



# Next Generation Science Standards: Quick Glance

The Next Generation Science Standards (NGSS) help educators address the most important concepts and skills in science education. The three dimensions shown here have equal importance to helping students learn science. Traditionally, these dimensions have been presented separately, but these standards are most successfully used when all three are blended during a lesson, so that students learn content, scientific approach and universal ideas simultaneously in a way that reflects how it is practiced in the real world. For more about the standards, visit <http://www.nextgenscience.org>.

## Dimension 1: Science and Engineering Practices

Description: Practices describe behaviors that scientists use to investigate the natural world and engineers use to design solutions to problems. Note that the term “practice” is used because it demands both knowledge and skills. Some examples of these practices include:

- 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 and communicating information

## Dimension 2: Crosscutting Concepts

Description: These concepts are important across all scientific domains, and can help youth connect knowledge from different areas. These include the following universal ideas:

- Patterns, similarity and diversity
- Cause and effect
- Scale, proportion and quantity
- Systems and system models
- Energy and matter
- Structure and function
- Stability and change

## Dimension 3: Disciplinary Core Ideas

Description: Grouped into four domains, these ideas help to focus curriculum, instruction and assessment on the most important aspects of science. The ideas help to organize concepts, provide key tools for understanding or investigating ideas, relate to societal or personal concerns, and can be taught and learned at increasing levels of depth and sophistication over multiple grades. They include:

- Physical sciences core ideas: (1) Matter and its interactions, (2) motion and stability, (3) energy, (4) waves and their applications.
- Life sciences core ideas: (1) From molecules to organisms, (2) ecosystems, (3) heredity, (4) biological evolution.
- Earth and space sciences core ideas: (1) Earth’s place in the universe, (2) Earth’s systems, (3) Earth and human activity.
- Engineering, technology and applications of science core ideas: (1) engineering design, (2) links among engineering, technology, science and society.

