



National Science Education Content Standards



These standards are based on the recommendation made in 1996 by the National Research Council in their publication, National Science Education Standards. The standards included here are those specifically targeted for middle and high school students.

		1	2	3	4	5	6	7	8	9	10	11	12
G R A D E S 5 to 8	Scientific Inquiry												
	* Identify questions that can be answered through scientific investigations.	✓	✓	✓	✓	✓	✓						
	* Design and conduct a scientific investigation.	✓											
	* Use appropriate tools and techniques to gather, analyze, and interpret data.												
	* Develop descriptions, explanations, predictions, and models using evidence.	✓	✓	✓	✓	✓	✓						
	* Think critically and logically to make the relationships between evidence and explanations.	✓	✓	✓	✓	✓	✓						
	* Recognize and analyze alternative explanations and predictions.					✓	✓						
	* Communicate scientific procedures and explanations.	✓	✓	✓	✓	✓	✓						
* Use mathematics in all aspects of scientific inquiry.	✓	✓	✓	✓	✓	✓							
G R A D E S 9 to 12	* Identify questions and concepts that guide scientific investigations.	✓	✓	✓	✓	✓	✓						
	* Design and conduct scientific investigations.	✓											
	* Use technology and mathematics to improve investigations and communications.	✓	✓	✓	✓	✓	✓						
	* Formulate and revise scientific explanations and models using logic and evidence.					✓	✓						
	* Recognize and analyze alternative explanations and models.					✓	✓						
* Communicate and defend a scientific argument.	✓	✓	✓	✓	✓	✓							



Standards (continued)



		1	2	3	4	5	6	7	8	9	10	11	12
G R A D E S	Physical Science												
	* Understand properties and changes of properties in matter.	✓	✓	✓	✓	✓	✓						
	* Understand the concepts of motions and forces.	✓	✓		✓	✓							
5 to 8	* Understand the concept of transfer of energy.	✓	✓		✓	✓	✓						
G R A D E S	* Understand the structure of atoms.			✓			✓						
	* Understand the structure and properties of matter.	✓	✓	✓	✓	✓	✓						
	* Understand the concepts of chemical reactions.			✓									
	Understand the concept of motion and forces.	✓	✓		✓	✓							
9 to 12	* Understand the concepts of concentration of energy and increase in disorder.	✓	✓		✓	✓	✓						
	* Understand the concept of interactions of energy and matter.	✓	✓	✓	✓	✓	✓						
Life Science													
G R A D E S	* Understand structure and function in living systems.			✓		✓	✓						
	* Understand reproduction and heredity.												
	* Understand regulation and behavior.					✓	✓						
5 to 8	* Understand populations and ecosystems.					✓	✓						
	* Understand diversity and adaptations of organisms.					✓	✓						
G R A D E S	* Understand the cell.												
	* Understand the molecular basis of heredity.												
	* Understand the concept of biological evolution.												
	* Understand interdependence of organisms.					✓	✓						
	9 to 12	* Understand the concepts of matter, energy, and organization in living systems.					✓	✓					
		* Understand the behavior of organisms.					✓						



Standards (continued)



		1	2	3	4	5	6	7	8	9	10	11	12
G R A D E S 5 to 8	Earth and Space Science												
	* Understand structure of the Earth System.	✓	✓	✓	✓	✓							
	* Understand Earth's history.						✓						
	* Understand Earth in the solar system.						✓						
G R A D E S 9 to 12	* Understand the energy in the Earth system.		✓		✓	✓							
	* Understand the geochemical cycles.			✓			✓						
	* Understand the origin and evolution of the Earth System.												
	* Understand the origin and evolution of the Universe.												
G R A D E S 5 to 12	Science and Technology												
	Develop abilities of technological design.	✓	✓	✓	✓	✓	✓						
	* Develop the understanding about science and technology.	✓	✓	✓	✓	✓	✓						
	Science in Personal and Social Perspectives												
G R A D E S 5 to 8	* Understand personal health.			✓									
	* Understand populations, resources, and environments.		✓	✓	✓	✓	✓						
	* Understand natural hazards.		✓	✓	✓	✓	✓						
	* Understand risks and benefits.		✓	✓	✓	✓	✓						
	* Understand science and technology in society.	✓	✓	✓	✓	✓	✓						
G R A D E S 9 to 12	* Understand personal and community health.			✓									
	* Understand population growth.												
	* Understand natural resources.					✓							
	* Understand environmental quality.	✓	✓	✓	✓	✓	✓						
	* Understand natural and human-induced hazards.	✓	✓	✓	✓	✓	✓						



Standards (continued)



G R A D E S		1	2	3	4	5	6	7	8	9	10	11	12
		Science in Personal and Social Perspectives (continued)											
9 to 12	* Understand science and technology in local, national, and global challenges.	✓	✓	✓	✓	✓	✓						
	History and Nature of Science												
	* Understand science as a human endeavor.	✓	✓	✓	✓	✓	✓						
	* Understand nature of science.	✓	✓	✓	✓	✓	✓						
5 to 8	* Understand the history of science.			✓		✓							
	* Understand Science as a human endeavor.	✓	✓	✓	✓	✓	✓						
	* Understand the nature of scientific knowledge.	✓	✓	✓	✓	✓	✓						
9 to 12	* Understand the historical perspectives.		✓	✓	✓	✓	✓						