

## Year 13 Curriculum Grid

# CHEMISTRY

Year/term	Unit of work	Intent
<b>Overall</b>		<ul style="list-style-type: none"> <li>Develop knowledge from year 12 in preparation for A-level exams</li> <li>Enthuse year 13 students to carry on with chemistry in the future</li> </ul>
<b>Autumn</b>	Optical Isomers	<ul style="list-style-type: none"> <li>Draw the structural and displayed formulas of enantiomers a</li> <li>Explain their effect on polarised light</li> </ul>
	Aldehydes	<ul style="list-style-type: none"> <li>Write equations for the oxidation and reduction of aldehydes</li> <li>Outline the nucleophilic addition reaction mechanisms</li> </ul>
	Carboxylic Acids	<ul style="list-style-type: none"> <li>Recall the reactions of carboxylic acids and esters</li> </ul>
	Acylation	<ul style="list-style-type: none"> <li>Outline the mechanism of addition–elimination reactions</li> <li>Prepare and purify a sample of aspirin (RP)</li> </ul>
	Amines	<ul style="list-style-type: none"> <li>Relate the properties of amines to their structure</li> <li>Outline the nucleophilic substitution and addition reactions</li> </ul>
	Aromatic Chemistry	<ul style="list-style-type: none"> <li>Describe the structure of the benzene ring and the substitution reactions it undertakes</li> </ul>
	Polymers	<ul style="list-style-type: none"> <li>Draw the repeating units of condensation polymers</li> <li>Explain the biodegradability of different types of polymers</li> </ul>
	Rate equations	<ul style="list-style-type: none"> <li>Use the mathematical relationship between rate of reaction and concentration to complete calculations</li> <li>Determine the rate of a reaction practically (RP)</li> </ul>
	Equilibrium	<ul style="list-style-type: none"> <li>Use the mathematical expression for the equilibrium constant <math>K_p</math> to complete calculations</li> </ul>
	Thermodynamics	<ul style="list-style-type: none"> <li>Use Born-Haber cycles to calculate enthalpy changes</li> <li>Calculate the entropy change in reactions</li> </ul>
	Acids and Bases	<ul style="list-style-type: none"> <li>Calculate the pH, <math>[H^+]</math>, <math>[OH^-]</math> of solutions</li> <li>Investigate how pH changes in reactions (RP)</li> <li>Explain the action of buffer solutions</li> </ul>
<b>Spring</b>	Electrode Potentials	<ul style="list-style-type: none"> <li>Use <math>E^\ominus</math> values to predict the direction of simple redox reactions</li> <li>calculate the EMF of a cell (RP)</li> <li>Describe the commercial applications of electrochemical cells</li> </ul>
	Transition Metals	<ul style="list-style-type: none"> <li>Describe the properties and reactions of the transition metals</li> <li>Explain the formation and shapes of complex ions</li> </ul>
	Period 3	<ul style="list-style-type: none"> <li>Recall the reactions of period 3 elements with water and oxygen</li> <li>Explain the chemical and physical properties of period 3 oxides</li> </ul>
	Reactions of Inorganic	<ul style="list-style-type: none"> <li>Carry out simple test-tube reactions to identify transition metal ions in aqueous solution. (RP)</li> </ul>
	Amino Acids, Proteins and DNA	<ul style="list-style-type: none"> <li>Describe the structure and bonding in these molecules and relate it to their properties</li> </ul>



## Year 13 Curriculum Grid

# CHEMISTRY

	Structure determination	Use data from mass spectrometry, infrared spectroscopy, NMR spectroscopy and chromatography (RP) to determine the structures of unknown compounds
	Organic Synthesis	Determine the formation of new organic compounds by multi-step syntheses using reactions included in the specification.
<b>Summer</b>	Revision	Revise content from Year 12 and 13

NB: Where possible some Autumn content will have been covered in the Summer term of year 12