



Alignment Document  
 State of Wyoming and Aventa Learning Chemistry  
**Chemistry**

Standards	Topics	Benchmarks	Unit Name	Course Topic Description
<p><b>1</b> In the context of unifying concepts and processes, students develop an understanding of scientific content through inquiry. Science is a dynamic process; concepts and content are best learned through inquiry and investigation.</p>	<p><b>0</b> Earth, Space, and Physical Systems</p>	<p><b>1.7</b> Geochemical Cycles: Students describe the Earth as a closed system and demonstrate a conceptual understanding of the following systems: geosphere, hydrosphere, atmosphere, and biosphere. Students explain the role of energy in each of these systems, such as weather patterns, global climate, weathering, and plate tectonics.</p>		
		<p><b>1.8</b> Origin and Evolution of the Earth System: Students investigate geologic time through comparing rock sequences, the fossil record, and decay rates of radioactive isotopes.</p>		
		<p><b>1.9</b> Origin and Evolution of the Universe: Students examine evidence for the Big Bang Theory and recognize the immense time scale involved in comparison to human-perceived time. They describe the process of star and planet formation, planetary and stellar evolution including the fusion process, element formation, and dispersion.</p>		
		<p><b>1.10</b> Structure and Properties of Matter: Students describe the atomic structure of matter including subatomic particles, their</p>	Atoms/Periodic Table	Atom
			Atoms/Periodic Table	History of the Periodic Table

		<p>properties, and interactions. They recognize that elements are organized into groups in the periodic table based on their outermost electrons and these groups have similar properties. They explain chemical bonding in terms of the transfer or sharing of electrons between atoms. Students describe physical states of matter and phase changes. Students differentiate between chemical and physical properties, and chemical and physical changes.</p>	<p>Atoms/Periodic Table Atoms/Periodic Table Ionic Compounds Chemistry Fundamentals Chemistry Fundamentals Chemistry Fundamentals Chemistry Fundamentals</p>	<p>Group Names Trends in the Periodic Table Ionic and Covalent Compounds Physical Change Phase Change Chemical Change Chemical Versus Physical Properties</p>
		<p><b>1.11</b> Chemical Reactions: Students recognize that chemical reactions take place all around us. They realize that chemical reactions may release or consume energy, occur at different rates, and result in the formation of different substances. They identify the factors that affect reaction rates.</p>	<p>Thermodynamics Reaction Rates Chemical Reactions</p>	<p>Thermodynamics Kinetics Types of Chemical Reactions</p>
		<p><b>1.12</b> Conservation of Energy and Increase in Disorder: Students demonstrate an understanding of the laws of conservation of mass and energy within the context of physical and chemical changes. They realize the tendency for systems to increase in disorder.</p>	<p>Chemistry Fundamentals Chemistry Fundamentals Chemical Reactions Thermodynamics</p>	<p>Physical Change Chemical Change What is a Chemical Reaction Conservation of Energy-Calorimetry</p>
		<p><b>1.13</b> Energy and Matter: Students demonstrate an understanding of types of energy, energy transfer and transformations, and the relationship between energy and matter.</p>	<p>Thermodynamics Thermodynamics</p>	<p>Conservation of Energy-Calorimetry Thermodynamics</p>
		<p><b>1.14</b> Force and Motion: Students develop a conceptual understanding of Newton's</p>		

		Laws of Motion, gravity, electricity, and magnetism.		
<p><b>2</b> Students demonstrate knowledge, skills, and habits of mind necessary to safely perform scientific inquiry. Inquiry is the foundation for the development of content, teaching students the use of processes of science that enable them to construct and develop their own knowledge. Inquiry requires appropriate field, classroom, and laboratory experiences with suitable facilities and equipment.</p>		<b>2.1</b> Students research scientific information and present findings through appropriate means.	Covered in labs throughout the course	
		<b>2.2</b> Students use inquiry to conduct scientific investigations.	Covered in labs throughout the course	
		<b>2.2.A</b> Pose problems and identify questions and concepts to design and conduct an investigation.		
		<b>2.2.B</b> Collect, organize, analyze and appropriately represent data.	Covered in labs throughout the course	
		<b>2.2.C</b> Give priority to evidence in drawing conclusions and making connections to scientific concepts.	Covered in labs throughout the course	
		<b>2.2.D</b> Clearly and accurately communicate the result of the investigation.	Covered in labs throughout the course	
		<b>2.3</b> Students clearly and accurately communicate the result of their own work as well as information from other sources.		
		<b>2.4</b> Students investigate the relationships between science and technology and the role of technological design in meeting human needs.		
<p><b>3</b> Students recognize the nature of science, its history, and its connections to personal, social, economic, and political decisions. Historically, scientific events have had significant impacts</p>		<b>2.5</b> Students properly use appropriate scientific and safety equipment, recognize hazards and safety symbols, and observe standard safety procedures.		
		<b>3.1</b> Students examine the nature and history of science.	Atoms/Periodic Table	Atom
		<b>3.1.A</b> As scientific knowledge evolves, it impacts personal, social, economic, and political decisions.		
		<b>3.1.B</b> The historical misuse of scientific information to make personal, social,		



<p>on our cultural heritage.</p>		<p>economic, and political decisions.</p>		
		<p><b>3.2</b> Students examine how scientific information is used to make decisions.</p>		
		<p><b>3.2.A</b> Interdisciplinary connections of the sciences and connections to other subject areas and career opportunities.</p>		
		<p><b>3.2.B</b> The role of science in solving personal, local, national, and global problems.</p>		
		<p><b>3.2.C</b> The origins, limitations, and conservation of natural resources, including Wyoming examples.</p>		