



## Curriculum Overview for Chemistry

### Year 11

<p><b>Half Term 1: unit 6 ( the rate and extend of chemical change) and unit 7 (Organic Chemistry)</b></p> <p>Substantive knowledge unit 6:</p> <ul style="list-style-type: none"> <li>▪ Describe how changing temperature, concentration, pressure, surface area affects rate of reaction.</li> <li>▪ Explain using collision theory the effects of changing conditions temperature, concentration, pressure, surface area on rate of reaction.</li> <li>▪ Describe how catalysts impact rate of reaction.</li> <li>▪ Link how catalysts impact rate of reaction to reaction profiles.</li> <li>▪ Identify the symbol for reversible reactions.</li> <li>▪ Link exothermic and endothermic reactions to reversible reactions.</li> </ul>		<p>Skim and Scan of source information Decoding terms Etymology of key terms</p>
<p>Substantive Knowledge unit 7</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Describe how crude oil is formed</li> <li><input type="checkbox"/> Identify alkanes</li> <li><input type="checkbox"/> Identify the general formula for an alkane</li> <li><input type="checkbox"/> Describe fractional distillation.</li> <li><input type="checkbox"/> Describe the properties of hydrocarbons.</li> <li><input type="checkbox"/> Explain the properties of hydrocarbons.</li> <li><input type="checkbox"/> Describe cracking.</li> <li><input type="checkbox"/> Explain why we do cracking.</li> <li><input type="checkbox"/> Compare the reactivity of alkanes and alkenes.</li> <li><input type="checkbox"/> Explain alkene reactions. T</li> <li><input type="checkbox"/> Describe alcohol reactions. T</li> <li><input type="checkbox"/> Describe reactions of carboxylic acids. T</li> <li><input type="checkbox"/> Explain the acidity of carboxylic acids. T</li> <li><input type="checkbox"/> Describe polymerisation. T</li> <li><input type="checkbox"/> Describe condensation polymerisation. T</li> <li><input type="checkbox"/> Describe the structure of an amino acid. T</li> <li><input type="checkbox"/> Describe the polymerisation of an amino acid. T</li> <li><input type="checkbox"/> Describe the structure of DNA. T</li> </ul> <p>Disciplinary knowledge unit 6 :</p> <ul style="list-style-type: none"> <li>▪ Calculate mean rate of reaction.</li> </ul>		<p>Activation energy Catalyst Collision theory Effect of changing concentration on equilibrium Effect of changing pressure on equilibrium Effect of changing temperature on equilibrium Effect of concentration on reaction rate Effect of pressure on reaction rate Effect of surface area on reaction rate Effect of temperature on reaction rate Equilibrium Le Chatelier's Principle Rate of reaction Reversible reaction</p> <p>Addition polymerisation Alcohols Alkanes Alkenes Amino acids Carboxylic acids Catalytic cracking Combustion Complete combustion Crude oil Condensation polymerisation Cracking DNA Esters Fermentation Fractional distillation Homologous series Hydrocarbons Nucleotides Polyesters Polymers Polypeptide Repeat unit Steam cracking</p>



<ul style="list-style-type: none"> <li>Draw and interpret graphs showing the quantity of product formed or reactant used.</li> <li>HT – Draw tangents on graphs to calculate rate of reaction from a gradient</li> <li>HT- Predict changes on systems using Le Chatelier's principle.</li> <li>HT – Predict the effect a change of concentration of a reactant or product, temperature or pressure has on equilibrium.</li> </ul>		<p>Recall questions to start every lesson Recall test Review sheet End of unit assessment</p>
<p><b>Disciplinary Knowledge unit 7:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Identify carboxylic acids</li> <li><input type="checkbox"/> Identify alkenes.</li> <li><input type="checkbox"/> Identify the general formula for an alkene.</li> <li><input type="checkbox"/> Identify alcohols.</li> <li><input type="checkbox"/> Identify the general formula of an alcohol.</li> </ul> <p>Calculate R<sub>f</sub> values. Interpret chromatograms</p>		<p>Revision Card preparation for every lesson Recall test Review sheet Repetition of use of revision cards for end of unit assessment</p>
<p><b>Half Term 2: Chemical analysis</b></p> <p><b>Substantive Knowledge:</b> Describe how we test for pure substances. Describe the use of formulation. Identify examples of formulations. Describe the chromatography required practical. Explain how paper chromatography separates mixtures. Describe the test for hydrogen. Describe the test for oxygen Describe the test for chlorine. Describe the test for carbon dioxide TRIPLE ONLY Describe how to test for positive metal ions. Identify the results for the positive metal ion test. Describe how to use sodium hydroxide to test for some metal ions. Identify the results of the sodium hydroxide test. Describe the test for carbonates. Describe the test for halides. Identify the halide test results. Describe the test for sulfates. State advantages of instrumental analysis compared to chemical tests. Describe flame emission spectroscopy. Interpret an instrumental results</p>		<p>Skim and Scan of source information Decoding terms Etymology of key terms</p>
<p>TRIPLE ONLY Describe how to test for positive metal ions. Identify the results for the positive metal ion test. Describe how to use sodium hydroxide to test for some metal ions. Identify the results of the sodium hydroxide test. Describe the test for carbonates. Describe the test for halides. Identify the halide test results. Describe the test for sulfates. State advantages of instrumental analysis compared to chemical tests. Describe flame emission spectroscopy. Interpret an instrumental results</p>		<p>Pure, Boiling point, Mixture, Formulation, Chromatography, Mobile phase, Stationary phase, Limewater, Litmus paper TRIPLE ONLY: Ion, Metal, Precipitate, Instrumental analysis, Flame emission spectroscopy.</p>
<p>Describe how to test for positive metal ions. Identify the results for the positive metal ion test. Describe how to use sodium hydroxide to test for some metal ions. Identify the results of the sodium hydroxide test. Describe the test for carbonates. Describe the test for halides. Identify the halide test results. Describe the test for sulfates. State advantages of instrumental analysis compared to chemical tests. Describe flame emission spectroscopy. Interpret an instrumental results</p>		<p>Recall questions to start every lesson Recall test Review sheet End of unit assessment</p>
<p><b>Disciplinary Knowledge:</b> Calculate R<sub>f</sub> values. Interpret chromatograms</p>		<p>Revision Card preparation for every lesson Recall test Review sheet Repetition of use of revision cards for end of unit assessment</p>