| NGSS Dimension | Alignment with learning objectives by grade level and performance expectation | | | |
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| **CROSSCUTTING CONCEPTS** | Patterns | Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them. | Different patterns may be observed at each of the scales at which a system is studied and can provide evidence for causality in explanations of phenomena. | Grade 9-12 |
| | | | Graphs, charts, and images can be used to identify patterns in data. | Grade 6-8 |
| | Cause & Effect | Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering. | Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects. | Grade 9-12 |
| | | | Relationships can be classified as causal or correlational, and correlation does not necessarily imply causation. | Grade 6-8 |
| **SCIENCE PRACTICES** | Constructing Explanations | Constructing explanations and designing solutions in Gr. 6-12 builds on K-5 science skills and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles, and theories. | Apply scientific reasoning, theory, and/or models to link evidence to the claims to assess the extent to which the reasoning and data support the explanation or conclusion. | Grade 9-12 |
| | | | Apply scientific reasoning to show why the data or evidence is adequate for the explanation or conclusion. | Grade 6-8 |
| | Obtaining, Evaluating and Communicating Information | Obtaining, evaluating, and communicating information buildings in Gr. 6-12 builds on K-5 skills and progresses to evaluating the merit and validity of ideas, claims and methods. | Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) in multiple formats (including orally, graphically, textually, and mathematically). | Grade 9-12 |
| | | | Communicate scientific and /or technical information (e.g. about a proposed object, tool, process, system) in writing and/or through oral presentations. | Grade 6-8 |
| **DISCIPLINARY CORE IDEAS** | Earth and Space Science | ESS1.C. The History of Planet Earth | The geologic time scale interpreted from rock strata provides a way to organize Earth's history. Analyses of rock strata and the fossil record | MS-ESS1-4 |

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| | | | provide only relative dates, not an absolute scale. | |
| | | ESS2.A. Earth's Materials and Systems | The planet's systems interact over scales that range from microscopic to global and operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future. | MS-ESS2-2 |
| | | ESS2.D. Weather and Climate | Gradual atmospheric changes were due to plants and other organisms that captured CO2 and released O2. | HS-ESS2-6 |
| | | ESS2.E. Biogeology | The many dynamic and delicate feedbacks between the biosphere and other Earth systems cause a continual co-evolution of Earth's surface and the life that exists on it. | HS-ESS2-7 |
| | Physical Science | PS1.C. Nuclear Processes | Spontaneous radioactive decays follow an exponential decay law. Nuclear lifetimes allow radiometric dating to be used to determine ages of rocks and other materials. | HS-ESS1-5,HS-ESS1-6 |
| | Life Science | LS2.C: Ecosystem Dynamics, Functioning, and Resilience | Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations. | MS-LS2-4 |
| | | LS4.A: Evidence of Common Ancestry and Diversity | The collection of fossils and their placement in chronological order (e.g., through location of the sedimentary layers in which they are found or radioactive dating) is known as the fossil record. It documents the existence, diversity, extinction, and change of many life forms throughout the history of life on Earth. | MS-LS4-1 |
| | | LS4.C: Adaptation | Species become extinct because they can no longer survive and reproduce in their altered environment. If members cannot adjust to change that is too fast or drastic, the opportunity for the species' evolution is lost. | HS-LS4-5 |