

Earth and Environmental Science	Boardworks High School Earth Science Presentation
Competency Goal 2: The learner will build an understanding of lithospheric materials, tectonic processes, and the human and environmental impacts of natural and human-induced changes in the lithosphere.	
2.01 Analyze the dependence of the physical properties of minerals on the arrangement and bonding of their atoms.	-
2.02 Analyze the historical development of the theory of plate tectonics.	Plate Tectonics
2.03 Investigate and analyze the processes responsible for the rock cycle:	
Analyze the origin, texture and mineral composition of rocks.	The Rock Cycle
Trace the path of elements through the rock cycle.	The Rock Cycle
Relate rock formation to plate tectonics.	Plate Tectonics The Rock Cycle
Identify forms of energy that drive the rock cycle.	Plate Tectonics
Analyze the relationship between the rock cycle and processes in the atmosphere and hydrosphere.	Erosion, Transportation and Deposition The Rock Cycle Weathering
2.04 Analyze seismic waves including velocity and refraction to:	
Infer Earth's internal structure.	Earth's Structure
Locate earthquake epicenters.	Earthquake Causes
Measure earthquake magnitude.	Earthquake Causes
<i>Evaluate the level of seismic activity in North Carolina.</i>	Earthquake Causes
2.05 Create and interpret topographic, soil and geologic maps using scale and legends.	Relief
2.06 Investigate and analyze the importance and impact of the economic development of earth's finite rock, mineral, soil, fossil fuel and other natural resources to society and our daily lives:	
Availability.	Crude Oil
Geographic distribution.	Crude Oil
<i>Conservation/Stewardship.</i>	-
Recycling.	The Impact of Mining
Environmental impact	Air Pollution Fossil Fuels Greenhouse Gases Human Impact on the Environment The Impact of Mining

<i>Challenge of rehabilitation of disturbed lands.</i>	–
2.07 Analyze the sources and impacts of society's use of energy.	
Renewable and non-renewable sources.	Air Pollution Formation of Fossil Fuels Fossil Fuels Greenhouse Gases Human Impact on the Environment Nuclear Fission Solar Energy The Impact of Mining
The impact of human choices on Earth and its systems.	Air Pollution Fossil Fuels Greenhouse Gases Human Impact on the Environment The Impact of Mining
Competency Goal 3: The learner will build an understanding of the origin and evolution of the earth system.	
3.01 Assess evidence to interpret the order and impact of events in the geologic past:	
<i>Relative and absolute dating techniques.</i>	–
Statistical models of radioactive decay.	Radioactive Dating
Fossil evidence of past life.	Fossil Record
<i>Uniformitarianism.</i>	–
<i>Stratigraphic principles.</i>	–
<i>Divisions of Geologic Time</i>	–
Origin of the earth system.	The Atmosphere
Origin of life.	Fossil Record
3.02 Evaluate the geologic history of North Carolina.	–
Competency Goal 4: The learner will build an understanding of the hydrosphere and its interactions and influences on the lithosphere, the atmosphere, and environmental quality.	
4.01 Evaluate erosion and depositional processes:	
<i>Formation of stream channels with respect to the work being done by the stream (i.e. down-cutting, lateral erosion, and transportation).</i>	–
Nature and characteristics of sediments.	Erosion, Transportation and Deposition
<i>Effects on water quality.</i>	–
<i>Effect of human choices on the rate of erosion.</i>	–
4.02 Analyze mechanisms for generating ocean currents and upwelling:	
Temperature.	Heat Transfer and Global Interactions

Coriolis effect.	Heat Transfer and Global Interactions
Climatic influence.	ENSO Weather and Climate
4.03 Analyze the mechanisms that produce the various types of shorelines and their resultant landforms:	
Nature of underlying geology.	Coastal Erosional Landforms Coastal Processes
<i>Long and short term sea-level history.</i>	–
Formation and breaking of waves on adjacent topography.	Coastal Erosional Landforms
<i>Human impact.</i>	–
4.04 Evaluate water resources:	
<i>Storage and movement of groundwater.</i>	–
<i>Ecological services provided by the ocean</i>	–
Environmental impacts of a growing human population.	Human Impact on the Environment Loss of Diversity
Causes of natural and manmade contamination.	Water Pollution
4.05 Investigate and analyze environmental issues and solutions for North Carolina's river basins, wetlands, and tidal environments:	
<i>Water quality.</i>	–
<i>Shoreline changes.</i>	–
<i>Habitat preservation.</i>	–
Competency Goal 5: The learner will build an understanding of the dynamics and composition of the atmosphere and its local and global processes influencing climate and air quality.	
5.01 Analyze air masses and the life cycle of weather systems:	
<i>Planetary wind belts.</i>	–
Air masses.	Heat Transfer and Global Interactions Weather and Climate
<i>Frontal systems.</i>	–
Cyclonic systems.	Tropical Cyclones
5.02 Evaluate meteorological observing, analysis, and prediction:	
<i>Worldwide observing systems.</i>	–
<i>Meteorological data depiction.</i>	–
5.03 Analyze global atmospheric changes including changes in CO₂, CH₄, and stratospheric O₃ and the consequences of these changes:	

Climate change.	Air Pollution Climate Change Greenhouse Gases The Impact of Using CFCs
Changes in weather patterns.	Air Pollution Climate Change Greenhouse Gases The Impact of Using CFCs
Increasing ultraviolet radiation.	The Impact of Using CFCs
<i>Sea level changes.</i>	–
Competency Goal 6: The learner will acquire an understanding of the earth in the solar system and its position in the universe.	
6.01 Analyze the theories of the formation of the universe and solar system.	Astronomical Distances Observing the Universe Planets of the Solar System
6.02 Analyze planetary motion and the physical laws that explain that motion:	
Rotation.	The Rotation of the Earth
Revolution.	Gravity and Orbits
Apparent diurnal motions of the stars, sun and moon.	The Moon The Rotation of the Earth
Effects of the tilt of the earth's axis.	The Rotation of the Earth
6.03 Examine the sources of stellar energies.	
Life cycle of stars.	The Life Cycle of Stars Properties of Stars
Hertzsprung - Russell Diagram.	Properties of Stars
6.04 Assess the spectra generated by stars and our sun as indicators of motion and composition (the Doppler effect).	Doppler Effect Observing the Universe
<i>6.05 Evaluate astronomers' use of various technologies to extend their senses:</i>	
Optical telescopes.	Telescopes
<i>Cameras.</i>	–
<i>Radio telescopes.</i>	–
<i>Spectroscope.</i>	–