3a Special Relativity pages 92-94: Students learn that the speed of light in a vacuum is constant and appears constant for all observers, no matter if they are moving or not. | ELA.K12.EE.2.1 |