



# APS Science Curriculum Unit Planner

<b>Grade Level/Subject</b>	Chemistry
<b>Stage 1: Desired Results</b>	
<b>Enduring Understanding</b>	
When elements are arranged in the periodic table, patterns arise that enable us to understand the properties of the elements.	
<b>Correlations</b>	
Unifying Understanding	
VA SOL	CH.2 The student will investigate and understand that the placement of elements on the periodic table is a function of their atomic structure. The periodic table is a tool used for the investigations of a) average atomic mass, mass number, and atomic number; b) isotopes, half lives, and radioactive decay; c) mass and charge characteristics of subatomic particles; d) families or groups; e) series and periods; f) trends including atomic radii, electronegativity, shielding effect, and ionization energy; g) electron configurations, valence electrons, and oxidation numbers; h) chemical and physical properties; and i) historical and quantum models.
NSES (grade level)	
AAAS Atlas	
<b>Essential Questions</b>	
<ul style="list-style-type: none"> <li>• How does the periodic table relate to the organization of our world?</li> <li>• What can an elements placement on the periodic table determine?</li> <li>• How has the periodic table changing over time affected the practice of science?</li> <li>• How different areas of the periodic table related to each other?</li> <li>• How has our knowledge of the atom developed over time?</li> </ul>	
<b>Knowledge and Skills</b>	
<b>Students should know:</b>	
<ul style="list-style-type: none"> <li>• Average atomic mass, mass number, and atomic number;</li> <li>• Isotopes, half lives, and radioactive decay;</li> <li>• Mass and charge characteristics of subatomic particles;</li> <li>• Families or groups;</li> <li>• Series and periods;</li> <li>• Trends including atomic radii, electronegativity, shielding effect, and ionization energy;</li> <li>• Electron configurations, valence electrons, and oxidation numbers;</li> <li>• Chemical and physical properties;</li> <li>• Historical and quantum models.</li> </ul>	
<b>Students should be able to:</b>	

<ul style="list-style-type: none"> <li>• Identify protons, neutrons, and electrons</li> <li>• Label groups and periods</li> <li>• Label families</li> <li>• Label SPDF blocks</li> <li>• Write electron configurations</li> <li>• Draw Bohr Models</li> <li>• Use the periodic table to predict chemical formulas of ionic compounds.</li> </ul>	
<b>Stage 2: Assessment Evidence</b>	
<b>Prior Knowledge and Skills</b>	
<p>The names and symbols of the most common elements in our world                  The difference between horizontal rows and vertical columns                  That the periodic table has changed over time</p>	
<b>Formative Assessment</b>	<b>Summative Assessment</b>
<ul style="list-style-type: none"> <li>• Student participation</li> <li>• Homework (readings, questions, and problems)</li> <li>• Laboratory assessment understanding models.</li> </ul>	<ul style="list-style-type: none"> <li>• Laboratory Reports</li> <li>• Tests and Quizzes</li> </ul>
<b>Stage 3: Learning Plan</b>	
<b>References to Adopted Materials</b>	
<p><i>Prentice Hall Chemistry: Chapter 6 The Periodic Table</i></p> <p><i>Holt Chemistry</i></p> <ul style="list-style-type: none"> <li>• Read pg 119 - What is Periodic Law?</li> <li>• Read pg 23 - Elements as Single Atoms or as Molecules</li> <li>• Read pg 79-86 – Subatomic Particles</li> <li>• Read pg 84 – Atomic Number is the Number of Protons of the Nucleus</li> <li>• Do pg 86 – Practice Problems #1-4</li> <li>• Read pg 160-162 – Valence electrons</li> <li>• Do pg 165 # 1-4, 6-8</li> <li>• Read pg 132-138 – Trends in the Periodic Table</li> <li>• Read pg 137 – 138 - Electronegativity</li> </ul>	
<b>Suggested Investigations</b>	
<ul style="list-style-type: none"> <li>• Alien Periodic Table - Different symbols are used for the periodic table and students are to arrange these elements based on clues</li> <li>• Element Project - Students research an individual element of family of elements</li> <li>• Electron Configuration bingo - Bingo cards contain electron configurations for elements.</li> </ul>	
<b>Outdoor Education Applications</b>	
<ul style="list-style-type: none"> <li>• None currently noted</li> </ul>	
<b>Resources</b>	
<b>Web Sites</b>	

<ul style="list-style-type: none"> <li>• <a href="http://www.chemicool.com">www.chemicool.com</a></li> <li>• <a href="http://periodic.lanl.gov/default.htm">http://periodic.lanl.gov/default.htm</a></li> <li>• <a href="http://www.ilpi.com/genchem/periodicquiz.html">www.ilpi.com/genchem/periodicquiz.html</a></li> </ul>
<b>Videos</b>
<ul style="list-style-type: none"> <li>• None currently noted</li> </ul>
<b>Discovery Learning</b>
<ul style="list-style-type: none"> <li>• Simply Science: The Periodic Table Clips- The First Periodic Table (1:36),</li> <li>• Early Nuclear Theory (4:33),</li> <li>• Exploring the Modern Periodic Table (6: 17),</li> <li>• Using the Modern Periodic Table (6:24)</li> </ul>
<b>Field Trips</b>
<ul style="list-style-type: none"> <li>• None currently noted</li> </ul>
<b>Other</b>
<ul style="list-style-type: none"> <li>• Holt Chapter Resources on CD- ROM pg 25-29 Concept Review: How are Elements Organized?</li> <li>• Holt Chapter Resources on CD- ROM pg 30-32 Concept Review: Trends in the Periodic Table</li> <li>• Holt Chapter Resources on CD- ROM pg 35-36 Concept Review: Simple Ions</li> </ul>