

Course Proficiencies: ESS 200 revised 8/2016

Course Proficiencies Units Taught	Indicators
Students will understand The Big Bang Theory through scientific processes and practices	<p>(HS-ESS1-2)</p> <p>Students can:</p> <ul style="list-style-type: none"> ● Explain the origins of the universe according to the big bang theory. ● Identify how red-shift of light spectra and cosmic background microwave radiation provide evidence in support of the big bang theory.
Students will comprehend Stellar Life Cycles through scientific processes and practices	<p>(HS-ESS1-1, HS-ESS1-2, HS-ESS1-3)</p> <p>Students can:</p> <ul style="list-style-type: none"> ● Describe how naturally-occurring elements are created, including hydrogen and helium that formed at the big bang and present-day nucleosynthesis in stars or during star explosions. ● Model the various stages of a star's life. (HS-ESS1-3) ● Use the Hertzsprung-Russell Diagram to categorize stars and extrapolate information about star types.
Students will understand the Origin of Our Solar System through scientific processes and practices	<p>(HS-ESS1-4) (HS-ESS1-6)</p> <p>Students can:</p> <ul style="list-style-type: none"> ● Compare the sizes and compositions of solar system objects. ● Describe Earth's formation and early history.
Students will comprehend the Age of Rocks/ Earth History through scientific processes and practices	<p>(HS-ESS1-6)(HS-ESS2-7)(HS-ESS2-3)</p> <p>Students can:</p> <ul style="list-style-type: none"> ● Identify how relative and absolute dating help determine Earth's history. ● Understand atom, element, isotope, half-life, radioactive decay. ● Understand the co-evolution of Earth's systems and life on Earth.

<p>Students will understand Plate Tectonics through scientific processes and practices</p>	<p>(HS-ESS2-1)</p> <p>Students can:</p> <ul style="list-style-type: none"> ● Create a model of Earth’s interior; including convection currents and its effect on plate movement. ● Model the various plate boundaries and associated features. ● Identify how Earth’s surface features come about through constructive and destructive forces (plate tectonics, weathering, erosion, and deposition).
<p>Students will understand the Properties of Water/Effects on Earth Materials through scientific processes and practices</p>	<p>(EHSS2-5)</p> <p>Students can:</p> <ul style="list-style-type: none"> ● Describe the properties of water. ● Model the hydrologic cycle. ● Identify the effects of chemical and physical weathering on Earth’s materials. ● Interpret weathering and erosion events
<p>Students will comprehend the relationship and interactions between Earth’s systems through scientific processes and practices</p>	<p>(HS-ESS3-6, HS-ESS2-7), (HS-ESS2-2), (HS-ESS3-1, HS-ESS3-6)</p> <p>Students can:</p> <ul style="list-style-type: none"> ● Describe relationships (causes, effects, and feedbacks) among Earth’s systems - atmosphere, hydrosphere, biosphere, and geosphere. ● Provide an example of a feedback loop that occurs in nature. ● Identify situations in which human activity has modified Earth’s systems and situations in which human activity has been impacted by events occurring in Earth’s systems.
<p>Students will comprehend and model climate change.</p>	<p>(HS-ESS3-5), (HS-ESS3-6)</p> <p>Students can:</p> <ul style="list-style-type: none"> ● Create a model to demonstrate the greenhouse effect. ● Understand how humans contribute to an increased CO₂ level and how it causes a change in Earth’s climate. ● Identify potential impacts of climate change
<p>Students will design, evaluate or refine a solution to foster sustainability by reducing human impacts on natural resources.</p>	<p>(HS-ESS3-4), (HS-ESS3-3)</p> <p>Students can:</p> <ul style="list-style-type: none"> ● Recognize that the sustainability of human societies and the biodiversity that supports them requires the responsible management of Earth’s natural resources. ● Design, evaluate, or refine a solution that reduces human impacts of natural resource/energy extraction and/or use.

