

## Honors Chemistry II Scope & Sequence

Days	Unit	Standard(s)/Outcome(s)	Essential/Guiding Questions
8	<b>Lab Safety &amp; Chemistry I Review</b> <ul style="list-style-type: none"> <li>● Lab safety</li> <li>● Atomic structure</li> <li>● Electron configuration</li> <li>● Reading the periodic table</li> <li>● Chemical bonds: ionic and covalent</li> <li>● Types of chemical formulas</li> <li>● Types of chemical reactions</li> <li>● Writing and balancing chemical equations</li> </ul>	<p><i>This unit is a precursor to all units. Although it does not have any direct NGSS performance expectations it builds a foundation for all future units.</i></p> <p><b>HS-PS1</b>  <b>HS-PS1-1</b>  <b>HS-PS1-2</b></p>	<p><b><i>How does matter interact?</i></b></p>
12	<b>Stoichiometry</b> <ul style="list-style-type: none"> <li>● Mole Conversion</li> <li>● Molar Mass</li> <li>● Mass</li> <li>● Volume</li> <li>● Particles</li> <li>● 3-step stoichiometry conversions</li> <li>● Limiting reactants</li> <li>● % yield</li> </ul>	<p><b>HS-PS1-2</b>  <b>HS-PS1-7</b>  <b>HS-PS2-2</b></p>	<p><b><i>How do substances quantitatively combine/change/react to make new substances?</i></b></p>

	<ul style="list-style-type: none"> <li>● Hydrates</li> <li>● Empirical formula</li> <li>● Molarity</li> <li>● Molality</li> </ul>		
10	<b>Kinetic Molecular Theory and Gas Laws</b> <ul style="list-style-type: none"> <li>● Kinetic Molecular Theory</li> <li>● Temperature and Pressure conversions</li> <li>● Boyle's Law</li> <li>● Charles Law</li> <li>● Gay-Lussac's Law</li> <li>● Combined Gas Law</li> <li>● Ideal Gas Law</li> <li>● Dalton's Law</li> <li>● Graham's Law</li> </ul>	HS-PS1-7	<i>How can one explain the structure, properties and interactions of matter?</i>
5	<b>Thermodynamics</b> <ul style="list-style-type: none"> <li>● Enthalpy</li> <li>● Exothermic</li> <li>● Endothermic</li> <li>● Hess' Law</li> <li>● Heat of formation</li> <li>● Specific heat</li> <li>● Entropy</li> <li>● Free energy</li> </ul>	<b>HS-PS1-4</b> <b>HS-PS2-2</b> <b>HS-PS3-1</b> <b>HS-PS3-2</b> <b>HS-PS3-4</b>	<i>How is energy transferred and conserved?</i>
8	<b>Kinetics</b>	HS-PS1-5	<i>What underlying forces</i>

	<ul style="list-style-type: none"> <li>● Collision theory</li> <li>● Rates of reaction</li> <li>● Rate laws</li> <li>● Mechanisms</li> <li>● Energy diagrams</li> </ul>	<b>HS-PS2-6</b>	<i>explain the variety of interactions observed?</i>
4	<b>Equilibrium</b> <ul style="list-style-type: none"> <li>● Definition of equilibrium</li> <li>● Equilibrium constant expressions</li> <li>● Le Chatelier's Principle</li> </ul>	<b>HS-PS1-6</b> <b>HS-PS1-7</b>	<i>How can one predict the changes needed to increase products in a chemical reaction?</i>
18	<b>Organic: Pre-AP required topic</b> <ul style="list-style-type: none"> <li>● Properties</li> <li>● Allotropes</li> <li>● Hydrocarbons - naming and drawing (alkane, alkene, alkyne)</li> <li>● Functional groups</li> <li>● Hydrocarbon derivatives - identifying properties, naming, drawing</li> <li>● Organic reactions (esterification, saponification, polymerization)</li> <li>● Polymers</li> </ul>	<b>HS-PS1-2</b> <b>HS-PS1-3</b> <b>HS-PS3-3</b>	<i>How and why do particular parts of organic molecules interact?</i>
8	<b>Redox</b> <ul style="list-style-type: none"> <li>● Defining oxidation and</li> </ul>	<b>HS-PS1</b> <b>HS-PS1-3</b>	<i>What is the mechanism and driving force behind oxidation</i>

	<p>reduction</p> <ul style="list-style-type: none"> <li>• Assigning oxidation numbers</li> <li>• Half reactions</li> <li>• Balancing simple redox reactions</li> <li>• Corrosion</li> <li>• Electrochemistry</li> </ul>		<i>reduction reactions?</i>
12	<p><b>Acids &amp; Bases</b></p> <ul style="list-style-type: none"> <li>• Properties</li> <li>• Naming</li> <li>• Definitions</li> <li>• Conjugate acid-base pairs</li> <li>• Calculating pH, [H<sup>+</sup>]</li> <li>• Titrations</li> <li>• Titration curves</li> <li>• Buffers</li> </ul>	<p><b>HS-PS1-2</b>  <b>HS-PS1-7</b>  <b>HS-PS2-6</b></p>	<i>How can pH be used to predict and explain chemical interactions?</i>