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|  Environmental Science | **Standards-Based EducationPriority Standards** |
| **12th Grade** |
| *Climate Change* |
| HS-ESS2-2 | Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems. |
| 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-ESS3-1 | 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-ESS3-5 | Analyze geoscience data and the results from global climate models to make an evidnece-based forecast of the current rate of global or regional climate change and associated future impacts to Earth's 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. |
| HS-LS2-5 | Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere. |
| *Earth's History and Systems* |
| 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-PS2-4a | Use mathematical representations of Newton's Law of Gravitation to describe and predict the gravitational forces between objects. |
| HS-ESS1-5 | Evaluate the 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-ESS2-1 | 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-ESS2-5 | Plan and conduct an investigation on the properties of water and its effects on Earth materials and surface properties. |
| *Populations and Biodiversity* |
| HS-ESS3-3 | Create a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity. |
| 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-LS2-3 | Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions. |
| 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 claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem. |
| HS-LS2-8 | Evaluate evidence for the role of group behavior on individual and species changes to survive and reproduce. |
| HS-LS1-5 | Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy. |
| *Humans and the Environment* |
| HS-ESS3-2 | Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios. |
| HS-ESS3-4 | Evaluate or refine a technological solution that reduces the impacts of human activities on natural systems. |
| HS-LS2-7 | Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity. |
| HS-PS2-4b | Use mathematical representations of Coulomb's Law to describe and predict the eletrostatic forces between objects.  |
| HS-PS2-5 | Plan and conduct an investigation to provide evidence that an electrical current can produce a magnetic field and that a changing magnetic field can produce an electrical current. |
| 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. |
| *Environmental Solutions* |
| HS-ETS1-1 | Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants. |
| HS-ETS1-2 | Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.  |
| HS-ETS1-3 | Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.  |
| HS-ETS1-4 | Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem. |
| *Literacy in Science* |
| 11-12. RST.1 | Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.  |
| 11-12. RST.2 | Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.  |
| 11-12 RST.3 | Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. |
| 11-12. RST.4 | Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.  |
| 11-12. WHST.2 | Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes  |
| 11-12. WHST.7 | Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.  |
| 11-12. WHST.9 | Draw evidence from informational texts to support analysis, reflection, and research. |