

Subject to change. Highlights are for Chem 1H only.

**Quarter 1****UNIT 1: Introduction to Chemistry**

Topics
<b>T1. Nature of Science (N.1.1, N.1.2, N.1.4, N.1.5, N.2.2, N.2.3, N.2.4, N.2.5, N.3.1, N.3.2, N.3.3, N.4.1)</b> <ul style="list-style-type: none"> <li>➤ Characteristics of Science &amp; Methods</li> <li>➤ Consensus in the Development of a Theory</li> <li>➤ Scientific Laws</li> <li>➤ Evaluating &amp; Testing Scientific Claims</li> </ul>
<b>T2. Data Collection &amp; Analysis (N.1.6, N.1.7, MAFS.912.N-Q.1.1, MAFS.912.N-Q.1.3, MAFS.912.F-IF.3.7)</b> <ul style="list-style-type: none"> <li>➤ Choosing &amp; Interpreting Units &amp; Labels</li> <li>➤ Precision vs. Accuracy</li> <li>➤ Significant Figures</li> <li>➤ Percent Error</li> <li>➤ Dimensional Analysis</li> <li>➤ Creating &amp; Interpreting Graphs</li> </ul>

**UNIT 2: Forms of Matter**

Topics
<b>T1. Matter &amp; Change (P.8.1, P.8.2)</b> <ul style="list-style-type: none"> <li>➤ Particles in Four States of Matter</li> <li>➤ Physical vs. Chemical Properties</li> </ul>
<b>T2. Methods &amp; Experiments (P.8.2)</b> <ul style="list-style-type: none"> <li>➤ Physical vs. Chemical Changes</li> <li>➤ Mixture Types &amp; Separation Techniques</li> </ul>

**UNIT 3: Structure of Matter**

Topics
<b>T1. Atom (P.8.4, P.8.3, N.3.5)</b> <ul style="list-style-type: none"> <li>➤ Modern Atomic Theory</li> <li>➤ Subatomic Particles &amp; their Discovery</li> <li>➤ Changes to Atomic Model</li> <li>➤ Historically Relevant Experiments</li> </ul>
<b>T2. Electromagnetism (P.10.18)</b> <ul style="list-style-type: none"> <li>➤ Wavelength vs Frequency</li> <li>➤ Energy Levels in the EM Spectrum</li> </ul>
<b>T3. Quantum Theory (P.10.9)</b> <ul style="list-style-type: none"> <li>➤ Quantization of Energy at Atomic Level</li> </ul>

**UNIT 4: Periodic Table**

Topics
<b>T1. Introduction &amp; Layout (P.8.5)</b> <ul style="list-style-type: none"> <li>➤ Groups &amp; Periods</li> <li>➤ Octet Rule</li> <li>➤ Electron Configuration</li> <li>➤ Aufbau, Pauli &amp; Hund Concepts</li> <li>➤ Energy Levels, Sublevels &amp; Orbitals</li> </ul>
<b>T2. Periodic Trends (P.8.5)</b> <ul style="list-style-type: none"> <li>➤ Reactivity, Radius, Electronegativity &amp; Ionization Energy</li> </ul>

**Quarter 2****UNIT 5: Compounds**

Topics
<b>T1. Bonding (P.8.6, P.8.7, P.8.12)</b> <ul style="list-style-type: none"> <li>➤ Ionic vs. Covalent Bond Characteristics</li> <li>➤ Lewis Structures</li> <li>➤ Metallic Bond</li> <li>➤ Bonding Characteristics of Carbon (H)</li> </ul>
<b>T2. Naming (P.8.7, P.8.13)</b> <ul style="list-style-type: none"> <li>➤ Ionic Compounds</li> <li>➤ Binary Molecular Compounds</li> <li>➤ Functional Groups (H)</li> </ul>
<b>T3. Formula Writing (P.8.7)</b> <ul style="list-style-type: none"> <li>➤ Binary &amp; Tertiary Ionic Compounds</li> <li>➤ Binary Molecular Compounds</li> </ul>

**UNIT 6: Chemical Reactions**

Topics
<b>T1. Chemical Equations (P.8.8, P.8.9, P.8.10, P.10.2)</b> <ul style="list-style-type: none"> <li>➤ Reaction Types</li> <li>➤ Oxidation-Reduction Reactions in Living and Non-living Systems (H)</li> <li>➤ Balance Chemical Equations</li> <li>➤ Conservation of Energy (H)</li> </ul>
<b>T2. Mole Concept (P.8.9)</b> <ul style="list-style-type: none"> <li>➤ Convert between Moles, Particles, Mass &amp; Volume</li> </ul>
<b>Exam Review &amp; Semester Exam</b>

**Quarter 3****UNIT 7: Stoichiometry**

Topics
<b>T1. Stoichiometry (P.8.9)</b> <ul style="list-style-type: none"> <li>➤ Calculate Quantities of Chemicals in Reactions</li> <li>➤ Limiting Reagents</li> <li>➤ Calculate Percent Yield</li> </ul>

**UNIT 8: Fluids**

Topics
<b>T1. Behavior of Gases (P.12.10)</b> <ul style="list-style-type: none"> <li>➤ Kinetic Molecular Theory</li> <li>➤ Gas Laws (Boyle's, Charles', Gay-Lussac's, Avogadro's Hypothesis)</li> </ul>
<b>T2. Phase Transitions (P.12.11, P.10.5)</b> <ul style="list-style-type: none"> <li>➤ Particle Motion</li> <li>➤ Heating Curve/Phase Diagram</li> <li>➤ Kinetic Molecular Theory</li> <li>➤ Relate Temperature to Kinetic Energy</li> </ul>
<b>T3. Intra &amp; Intermolecular Forces (P.8.6, L.18.12)</b> <ul style="list-style-type: none"> <li>➤ Intramolecular vs. Intermolecular Force</li> <li>➤ Water Soluble Substances</li> <li>➤ Cause &amp; Effect of Properties of Water</li> </ul>

**Quarter 4****UNIT 9: Acids, Bases & pH**

Topics
<b>T1. Acid Base Theory (P.8.11)</b> <ul style="list-style-type: none"> <li>➤ Bronsted-Lowry &amp; Arrhenius</li> </ul>
<b>T2. Ion Concentration &amp; pH (P.8.11)</b> <ul style="list-style-type: none"> <li>➤ Dissociation</li> <li>➤ pH Scale</li> <li>➤ Strength &amp; Concentration</li> </ul>

**UNIT 10: Thermochemistry**

Topics
<b>T1. Forms and Transformations of Energy (P.10.1)</b> <ul style="list-style-type: none"> <li>➤ Potential &amp; Kinetic</li> <li>➤ Examples of Energy Transformations</li> </ul>
<b>T2. Exothermic &amp; Endothermic Reactions (P.10.6, P.10.7, P.10.8)</b> <ul style="list-style-type: none"> <li>➤ Potential Energy Diagrams</li> <li>➤ Entropy (H)</li> </ul>

**UNIT 11: Rates & Equilibrium**

Topics
<b>T1. Factors that Affect Rates (P.12.12)</b> <ul style="list-style-type: none"> <li>➤ Surface Area, Concentration, Temperature &amp; Catalyst</li> <li>➤ Collision Theory</li> </ul>
<b>T2. Concepts of Equilibrium (P.12.13)</b> <ul style="list-style-type: none"> <li>➤ Dynamic Equilibrium</li> <li>➤ LeChatelier's Principle</li> </ul>

**UNIT 12: Nuclear Processes**

Topics
<b>T1. Nuclear Reactions (P.10.12, P.10.11, P.10.10, N.4.2, L.17.15, L17.19)</b> <ul style="list-style-type: none"> <li>➤ Chemical vs. Nuclear Reactions</li> <li>➤ Radioactive Decay (alpha, beta, gamma), Fission, Fusion (H)</li> <li>➤ Half-Life Calculations (H)</li> <li>➤ Effect of Nuclear Forces (weak vs strong) on Structure of Matter (H)</li> <li>➤ Real world examples of Chemical &amp; Nuclear Reactions</li> <li>➤ Cost &amp; Benefits to Society &amp; Environment (H)</li> </ul>
<b>Exam Review &amp; Final Exam</b>