# GPS Curriculum Transparency: 8th Grade Science
# Identifying Essential Skills/Content & Resource Material

| Course Title: | Unit: | Resources: | |
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| **Content Standards/Learning Goals:** | **Unit Title** | **Unit: Required Resources: Textbook, additional readings, etc.** | **Unit: Other Extension or Enrichment Resources: if applicable** |
| **MS-ESS1-4.** Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history. | Geology (History of the Earth) | TCI: Bring Science Alive! Planet Earth | |
| **MS-ESS2-2.** Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. | Geology (History of the Earth) | TCI: Bring Science Alive! Planet Earth | |
| **MS-ESS2-3.** Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions. | Geology (History of the Earth) | TCI: Bring Science Alive! Planet Earth | |
| **MS-LS4-1.** Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change in life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past. | Geology (History of the Earth) | TCI: Bring Science Alive! Planet Earth | |
| **MS-ESS2-1.** Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. | Geology (Earth's Systems) | TCI: Bring Science Alive! Planet Earth | |
| **MS-ESS3-1.** Construct a scientific explanation based on evidence for how the | Geology (Earth's Systems) | TCI: Bring Science Alive! Planet Earth | |

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| uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes. | | | |
| **MS-ESS3-2.** Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. | Geology (Earth's Systems) | TCI: Bring Science Alive! Planet Earth | |
| **MS-ESS3-4.** Construct and argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems. | Geology (Earth's Systems) | TCI: Bring Science Alive! Planet Earth | |
| **MS-LS4-2.** Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. | Natural Selection and Adaptations | TCI: Bring Science Alive! Adaptations | |
| **MS-LS4-3.** Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy. | Natural Selection and Adaptations | TCI: Bring Science Alive! Adaptations | |
| **MS-LS4-4.** Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment. | Natural Selection and Adaptations | TCI: Bring Science Alive! Adaptations | |
| **MS-LS4-5.** Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms. | Natural Selection and Adaptations | TCI: Bring Science Alive! Adaptations | |
| **MS-LS4-6.** Use mathematical representations to support explanations of | Natural Selection and Adaptations | TCI: Bring Science Alive! Adaptations | |

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| how natural selection may lead to increases and decreases of specific traits in populations over time. | | | |
| **MS-LS3-1.** Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism. | Heredity | TCI: Bring Science Alive! Adaptations<br>TCI: Bring Science Alive! Cells and Genetics | |
| **MS-LS3-2.** Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation. | Heredity | TCI: Bring Science Alive! Adaptations<br>TCI: Bring Science Alive! Cells and Genetics | |
| **MS-PS2-1.** Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects. | Physics/Forces and Energy | TCI: Bring Science Alive! Forces and Energy | |
| **MS-PS2-2.** Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object. | Physics/Forces and Energy | TCI: Bring Science Alive! Forces and Energy | |
| **MS-PS2-3.** Ask questions about data to determine the factors that affect the strength of electric and magnetic forces. | Physics/Forces and Energy | TCI: Bring Science Alive! Forces and Energy | |
| **MS-PS2-4.** Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects. | Physics/Forces and Energy | TCI: Bring Science Alive! Forces and Energy | |
| **MS-PS2-5.** Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact. | Physics/Forces and Energy | TCI: Bring Science Alive! Forces and Energy | |
| **MS-PS3-1.** Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object | Physics/Forces and Energy | TCI: Bring Science Alive! Forces and Energy | |

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| and to the speed of an object. | | | |
| **MS-PS3-1.** Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object. | Physics/Forces and Energy | TCI: Bring Science Alive! Forces and Energy | |
| **MS-ESS1-1.** Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons. | Astronomy | TCI: Bring Science Alive! Space | |
| **MS-ESS1-2.** Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. | Astronomy | TCI: Bring Science Alive! Space | |
| **MS-ESS1-3.** Analyze and interpret data to determine scale properties of objects in the solar system. | Astronomy | TCI: Bring Science Alive! Space | |
| **MS-ETS1-1.** Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people on the natural environment that may limit possible solutions. | All Units - Lab and engineering experiences utilized throughout the year | TCI: Bring Science Alive! - Planet Earth, Adaptations, Cells and Genetics, Forces and Energy, Space | |
| **MS-ETS1-2.** Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. | All Units - Lab and engineering experiences utilized throughout the year | TCI: Bring Science Alive! - Planet Earth, Adaptations, Cells and Genetics, Forces and Energy, Space | |
| **MS-ETS1-3.** Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. | All Units - Lab and engineering experiences utilized throughout the year | TCI: Bring Science Alive! - Planet Earth, Adaptations, Cells and Genetics, Forces and Energy, Space | |
| **MS-ETS1-4.** Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved. | All Units - Lab and engineering experiences utilized throughout the year | TCI: Bring Science Alive! - Planet Earth, Adaptations, Cells and Genetics, Forces and Energy, Space | |