# Next Generation Science Standards (NGSS) / Washington State Science Learning Standards (WSSLS)

Environmental Education Program lessons support the highlighted standards.

| Disciplinary Core Ideas in Physical Science | Disciplinary Core Ideas in Life Science | Disciplinary Core Ideas in Earth and Space Science | Disciplinary Core Ideas in Engineering, Technology and the Application of Science |
|---|---|---|---|
| **PS1: Matter and its Interactions** | **LS1: From Molecules to Organisms: Structures and Processes** | **ESS1: Earth's Place in the Universe** | **ETS1: Engineering Design** |
| PS1.A: Structure and Properties of Matter | LS1.A: Structure and Function | ESS1.A: The Universe and Its Stars | ETS1.A: Defining and Delimiting an Engineering Problem |
| PS1.B: Chemical Reactions | LS1.B: Growth and Development of Organisms | ESS1.B: Earth and the Solar System | ETS1.B: Developing Possible Solutions |
| PS1.C: Nuclear Processes | LS1.C: Organization for Matter and Energy Flow in Organisms | ESS1.C: The History of Planet Earth | ETS1.C: Optimizing the Design Solution |
| **PS2: Motion and Stability: Forces and Interactions** | LS1.D: Information Processing | **ESS2: Earth's Systems** | **ETS2: Links Among Engineering, Technology, Science, and Society** |
| PS2.A: Forces and Motion | **LS2: Ecosystems: Interactions, Energy, and Dynamics** | ESS2.A: Earth Materials and Systems | ETS2.A: Interdependence of Science, Engineering, and Technology |
| PS2.B: Types of Interactions | LS2.A: Interdependent Relationships in Ecosystems | ESS2.B: Plate Tectonics and Large-Scale System Interactions | ETS2.B: Influence of Engineering, Technology, and Science on Society and the Natural World |
| PS2.C: Stability and Instability in Physical Systems | LS2.B: Cycles of Matter and Energy Transfer in Ecosystems | ESS2.C: The Roles of Water in Earth's Surface Processes | |
| **PS3: Energy** | LS2.C: Ecosystem Dynamics, Functioning, and Resilience | ESS2.D: Weather and Climate | |
| PS3.A: Definitions of Energy | LS2.D: Social Interactions and Group Behavior | ESS2.E: Biogeology | |
| PS3.B: Conservation of Energy and Energy Transfer | **LS3: Heredity: Inheritance and Variation of Traits** | **ESS3: Earth and Human Activity** | |
| PS3.C: Relationship Between Energy and Forces | LS3.A: Inheritance of Traits | ESS3.A: Natural Resources | |
| PS3.D: Energy in Chemical Processes and Everyday Life | LS3.B: Variation of Traits | ESS3.B: Natural Hazards | |
| **PS4: Waves and Their Applications in Technologies for Information Transfer** | **LS4: Biological Evolution: Unity and Diversity** | ESS3.C: Human Impacts on Earth Systems | |
| PS4.A: Wave Properties | LS4.A: Evidence of Common Ancestry and Diversity | ESS3.D: Global Climate Change | |
| PS4.B: Electromagnetic Radiation | LS4.B: Natural Selection | | |
| PS4.C: Information Technologies and Instrumentation | LS4.C: Adaptation | | |
| | LS4.D: Biodiversity and Humans | | |

Developed by NSTA based on content from the *Framework for K-12 Science Education* and supporting documents for the *May 2012 Public Draft* of the NGSS

Environmental Educators will apply the Crosscutting Concepts and Science and Engineering Practices most applicable to your lessons.

# Crosscutting Concepts

**Patterns**
Observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them.

**Cause and Effect: Mechanism and Explanation**
Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigations and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts.

**Scale, Proportion, and Quantity**
In considering phenomena, it is critical to recognize what is relevant at different measures of size, time, and energy and to recognize how changes in scale, proportion, or quantity affect a system's structure or performance.

**Systems and System Models**
Defining the system under study-specifying its boundaries and making explicit a model of that system-provides tools for understanding and testing ideas that are applicable throughout science and engineering.

**Energy and Matter: Flows, Cycles, and Conservation**
Tracking fluxes of energy and matter into, out of, and within systems helps one understand the systems' possibilities and limitations.

**Structure and Function**
The way in which an object or living thing is shaped and its substructure determine many of its properties and functions.

**Stability and Change**
For natural and built systems alike, conditions of stability and determinants of rates of change of evolution of a system are critical elements of study.

# Science and Engineering Practices

1. Asking Questions (for science) and Defining Problems (for engineering)
2. Developing and Using Models
3. Planning and Carrying Out Investigations
4. Analyzing and Interpreting Data
5. Using Mathematics and Computational Thinking
6. Constructing Explanations (for science) and Designing Solutions (for engineering)
7. Engaging in Argument from Evidence
8. Obtaining, Evaluating, and Communicating Information

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