

**Instructor: Shelly Lindstrom**  
**Course/Area: Physical Science**

**Grade: 9**

Content/Topics	Standard	Skills/Benchmarks	Assessment/Products	Time
Nature of Science	<p>I. History and Nature of Science</p> <p>A. Scientific World View</p> <p>The student will understand the nature of scientific ways of thinking and that scientific knowledge changes and accumulates over time.</p>	<ol style="list-style-type: none"><li>1. The student will be able to distinguish among hypothesis, theory and law as scientific terms and how they are used to answer a specific question.</li><li>2. The student will be able to explain how scientific and technological innovations as well as new evidence can challenge portions of or entire accepted theories and models including but not limited to cell theory, atomic theory, theory of evolution, plate tectonic theory, germ theory of disease and big bang theory.</li><li>3. The student will recognize that in order to be valid, scientific knowledge must meet certain criteria including that it be consistent with experimental, observational and inferential evidence about nature; follow rules of logic and reporting both methods and procedures; and, be falsifiable and open to criticism.</li></ol>	labs, lab reports, tests	2-5 weeks
	<p>B. Scientific Inquiry</p> <p>The student will design and conduct a scientific investigation.</p>	<ol style="list-style-type: none"><li>1. The student will design and complete a scientific experiment using scientific methods by determining a testable question, making a hypothesis, designing a scientific investigation with appropriate controls, analyzing data, making conclusions based on evidence and comparing conclusions to the original hypothesis and prior knowledge.</li></ol>	labs, lab reports, tests	(cont. from above)

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Content/Topics	Standard	Skills/Benchmarks	Assessment/Products	Time
Nature of Science (continued)	I. History and Nature of Science (continued) B. Scientific Inquiry The student will design and conduct a scientific investigation. (continued)  C. Scientific Enterprise The student will understand the relationship between science and technology and how both are used.	3. The student will apply mathematics and models to analyze data and support conclusions. 4. The student will identify possible sources of error and their effects on results. 5. The student will know that professional scientists and engineers have ethical codes. 6. The student will give examples of how different domains of science use different bodies of scientific knowledge and employ different methods to investigate questions.  3. The student will provide an example of how technology facilitates new discoveries and the development of scientific knowledge.	labs, lab reports, tests        tests	(cont. from above)        (cont. from above)
Introduction to Matter	II. Physical Science A. Structure of Matter The student will understand the nature of matter including its forms, properties and interactions.	7. The student will compare and contrast the states of matter in terms of interactions between particles. 8. The student will differentiate between an atom and a molecule. 9. The student will differentiate between an element and a compound.	labs, daily work, tests	2-3 weeks

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Introduction to Chemistry	II. Physical Science A. Structure of Matter The student will understand the nature of matter including its forms, properties and interactions.	1. The student will identify protons, neutrons and electrons as the major components of the atom, their mass relative to one another, their arrangement and their charge. 2. The student will be able to explain the relationship of an element's position on the periodic table to its atomic number and atomic mass. 3. The student will compare and contrast the properties of an element and its isotopes, and describe how isotopes can be used in research, medicine and industry. 4. The student will use the periodic table to identify regions, families, groups and periods. 5. The student will explain how neutral atoms become ions.	daily work, labs, tests	2 weeks
Chemical Reactions	II. Physical Science A. Structure of Matter The student will understand the nature of matter including its forms, properties and interactions.	6. The student will be able to explain how atoms form compounds through bonding.	daily work, labs, tests	