



Alignment Document

State of Connecticut And Aventa Learning Earth Science

Earth Science 2005-2007 Benchmark Blueprint

State Standard Number	State Standard Area / Description	Unit Name	Course Topic Description
0	How is scientific knowledge created and communicated?		
0	Scientific Inquiry		
NA	Scientific inquiry is a thoughtful and coordinated attempt to search out, describe, explain and predict natural phenomena	Planet Earth	Geology
NA	Scientific inquiry progresses through a continuous process of questioning, data collection, analysis and interpretation.	Planet Earth	Geology
NA	Scientific inquiry requires the sharing of findings and ideas for critical review by colleagues and other scientists.		Covered throughout the course
0	Scientific Literacy		
NA	Scientific literacy includes the ability to read, write, discuss and present coherent ideas about science.		Covered throughout the course
NA	Scientific literacy also includes the ability to search for and assess the relevance and credibility of scientific information found in various print and electronic media.		Covered throughout the course
0	Scientific Numeracy	Atmosphere and Climate	Pressure
		Astronomy	Birth of a Star
NA	Scientific numeracy includes the ability to use mathematical operations and procedures to calculate, analyze and present scientific data and ideas.		



D INQ.1	Identify questions that can be answered through scientific investigation.		Covered throughout the course
D INQ.2	Read, interpret and examine the credibility and validity of scientific claims in different sources of information.		Covered throughout the course
D INQ.3	Formulate a testable hypothesis and demonstrate logical connections between the scientific concepts guiding the hypothesis and the design of the experiment.		
D INQ.4	Design and conduct appropriate types of scientific investigations to answer different questions.		
D INQ.5	Identify independent and dependent variables, including those that are kept constant and those used as controls.		
D INQ.6	Use appropriate tools and techniques to make observations and gather data.		Covered throughout the course
D INQ.7	Assess the reliability of the data that was generated in the investigation.		Covered throughout the course
D INQ.8	Use mathematical operations to analyze and interpret data, and present relationships between variables in appropriate forms.		Covered throughout the course
D INQ.9	Articulate conclusions and explanations based on research data, and assess results based on the design of the investigation.		Covered throughout the course
D INQ.10	Communicate about science in different formats, using relevant science vocabulary, supporting evidence and clear logic.		Covered throughout the course
E	Earth Science		
E.1	Earth's Place in the Universe		
E.1.1	Earth-based and space-based astronomy reveal the structure, scale and changes in stars, galaxies and the universe over time.	Astronomy	The Universe
E.1.1.1	The differences and similarities among the sun, the terrestrial planets and the gas planets may have been established during the formation of the solar system.	Astronomy	The Universe

E.1.1.2	Evidence from Earth and moon rocks indicates that the solar system was formed from a nebular cloud of dust and gas approximately 4.6 billion years ago.	Astronomy	The Universe & The Earth, Sun, and Moon
E.1.1.3	Evidence from geological studies of Earth and other planets suggests that the early Earth was very different from Earth today.	Geologic Time	Covered throughout the unit
E.1.1.4	The sun is a typical star and is powered by nuclear reactions, primarily the fusion of hydrogen to form helium.	Astronomy	The Earth, Moon, and Sun
E.1.1.5	Asteroids and meteorites had a significant role in shaping the surface of planets and their moons and in mass extinctions of life on Earth.	Astronomy	The Earth, Moon, and Sun
E.1.1.6	The solar system is located in an outer edge of the disc-shaped Milky Way galaxy, which spans 100,000 light years.	Astronomy	The Solar System
E.1.1.7	Galaxies are made of billions of stars and comprise most of the visible mass of the universe.	Astronomy	Birth of a Star
E.1.1.8	Evidence indicates that all elements with an atomic number greater than that of lithium have been formed by nuclear fusion in stars.		
E.1.1.9	Visual, radio and X-ray telescopes may be used to collect data that reveal those differences in the life cycles of stars.	Astronomy	Looking Into Space
E.1.1.10	The "big bang" model suggests that the universe has been expanding for 10 to 20 billion years.	Astronomy	The Universe
E.2	Dynamic Earth Processes		
E.2.1	Plate tectonics operating over geologic time has changed the patterns of land, sea and mountains on Earth's surface.	Plate Tectonics, Volcanoes, Earthquakes, and Deformations	Plate Tectonics
E.2.1.1	Features of the ocean floor, as well as the shape and rock composition of the major plates, provide evidence of plate tectonics.	Plate Tectonics, Volcanoes, Earthquakes, and Deformations	Plate Tectonics
E.2.1.2	Volcanic eruptions and earthquakes are the result of the movement of matter and energy within the Earth.	Plate Tectonics, Volcanoes, Earthquakes, and Deformations	Volcanoes



E.2.1.3	The properties of rocks and minerals can be explained based on the physical and chemical conditions in which they were formed, including plate tectonic processes.	Minerals, Rocks, and the Rock Cycle	Covered throughout the unit
E.3	Energy in the Earth System		
E.3.1	Energy enters the Earth system primarily as solar radiation and eventually escapes as heat.	Atmosphere and Climate	Heating the Atmosphere
E.3.1.1	The sun is a major source of energy for Earth and other planets.	Atmosphere and Climate	Heating the Atmosphere
E.3.1.2	Some of the solar radiation is reflected back into the atmosphere and some is absorbed by matter and photosynthetic processes.	Atmosphere and Climate	Heating the Atmosphere
E.3.1.3	Different atmospheric gases absorb the Earth's thermal radiation.	Atmosphere and Climate	Heating the Atmosphere
E.3.1.4	The greenhouse effect may cause climatic changes.	Atmosphere and Climate	Heating the Atmosphere
E.3.2	Heating of Earth's surface and atmosphere by the sun drives convection within the atmosphere and oceans, producing winds and ocean currents	World of Weather	Wind
E.3.2.1	Differential heating of Earth results in circulation patterns in the atmosphere and oceans that globally distribute the heat.	World of Weather	Wind
E.3.2.2	The rotation of Earth influences the circular motions of ocean currents and air.	World of Weather	Wind
E.3.2.3	Properties of ocean water, such as temperature and salinity, can be used to explain the layered structure of the oceans, the generation of horizontal and vertical ocean currents, and the geographic distribution of marine organisms.		
E.3.2.4	The interaction of wind patterns, ocean currents, and the distribution of land masses result in a global pattern of latitudinal bands of rain forests and deserts.	World of Weather	Wind
E.3.3	Climate is the long-term average of a region's weather and depends on many factors.	World of Weather	Weather and Forecasting

E.3.3.1	Weather and climate involve the transfer of energy into and out of the atmosphere.	World of Weather	Weather and Forecasting
E.3.3.2	Latitude, elevation, topography, proximity to large bodies of water, and cold or warm ocean currents affect the climate.	World of Weather	Weather and Forecasting
E.3.3.3	Earth's climate has changed over time, corresponding to changes in Earth's geography, atmospheric composition and other factors, such as solar radiation and plate movement.	Atmosphere and Climate	Structure of the Atmosphere
E.4	Biogeochemical Cycles		
E.4.1	Each element on Earth moves among reservoirs which exist in the solid earth, in oceans, in the atmosphere, and within and among organisms as part of biogeochemical cycles.	Atmosphere and Climate	Structure of the Atmosphere
E.4.1.1	The movement of matter among reservoirs is driven by Earth's internal and external sources of energy.	Atmosphere and Climate	Structure of the Atmosphere
E.4.1.2	Carbon cycles through the reservoirs of the atmosphere, lithosphere, hydrosphere and biosphere.	Atmosphere and Climate	Structure of the Atmosphere
E.5	Structure and Composition of the Atmosphere		
E.5.1	Life has changed Earth's atmosphere, and changes in the atmosphere affect conditions for life.	Atmosphere and Climate	Structure of the Atmosphere
E.5.1.1	The atmosphere has specific thermal structure and chemical composition.	Atmosphere and Climate	Structure of the Atmosphere
E.5.1.2	The composition of Earth's atmosphere has evolved over geologic time.	Atmosphere and Climate	Structure of the Atmosphere
E.5.1.3	The origin of atmospheric oxygen is photosynthetic processes.	Atmosphere and Climate	Structure of the Atmosphere
E.5.1.4	The ozone layer in the upper atmosphere absorbs ultraviolet radiation. This layer varies both naturally and in response to human activities.	Atmosphere and Climate	Structure of the Atmosphere