

## Key Stage 5 Curriculum Overview

**Subject: Chemistry**

**Year 12**

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	Assessment
<p>Atomic structure;</p> <ul style="list-style-type: none"> <li>Fundamental particles</li> <li>Mass number, atomic number and isotopes</li> <li>Electron arrangement</li> <li>Ionisation energy</li> </ul> <p>Amount of substance;</p> <ul style="list-style-type: none"> <li>Relative atomic mass</li> <li>Moles</li> <li>Ideal gas equation</li> <li>Empirical and molecular formulae</li> <li>Balanced equations</li> <li>Atom economy</li> </ul> <p>Bonding;</p> <ul style="list-style-type: none"> <li>Ionic bonding</li> <li>Covalent bonding</li> <li>Metallic bonding</li> <li>Electronegativity</li> <li>Forces acting between molecules</li> <li>Shapes and bond angles</li> <li>Bonding and physical properties</li> </ul> <p>Kinetics</p> <ul style="list-style-type: none"> <li>Collision theory</li> <li>Maxwell-Boltzmann distribution</li> <li>Catalysts</li> </ul>	<p>Energetics;</p> <ul style="list-style-type: none"> <li>Exothermic and endothermic reactions</li> <li>Enthalpy</li> <li>Measuring enthalpy change</li> <li>Hess's law</li> <li>Thermochemical cycles</li> <li>Bond enthalpies</li> </ul> <p>Equilibrium;</p> <ul style="list-style-type: none"> <li>Changing conditions</li> <li>Equilibrium in industry</li> <li>Equilibrium constant</li> <li>Kc calculations</li> <li>Dynamic equilibrium</li> </ul> <p>Introduction to organic chemistry;</p> <ul style="list-style-type: none"> <li>Carbon compounds</li> <li>Nomenclature</li> <li>Isomerism</li> </ul> <p>Alkanes</p> <ul style="list-style-type: none"> <li>Fractional distillation of crude oil</li> <li>Industrial cracking</li> <li>Combustion</li> <li>Formation of halogenoalkanes</li> </ul>	<p>Oxidation and reduction;</p> <ul style="list-style-type: none"> <li>Oxidation states</li> <li>Redox equations</li> </ul> <p>Halogenoalkanes;</p> <ul style="list-style-type: none"> <li>Nucleophilic substitution in halogenoalkanes</li> <li>Elimination reactions</li> </ul> <p>Alkenes</p> <ul style="list-style-type: none"> <li>Reactions of alkenes</li> <li>Addition polymers</li> </ul>	<p>Periodicity;</p> <ul style="list-style-type: none"> <li>The periodic table</li> <li>Trends in period 3</li> <li>Trends in ionisation energy</li> </ul> <p>Group 2</p> <ul style="list-style-type: none"> <li>The physical and chemical properties of group 2 elements</li> </ul> <p>Halogens</p> <ul style="list-style-type: none"> <li>Chemical reactions of halogens</li> <li>Reactions of halide ions</li> <li>Uses of chlorine</li> </ul> <p>Alcohols</p> <ul style="list-style-type: none"> <li>Ethanol production</li> <li>Reactions of alcohols</li> </ul> <p>Organic analysis</p> <ul style="list-style-type: none"> <li>Test tube reactions</li> <li>Mass spec</li> <li>Infrared spec</li> </ul>	<p>Revision; Atomic structure</p> <p>Amount of substance</p> <p>Bonding</p> <p>Kinetics</p> <p>Energetics</p>	<p>Revision;</p> <p>Equilibrium</p> <p>Organic intro</p> <p>Alkanes</p> <p>Redox</p> <p>Halogenoalkanes</p> <p>Periodicity</p> <p>G2 and 7</p> <p>Alcohols</p> <p>Organic analysis</p> <p>Kinetics;</p> <ul style="list-style-type: none"> <li>Rate expression</li> <li>Determining rate equation</li> <li>Rate determining step</li> </ul> <p>Optical isomerism</p> <p>Aldehydes and ketones</p>	<p>CPAC</p> <p>End of unit assessment</p> <p>PPQs homework</p>

## Key Stage 5 Curriculum Overview

**Subject: Chemistry**

**Year 13**

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	Assessment
<p>Acids, bases and buffers;</p> <ul style="list-style-type: none"> <li>pH scale</li> <li>Weak acids and bases</li> <li>Titration</li> <li>Indicators</li> <li>Buffers</li> </ul> <p>Electrode potentials;</p> <ul style="list-style-type: none"> <li>Electrochemical series</li> <li>Predicting direction of redox</li> <li>Electrochemical cells</li> </ul> <p>Carboxylic acids;</p> <ul style="list-style-type: none"> <li>Carboxylic acids and esters</li> <li>Reactions of carboxylic acids and esters</li> <li>Acylation</li> </ul> <p>Aromatic chemistry;</p> <ul style="list-style-type: none"> <li>Arenes</li> <li>Naming and properties</li> <li>Reactions of arenes</li> </ul>	<p>Thermodynamics;</p> <ul style="list-style-type: none"> <li>Enthalpy change</li> <li>Born-Haber cycles</li> <li>Why do reactions take place?</li> </ul> <p>Equilibrium constant;</p> <ul style="list-style-type: none"> <li>K<sub>p</sub> for homogenous systems</li> </ul> <p>Transition metals</p> <ul style="list-style-type: none"> <li>Properties of transition metals</li> <li>Complex ions</li> <li>Coloured ions</li> <li>Variable oxidation states</li> <li>Catalysts</li> </ul> <p>Structure determination;</p> <ul style="list-style-type: none"> <li>H nmr</li> <li>Interpreting nmr</li> </ul> <p>Chromatography;</p>	<p>Ions in solution</p> <ul style="list-style-type: none"> <li>Acid-base chemistry of aqueous transition ions</li> <li>Ligand substitution reactions</li> </ul> <p>Period 3</p> <ul style="list-style-type: none"> <li>Reactions of P3</li> <li>Oxides of P3</li> <li>Acidic/basic nature of P3 oxides</li> </ul> <p>Organic synthesis;</p> <ul style="list-style-type: none"> <li>Synthetic routes</li> <li>Organic analysis</li> </ul> <p>Amines</p> <ul style="list-style-type: none"> <li>Properties of amines as bases</li> <li>Amines as nucleophiles</li> </ul> <p>Polymers</p> <ul style="list-style-type: none"> <li>Condensation polymers</li> </ul> <p>Biological molecules</p> <ul style="list-style-type: none"> <li>Amino acids</li> <li>Peptides, polypeptides and proteins</li> <li>Enzymes</li> <li>DNA</li> <li>Action of anticancer drugs</li> </ul>	<p>Revision of A Level topics</p>	<p>Revision</p> <p>Deliberate practice A Level examinations</p>		<p>CPAC</p> <p>End of unit assessment</p> <p>PPQs homework</p>

