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Marking Period 1 (MP1)	Science Curriculum Pacing Guide Grade HS ENVIRONMENTAL SCIENCE + HONORS
MP1 **Standards for Science Content**	HS-ESS1-1 Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation. HS-ESS1-2 Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe. HS-ESS1-3 Communicate scientific ideas about the way stars, over their life cycle, produce elements. HS-ESS1-4 Use mathematical or computational representations to predict the motion of orbiting objects in the solar system. HS-ESS1-5 Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks HS-ESS1-6 Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history. HS-ESS2-3 - Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection.
MP1 **Topics**	Space Systems Earth and Earth's System
MP1 **Skills/Concepts**	Planet Earth is a tiny part of a vast universe that has developed over a huge expanse of time. The history of the universe, and of the structures and objects within it, can be deciphered using observations of their present conditions together with knowledge of physics and chemistry. The Big Bang Theory is a core scientific theory that is supported by a large body of evidence and is well accepted by the scientific community. Observable, predictable patterns of movement in the Sun, Earth, Moon system are caused by gravitational interaction and powered by energy from the Sun.
MP1 **Core Materials**	Savvas Realize - Your World Your Turn

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Marking Period 2 (MP2)	Science Curriculum Pacing Guide Grade HS ENVIRONMENTAL SCIENCE + HONORS
MP2 **Standards for Science Content**	HS-ESS2-1 Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features. HS-ESS2-2 Analyze geoscience data to make the claim that one change to Earth's surface can create feedback that cause changes to other Earth systems. HS-ESS2-3 Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection HS-ESS2-4 Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate. HS-ESS2-6 Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere HS-ESS2-7 Construct an argument based on evidence about the simultaneous co-evolution of Earth's systems and life on Earth. HS-ESS3-5 Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associate future impacts on Earth's systems. HS-LS4-1 Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence. HS-LS4-2 Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment. HS-LS4-4 Construct an explanation based on evidence for how natural selection leads to adaptation of populations. HS-LS4-5 Evaluate the evidence supporting claims that changes in environmental conditions may result in (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.
MP2 **Topics**	Earth's History and Earth's Systems Weather and Climate
MP2 **Skills/Concepts**	Earth's History and Earth's Systems Plate tectonics is the unifying theory that explains the past and current movements of rocks. • Biogeology - Dynamic and delicate feedback causes a continual co-evolution of Earth's surface and the life that exists on it. • Adaptation - Changes in the physical environment whether naturally occurring or human induced contribute to the expansion, emergence, or extinction of species. Weather and Climate Earth and Solar System - Cyclical changes in the shape of the Earth's orbit around the sun, together with the tilt of the planet's axis cause climatic changes • Earth Materials and Systems - Changes to global and regional climate can be caused by the earth's energy output and geological events. • The foundation of Earth's global climate system is electromagnetic radiation from the sun, its absorption reflection, storage, and redistribution. • Gradual atmospheric changes are due to plants, and other organisms that captured carbon dioxide and released oxygen • Changes in the atmosphere due to human activity. • Global Climate Change - Magnitude of human impact is great. Humans have the ability to model, predict, and manage current and future impacts.
MP2 **Core Materials**	Savvas Realize - Your World Your Turn

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Marking Period 3 (MP3)	Science Curriculum Pacing Guide Grade HS ENVIRONMENTAL SCIENCE + HONORS
MP23 **Standards for Science Content**	HS-ESS3-1: Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity. HS-ESS3-2: Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios. HS-ESS3-3: Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity. HS-ESS3-4: Evaluate or refine a technological solution that reduces impacts of human activities on natural systems. HS-ESS3-6: Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
MP3 **Topics**	Human Sustainability
MP3 **Skills/Concepts**	Earth's surface processes affect and are affected by human activities. Most of the resources from the natural world are limited whether they are renewable or nonrenewable and should be harvested sustainably. Natural hazards and other geologic events can significantly alter human populations and activities. Weather and Climate Current models predict that, although future regional changes will be complex and varied, the average global temperature will continue to rise. Natural resources Resource availability has guided the development of human society • All forms of energy production and other resource extraction have associated economic, social, environmental, and geopolitical costs and risks as well as benefits Natural Hazards Natural hazards and other geologic events have changed the course of human history. Human Impact on Earth Systems The sustainability of human societies and biodiversity that supports them requires responsible management of natural resources. • Scientists and engineers can make major contributions by developing technologies that produce less pollution and waste that preclude ecosystem degradation V. Global Climate Change • Through computer simulations and other studies, important discoveries are still being made about how the oceans, the atmosphere, and the biosphere interact and are modified in response to human activities VI. Developing Possible Solutions • When evaluating solutions, it is important to take into account a range of constraints, including cost, safety, cultural, and environmental impact. Humans contribute to the frequency and intensity of some natural hazards
MP2 **Core Materials**	Savvas Realize - Your World Your Turn

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Marking Period 4 (MP4)	Science Curriculum Pacing Guide Grade HS ENVIRONMENTAL SCIENCE + HONORS
MP4 **Standards for Science Content**	**HS-LS2-1.** Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales **HS-LS2-2.** Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales. **HS-LS2-4.** Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem. **HS-LS2-6.** Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce. **HS-LS2-7.** Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity. **HS-LS2-8.** Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.
MP4 **Topics**	Ecosystem Dynamics
MP4 **Skills/Concepts**	This unit is an introduction to ecology and ecosystem dynamics using a systems thinking lens. Students explore how scientists study ecosystems and investigate the complex array of factors that inform management efforts. Students will be able to grapple with real-world conservation questions, such as whether an ecosystem can recover from anthropogenic disruption and what role humans can, and should, play in that recovery.•Ecosystems are complex, interactive systems that include both biological communities and physical components of the environment. •Ecosystems are dynamic, experiencing shifts in population composition and abundance and changes in the physical environment over time, which ultimately affects the stability and resilience of the entire system. •Ecosystems have carrying capacities, which are limited to the number of organisms and populations they can support. •Energy and matter transfers through food chains/webs. •There are fewer animals at higher levels of food webs due to inefficiency of energy and matter transfer. • A complex set of interactions within an ecosystem can keep its numbers and types of organisms relatively constant under stable conditions. Extreme fluctuations in the condition or size of a population, however, can challenge the functioning of an ecosystem. •Anthropogenic changes in the environment can disrupt an ecosystem and threaten the survival of some species. •Group behavior has evolved because membership can increase the chances of survival for individuals and their genetic relatives.
MP4 **Core Materials**	Savvas Realize - Your World Your Turn