

# Curriculum Map Year 13 Chemistry

Topic Name	Term	Skills developed with link to NC Subject content	Reflection on previous link in the curriculum
Thermodynamics	Autumn HT1	<ul style="list-style-type: none"> <li>• Born-Haber Cycles</li> <li>• Gibbs free energy and Entropy change</li> </ul>	<b>Year 12:</b> <ul style="list-style-type: none"> <li>• Enthalpy Change</li> <li>• Calorimetry</li> <li>• Applications of Hess's Law</li> <li>• Bond Enthalpies</li> </ul>
Carboxylic acids and derivatives, Aromatic Chemistry	Autumn HT1	<ul style="list-style-type: none"> <li>• Nomenclature, uses and reactions of carboxylic acids</li> <li>• Nomenclature, uses and reactions of esters</li> <li>• Biodiesel and Soap</li> <li>• Acylation to form:               <ul style="list-style-type: none"> <li>○ Carboxylic acids</li> <li>○ Amides</li> <li>○ Esters</li> <li>○ N-Substituted amides</li> </ul> </li> <li>• Bonding in Benzene and justification</li> <li>• Electrophilic substitution               <ul style="list-style-type: none"> <li>○ Nitration</li> <li>○ Friedel-Crafts</li> </ul> </li> </ul>	<b>Year 12:</b> <ul style="list-style-type: none"> <li>• Organic Nomenclature, Alkanes, Halogenoalkanes</li> <li>• Alkenes and Alcohols and organic Analysis</li> </ul>
Rate Equations and Kp	Autumn HT2	<ul style="list-style-type: none"> <li>• Rate Equations</li> <li>• Determination of rate Equations</li> <li>• Equilibrium constant for homogeneous systems</li> </ul>	<b>Year 12:</b> <ul style="list-style-type: none"> <li>• Collision Theory</li> <li>• Maxwell - Boltzmann distribution</li> <li>• Effect of temperature on reaction rate</li> <li>• Effect of concentration and pressure</li> <li>• Catalysts</li> <li>• Chemical Equilibria and Le Chatelier's principle</li> <li>• Kc for homogeneous systems</li> </ul>
Amines, Polymers, Amino acids, proteins and DNA	Autumn HT2	<ul style="list-style-type: none"> <li>• Preparation of amines</li> <li>• Basicity of amines</li> <li>• Nucleophilic properties of amines</li> <li>• Condensation polymers</li> <li>• Addition polymers</li> <li>• Biodegradability and disposal of polymers</li> <li>• Amino acids</li> <li>• Proteins</li> <li>• Enzymes</li> <li>• DNA</li> <li>• Anti-cancer drugs</li> </ul>	<b>GCSE:</b> <ul style="list-style-type: none"> <li>• Biology</li> <li>• Chemistry-polymerisation</li> <li>• AS Nucleophilic substitution</li> </ul>
Electrode potentials and Electrochemical cells (Start Acids and Bases if time allows)	Spring HT3	<ul style="list-style-type: none"> <li>• Electrode potentials and cells</li> <li>• Commercial applications of electrochemical cells</li> </ul>	<b>GCSE:</b> <ul style="list-style-type: none"> <li>• Cells and Electrolysis</li> <li>• Oxidation and Reduction</li> </ul>
Organic Synthesis	Spring HT3	<ul style="list-style-type: none"> <li>• Piecing together the whole of organic chemistry from AS and A level into one big synthesis map.</li> <li>• Explain why chemists               <ul style="list-style-type: none"> <li>○ Use less dangerous starting materials</li> </ul> </li> </ul>	<b>Year 12 and 13:</b> <ul style="list-style-type: none"> <li>• Organic Nomenclature, Alkanes, Halogenoalkanes</li> </ul>

		<ul style="list-style-type: none"> <li>○ Use economic reactants</li> <li>○ Choose reactions with higher atom economy</li> <li>● Devise a synthesis of a compound using up to 4 steps</li> </ul>	<ul style="list-style-type: none"> <li>● Alkenes and Alcohols and organic Analysis</li> <li>● Carboxylic acids and derivatives,</li> <li>● Aromatic Chemistry</li> <li>● Optical Isomerism and Reactions of Aldehydes and Ketones</li> <li>● Amines, Polymers, Amino acids, proteins and DNA</li> </ul>
<b>Transition metals and reactions of ions in aqueous solution</b>	<i>Spring HT3</i>	<ul style="list-style-type: none"> <li>● General properties of transition metals</li> <li>● Substitution reactions</li> <li>● Shapes of complex ions</li> <li>● Formation of Coloured ions</li> <li>● Variable oxidation states</li> <li>● Catalysts</li> <li>● Reactions of aqueous ions</li> </ul>	<b>Year 12:</b> <ul style="list-style-type: none"> <li>● Periodicity</li> <li>● Group 2</li> <li>● Group 7</li> <li>● Redox</li> </ul>
<b>Acids and Bases</b>	<i>Spring HT4</i>	<ul style="list-style-type: none"> <li>● Bronsted-Lowry acid-base equilibria in aqueous solution</li> <li>● Definition and determination of pH</li> <li>● The ionic product of water, Kw</li> <li>● Weak acids and bases</li> <li>● Ka for weak acids</li> <li>● pH curves, titrations and indicators</li> <li>● Buffer action</li> </ul>	<b>GCSE:</b> 4.3.4 Using concentrations of solutions in mol/dm <sup>3</sup> (chemistry only)
<b>L2+ Maths Questions Practical Technique Questions</b>	<i>Spring HT4</i>	Any question on exampro that requires the highest level of mathematical application Any question on exampro that requires the explanation and analysis of practical technique	<b>A Level:</b> required practicals and all aspects of Physical Chemistry requiring numeracy skills
<b>All content completed by Easter Exam Preparation</b>	<i>Summer HT5</i>		
<b>Exam Preparation</b>	<i>Summer HT5</i>		
<b>Exam Preparation</b>	<i>Summer HT6</i>		
<b>n/a (students no longer at school)</b>	<i>Summer HT6</i>		