

Earth Science

State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
ESS.1	Describe sources of energy, including solar, gravitational, geothermal, and nuclear.		
ESS.2	Describe effects on weather of energy transfer within and among the atmosphere, hydrosphere, biosphere, and lithosphere.		
ESS.2.1	Describing the energy transfer related to condensation in clouds, precipitation, winds, and ocean currents		
ESS.2.2	Describing the characteristics of the El Niño and La Niña phenomena		
ESS.2.3	Using data to analyze global weather patterns		
ESS.3	Explain how weather patterns affect climate.		
ESS.3.1	Explaining characteristics of various weather systems, including high and low pressure areas or fronts	Changes in the Atmosphere	Weather and Forecasting and also Wind
ESS.3.2	Interpreting weather maps and symbols to predict changing weather conditions	Changes in the Atmosphere	Weather and Forecasting
ESS.3.3	Identifying technologies used to obtain meteorological data		
ESS.4	Describe the production and transfer of stellar energies.		
ESS.4.1	Describing the relationship between the life cycles and nuclear reactions of stars	Earth and Space	The Solar System and the Universe
ESS.4.2	Describing how the reception of solar radiation is affected by atmospheric and lithospheric conditions	Changes in the Atmosphere	Heating the Atmosphere
ESS.5	Discuss various theories for the origin, formation, and changing nature of the universe and our solar system.		
ESS.5.1	Explaining the nebular hypothesis for formation of planets, the big bang theory, and the steady state theory	Earth and Space	The Solar System and the Universe
ESS.5.2	Relating Hubble's law to the concept of an ever-expanding universe		
ESS.5.3	Describing the impact of meteor, asteroid, and comet bombardment on planetary and lunar development		
ESS.6	Explain the length of a day and of a year in terms of the motion of Earth.		
ESS.6.1	Explaining the relationship of the seasons to the tilt of Earth's axis and its revolution about the sun	Earth and Space	Earth and the Moon
ESS.7	Explain techniques for determining the age and composition of Earth and the universe.		
ESS.7.1	Using radiometric age methods to compute the age of Earth	The History of Earth and Atmosphere	The History of Earth
ESS.7.2	Using expanding universe measurements to determine the age of the universe		
ESS.7.3	Identifying techniques for evaluating the composition of objects in space	Earth and Space	Exploring Space

Earth Science

State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
ESS.8	Explain the terms astronomical unit and light year.	Earth and Space	The Solar System and Universe
ESS.9	Relate the life cycle of stars to the H-R diagram.		
ESS.9.1	Explaining indicators of motion by the stars and sun in terms of Doppler effect and red and blue shifts		
ESS.9.2	Describing the relationship of star color, brightness, and evolution to the balance between gravitational collapse and nuclear fusion	Earth and Space	The Solar System and Universe
ESS.10	Identify scientists and their findings relative to Earth and space, including Copernicus, Galileo, Kepler, Newton, and Einstein.		
ESS.10.1	Identifying classical instruments used to extend the senses and increase knowledge of the universe, including optical telescopes, radio telescopes, spectroscopes, and cameras	Earth and Space	The Solar System and Universe
ESS.11	Describe pulsars, quasars, black holes, and galaxies.		
ESS.12	Describe the challenges and required technologies of space exploration.		
ESS.12.1	Identifying long-term human space travel needs, including life support	Earth and Space	Exploring Space
ESS.12.2	Identifying applications of propulsion technologies for space travel	Earth and Space	Exploring Space
ESS.12.3	Identifying new instrumentation and communication technologies needed for space information gathering	Earth and Space	Exploring Space
ESS.12.4	Identifying benefits to the quality of life that have been achieved through space advances		
ESS.12.5	Identifying new technology used to gather information, including spacecraft, observatories, space-based telescopes, and probes	Earth and Space	Exploring Space