Oregon Science

Grade 7

Adopted 2022

Earth & Space Science

ESS2. Earth's Systems 7.ESS2

1. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. 7.ESS2.1
2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. 7.ESS2.2
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. 7.ESS2.3

ESS3. Earth and Human Activity 7.ESS3

1. Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes. 7.ESS3.1
2. Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. 7.ESS3.2

Engineering, Technology, and the Application of Science

ETS1. Engineering Design 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 and the natural environment that may limit possible solutions. MS.ETS1.1
2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. MS.ETS1.2
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. MS.ETS1.3
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. MS.ETS1.4

Life Science

LS1. From Molecules to Organisms: Structures and Processes 7.LS1

6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. 7.LS1.6
7. Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism. 7.LS1.7

LS2. Ecosystems: Interactions, Energy, and Dynamics 7.LS2

1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. 7.LS2.1
2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. 7.LS2.2
3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. 7.LS2.3
4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. 7.LS2.4
5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.*^ 7.LS2.5

Physical Science

PS1. Matter and Its Interactions 7.PS1

1. Develop models to describe the atomic composition of simple molecules and extended structures. 7.PS1.1
2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. 7.PS1.2
3. Gather and make sense of information to describe that synthetic materials come from natural resources and impact society. 7.PS1.3
4. Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed. 7.PS1.4
5. Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved. 7.PS1.5
6. Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes. 7.PS1.6