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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Unit:** | **L 1** | **L 2** | **L 3** | **L 4** | **L 5** | **L 6** | **L 7** | **L 8** |
| **Science and Engineering Practices** | Asking questions and defining problems |  |  |  |  |  |  |  |  |
| Developing and using models |  |  |  |  |  |  |  |  |
| Planning and Carrying Out Investigations |  |  |  |  |  |  |  |  |
| Analyzing and Interpreting Data |  |  |  |  |  |  |  |  |
| Using mathematics and computational thinking |  |  |  |  |  |  |  |  |
| Constructing explanations and designing solutions |  |  |  |  |  |  |  |  |
| Engaging in argument from evidence |  |  |  |  |  |  |  |  |
| Obtaining, evaluating, & communicating information |  |  |  |  |  |  |  |  |
| **Disciplinary Core Ideas** | **Earth and Space** | ESS1 Earth’s Place in the Universe |  |  |  |  |  |  |  |  |
| ESS2 Earth’s Systems |  |  |  |  |  |  |  |  |
| ESS3 Earth and Human Activity |  |  |  |  |  |  |  |  |
| **ETS[[1]](#footnote-1)** | ETS1 Engineering Design |  |  |  |  |  |  |  |  |
| ETS2 Links Among Engineering, Technology, Science, and Society |  |  |  |  |  |  |  |  |
| **Life** | LS1 From Molecules to Organisms: Structures and Processes |  |  |  |  |  |  |  |  |
| LS2 Ecosystems: Interactions, Energy, and Dynamics |  |  |  |  |  |  |  |  |
| LS3 Heredity: Inheritance and Variation of Traits |  |  |  |  |  |  |  |  |
| LS4 Biological Evolution: Unity and Diversity |  |  |  |  |  |  |  |  |
| **Physical** | PS1 Matter and Its Interactions |  |  |  |  |  |  |  |  |
| PS2 Motion and Stability: Forces and Interactions |  |  |  |  |  |  |  |  |
| PS3 Energy |  |  |  |  |  |  |  |  |
| PS4 Waves and Their Applications in Technologies for Information Transfer |  |  |  |  |  |  |  |  |
| **Crosscutting Concepts** | Patterns |  |  |  |  |  |  |  |  |
| Cause and effect |  |  |  |  |  |  |  |  |
| Scale, proportion, and quantity |  |  |  |  |  |  |  |  |
| Systems and system models |  |  |  |  |  |  |  |  |
| Energy and matter |  |  |  |  |  |  |  |  |
| Structure and function |  |  |  |  |  |  |  |  |
| Stability and change |  |  |  |  |  |  |  |  |

**Core and Component Ideas in the Earth and Space Sciences**

*Core Idea ESS1: Earth’s Place in the Universe*

ESS1.A: The Universe and Its Stars

ESS1.B: Earth and the Solar System

ESS1.C: The History of Planet Earth

*Core Idea ESS2: Earth’s Systems*

ESS2.A: Earth Materials and Systems

ESS2.B: Plate Tectonics and Large-Scale System Interactions

ESS2.C: The Roles of Water in Earth’s Surface Processes

ESS2.D: Weather and Climate

ESS2.E: Biogeology

*Core Idea ESS3: Earth and Human Activity*

ESS3.A: Natural Resources

ESS3.B: Natural Hazards

ESS3.C: Human Impacts on Earth Systems

ESS3.D: Global Climate Change

**Core and Component Ideas in Engineering, Technology, and Applications of Science**

*Core Idea ETS1: Engineering Design*

ETS1.A: Defining and Delimiting an Engineering Problem

ETS1.B: Developing Possible Solutions

ETS1.C: Optimizing the Design Solution

*Core Idea ETS2: Links Among Engineering, Technology, Science, and Society*

ETS2.A: Interdependence of Science, Engineering, and Technology

ETS2.B: Influence of Engineering, Technology, and Science on Society and the Natural World

**Core and Component Ideas in the Life Sciences**

*Core idea LS1: From molecules to organisms: Structures and Processes*

LS1.A: Structure and Function

LS1.B: Growth and Development of Organisms

LS1.C: Organization for Matter and Energy Flow in Organisms

LS1.D: Information Processing

*Core Idea LS2: Ecosystems: Interactions, Energy, and Dynamics*

LS2.A: Interdependent Relationships in Ecosystems

LS2.B: Cycles of Matter and Energy Transfer in Ecosystems

LS2.C: Ecosystem Dynamics, Functioning, and Resilience

LS2.D: Social Interactions and Group Behavior

*Core Idea LS3: Heredity: Inheritance and Variation of Traits*

LS3.A: Inheritance of Traits

LS3.B: Variation of Traits

*Core Idea LS4: Biological Evolution: Unity and Diversity*

LS4.A: Evidence of Common Ancestry and Diversity

LS4.B: Natural Selection

LS4.C: Adaptation

LS4.D: Biodiversity and Humans

**Core and Component Ideas in the Physical Sciences**

*Core Idea PS1: Matter and Its Interactions*

PS1.A: Structure and Properties of Matter

PS1.B: Chemical Reactions

PS1.C: Nuclear Processes

*Core Idea PS2: Motion and Stability: Forces and Interactions*

PS2.A: Forces and Motion

PS2.B: Types of Interactions

PS2.C: Stability and Instability in Physical Systems

*Core Idea PS3: Energy*

PS3.A: Definitions of Energy

PS3.B: Conservation of Energy and Energy Transfer

PS3.C: Relationship Between Energy and Forces

PS3.D: Energy in Chemical Processes and Everyday Life

*Core Idea PS4: Waves and Their Applications in Technologies for Information Transfer*

PS4.A: Wave Properties

PS4.B: Electromagnetic Radiation

PS4.C: Information Technologies and Instrumentation

1. **Engineering, Technology, and Applications of Science** [↑](#footnote-ref-1)