Content Expectations by Grade Span

Discipline: Earth Science (E)

Standard: Earth Systems (ES)

Grade Span: Middle School (5-7)

Content Statement Code	Content Statement
E.ES.M.1	***Solar Energy-*** *The sun is the major source of energy for phenomena on the surface of the Earth.*
Content Expectation Code	**Content Expectation**
E.ES.07.11	Demonstrate, using a model or drawing, the relationship between the warming by the sun of the Earth and the water cycle as it applies to the atmosphere (evaporation, water vapor, warm air rising, cooling, condensation, clouds).
E.ES.07.12	Describe the relationship between the warming of the atmosphere of the Earth by the sun and convection within the atmosphere and oceans.
E.ES.07.13	Describe how the warming of the Earth by the sun produces winds and ocean currents.

Content Expectations by Grade Span

Discipline: Earth Science (E)

Standard: Earth Systems (ES)

Grade Span: Middle School (5-7)

Content Statement Code	Content Statement
E.ES.M.4	***Human Consequences-*** *Human activities have changed the land, oceans and atmosphere of the Earth resulting in the reduction of the number and variety of wild plants and animals sometimes causing extinction of species.*
Content Expectation Code	**Content Expectation**
E.ES.07.41	Explain how human activities (surface mining, deforestation, overpopulation, construction and urban development, farming, dams, landfills, and restoring natural areas) change the surface of the Earth and affect the survival of organisms.
E.ES.07.42	Describe the origins of pollution in the atmosphere, geosphere, and hydrosphere, (car exhaust, industrial emissions, acid rain and natural sources), and how pollution impacts habitats, climatic change, threatens or endangers species.

Content Expectations by Grade Span

Discipline: Earth Science (E)

Standard: Earth Systems (ES)

Grade Span: Middle School (5-7)

Content Statement Code	Content Statement
E.ES.M.6	***Seasons-*** *Seasons result from annual variations in the intensity of sunlight and length of day due to the tilt of the axis of the Earth relative to the plane of its yearly orbit around the sun.*
Content Expectation Code	**Content Expectation**
E.ES.05.61	Demonstrate using a model, seasons as the result of variations in the intensity of sunlight caused by the tilt of the Earth on its axis, and revolution around the sun.
E.ES.05.62	Explain how the revolution of the Earth around the sun defines a year.

Content Expectations by Grade Span

Discipline: Earth Science (E)

Standard: Earth Systems (ES)

Grade Span: Middle School (5-7)

Content Statement Code	Content Statement
E.ES.M.7	***Weather and Climate-*** *Global patterns of atmospheric and oceanic movement influence weather and climate.*
Content Expectation Code	**Content Expectation**
E.ES.07.71	Compare and contrast the difference and relationship between climate and weather.
E.ES.07.72	Describe how different weather occurs due to the constant motion of the atmosphere from the energy of the sun reaching the surface of the Earth.
E.ES.07.73	Explain how the temperature of the oceans affects the different climates on Earth because water in the oceans holds a large amount of heat.
E.ES.07.74	Describe weather conditions associated with frontal boundaries (cold, warm, stationary, and occluded) and the movement of major air masses and the jet stream across North America, using a weather map.

Content Expectations by Grade Span

Discipline: Earth Science (E)

Standard: Earth Systems (ES)

Grade Span: Middle School (5-7)

Content Statement Code	Content Statement
E.ES.M.8	***Water Cycle-*** *Water circulates through the four spheres of the Earth in what is known as the "water cycle".*
Content Expectation Code	**Content Expectation**
E.ES.07.81	Explain the water cycle and describe how evaporation, transpiration, condensation, cloud formation, precipitation, infiltration, surface runoff, ground water and absorption occur within the cycle.
E.ES.07.82	Analyze the flow of water between the components of a watershed, including surface features (lakes, streams, rivers, wetlands) and groundwater.

Content Expectations by Grade Span

Discipline: Earth Science (E)

Standard: Solid Earth (SE)

Grade Span: Middle School (5-7)

Content Statement Code	Content Statement
E.SE.M.1	***Soil-*** *Soils consist of weathered rocks and decomposed organic materials from dead plants, animals, and bacteria. Soils are often found in layers with each having a different chemical composition and texture.*
Content Expectation Code	**Content Expectation**
E.SE.06.11	Explain how physical and chemical weathering lead to erosion and the formation of soils and sediments.
E.SE.06.12	Explain how waves, wind, water, and glacier movement shape and reshape the land surface of the Earth by eroding rock in some areas and depositing sediments in other areas.
E.SE.06.13	Describe how soil is a mixture, made up of weather eroded rock and decomposed organic material.
E.SE.06.14	Compare different soil samples based on particle size and texture.

Content Expectations by Grade Span

Discipline: Earth Science (E)

Standard: Solid Earth (SE)

Grade Span: Middle School (5-7)

Content Statement Code	Content Statement
E.SE.M.4	***Rock Formation-*** *Rocks and rock formations bear evidence of the minerals, materials, temperature/pressure conditions, and forces that created them.*
Content Expectation Code	**Content Expectation**
E.SE.06.41	Compare and contrast the formation of rock types (igneous, sedimentary and metamorphic) and demonstrate the similarities and differences using the rock cycle model.

Content Expectations by Grade Span

Discipline: Earth Science (E)

Standard: Solid Earth (SE)

Grade Span: Middle School (5-7)

Content Statement Code	Content Statement
E.SE.M.5	***Plate Tectonics-*** *The lithospheric plates of the Earth constantly move, resulting in major geological events, such as earthquakes, volcanic eruptions, and mountain building.*
Content Expectation Code	**Content Expectation**
E.SE.06.51	Explain plate tectonic movement and how the lithospheric plates move centimeters each year.
E.SE.06.52	Demonstrate how major geological events (earthquakes, volcanic eruptions, mountain building) result from these plate motions.
E.SE.06.53	Describe layers of the Earth as a lithosphere (crust and upper mantle), convecting mantle, and dense metallic core.

Content Expectations by Grade Span

Discipline: Earth Science (E)

Standard: Solid Earth (SE)

Grade Span: Middle School (5-7)

Content Statement Code	Content Statement
E.SE.M.6	***Magnetic Field of Earth-*** *Earth as a whole has a magnetic field that is detectable at the surface with a compass.*
Content Expectation Code	**Content Expectation**
E.SE.06.61	Describe the Earth as a magnet and compare the magnetic properties of the Earth to that of a natural or man-made magnet.
E.SE.06.62	Explain how a compass works using the magnetic field of the Earth and how a compass is used for navigation on land and sea.

Content Expectations by Grade Span

Discipline: Earth Science (E)

Standard: Fluid Earth (FE)

Grade Span: Middle School (5-7)

Content Statement Code	Content Statement
E.FE.M.1	***Atmosphere-*** *The atmosphere is a mixture of nitrogen, oxygen and trace gases that include water vapor. The atmosphere has different physical and chemical composition at different elevations.*
Content Expectation Code	**Content Expectation**
E.FE.07.11	Describe the atmosphere as a mixture of gases.
E.FE.07.12	Compare and contrast the composition of the atmosphere at different elevations.

Content Expectations by Grade Span

Discipline: Earth Science (E)

Standard: Earth in Space and Time (ST)

Grade Span: Middle School (5-7)

Content Statement Code	Content Statement
E.ST.M.1	***Solar System-*** *The sun is the central and largest body in our solar system. Earth is the third planet from the sun in a system that includes other planets and their moons, as well as smaller objects, such as asteroids and comets.*
Content Expectation Code	**Content Expectation**
E.ST.05.11	Design a model that describes the position and relationship of the planets and other objects (comets and asteroids) to the sun.

Content Expectations by Grade Span

Discipline: Earth Science (E)

Standard: Earth in Space and Time (ST)

Grade Span: Middle School (5-7)

Content Statement Code	Content Statement
E.ST.M.2	***Solar System Motion-*** *Gravity is the force that keeps most objects in the solar system in regular and predictable motion.*
Content Expectation Code	**Content Expectation**
E.ST.05.21	Describe the motion of planets and moons in terms of rotation on axis and orbits due to gravity.
E.ST.05.22	Explain moon phases as they relate to the position of the moon in its orbit around the Earth, resulting in the amount of observable reflected light.
E.ST.05.23	Recognize that nighttime objects (stars and constellations) and the sun appear to move because the Earth rotates on its axis and orbits the sun.
E.ST.05.24	Explain lunar and solar eclipses based on the relative positions of the Earth, moon, and sun and the orbit of the moon.
E.ST.05.25	Explain the tides of the oceans as they relate to the gravitational pull and orbit of the moon.

Content Expectations by Grade Span

Discipline: Earth Science (E)

Standard: Earth in Space and Time (ST)

Grade Span: Middle School (5-7)

Content Statement Code	Content Statement
E.ST.M.3	***Fossils-*** *Fossils provide important evidence of how life and environmental conditions have changed in a given location.*
Content Expectation Code	**Content Expectation**
E.ST.06.31	Explain how rocks and fossils are used to understand the age and geological history of the earth (timelines and relative dating, rock layers).

Content Expectations by Grade Span

Discipline: Earth Science (E)

Standard: Earth in Space and Time (ST)

Grade Span: Middle School (5-7)

Content Statement Code	Content Statement
E.ST.M.4	***Geologic Time-*** *Earth processes seen today (erosion, mountain building, and glacier movement) make possible the measurement of geologic time through methods such as observing rock sequences and using fossils to correlate the sequences at various locations.*
Content Expectation Code	**Content Expectation**
E.ST.06.41	Explain how Earth processes (erosion, mountain building, and glacier movement) are used for the measurement of geologic time through observing rock layers.
E.ST.06.42	Describe how fossils provide important evidence of how life and environmental conditions have changed.