

# ANNUAL LESSON PLAN FOR CHEMISTRY, KEY STAGE 5, AS (2021-22)

		<b>Key Concepts</b>	 
<b>Term 1: September – December</b>	<p><u>Unit 1.</u></p> <p>1. Formulae, Equations and Amount of substance</p> <p>2. Atomic Structure and the Periodic Table</p> <p>3. Bonding and Structure</p> <p>4. Introductory Organic chemistry and Alkanes</p> <p>5. Alkenes</p>	<ul style="list-style-type: none"> <li>• Amount of substance</li> <li>• Calculating amounts of substance in equations using moles</li> <li>• Solutions, yields, atom economy and test tube experiments</li> <li>• Structure of atoms and mass spectrometry</li> <li>• Ionisation energy and electron orbitals</li> <li>• Electron configuration and the Periodic Table</li> <li>• Ionic bonding</li> <li>• Covalent bonding</li> <li>• Shapes of molecules and metallic bonding</li> <li>• Introduction to Organic Chemistry and Alkanes</li> <li>• Alkane fuels and pollution</li> <li>• Reactions of alkanes</li> <li>• Alkenes</li> <li>• Reactions of alkenes</li> </ul>	<b>80</b>
	<p><u>Unit 2.</u></p> <p>6. Energetics</p> <p>7. Intermolecular Forces</p> <p>8 Redox chemistry and Groups 1, 2 and 7</p>	<ul style="list-style-type: none"> <li>• Enthalpy changes</li> <li>• Hess's Law</li> <li>• Bond enthalpies</li> <li>• Intermolecular forces</li> <li>• Redox reactions</li> </ul>	<b>40</b>
<b>Term 2: January – March</b>	<p>8 Redox chemistry and Groups 1, 2 and 7</p> <p>9 Introduction to Kinetics and Equilibria</p> <p>10 Organic chemistry: Alcohols, Halogenoalkanes and Spectra</p>	<ul style="list-style-type: none"> <li>• Chemistry of Groups 1 and 2</li> <li>• Analysis</li> <li>• Chemistry of Group 7</li> <li>• Explaining redox reactions of Group 7</li> <li>• Kinetics</li> <li>• Equilibria</li> <li>• Introduction to halogenoalkanes</li> <li>• Trends in Reactivity of Nucleophilic Substitution Reactions</li> <li>• Alcohols</li> <li>• Mass spectra and IR</li> </ul>	<b>40</b>

	<p><u>Unit 3. Practical Skills in Chemistry I</u></p>	<p>CORE PRACTICAL 1: Measure the molar volume of a gas  CORE PRACTICAL 2: Determination of the enthalpy change of a reaction using Hess's Law  CORE PRACTICAL 3: Finding the concentration of a solution of hydrochloric acid Understand how to minimise the sources of measurement uncertainty in volumetric analysis and estimate the overall uncertainty in the calculated result.  CORE PRACTICAL 4: Preparation of a standard solution from a solid acid and use it to find the concentration of a solution of sodium hydroxide  CORE PRACTICAL 5: Investigation of the rates of hydrolysis of some halogenoalkanes Know the trend in reactivity of primary, secondary and tertiary halogenoalkanes Understand, in terms of bond enthalpy, the trend in reactivity of chloro-, bromo- and iodoalkanes  CORE PRACTICAL 6: Chlorination of 2-methylpropan-2-ol with concentrated hydrochloric acid  CORE PRACTICAL 7: The oxidation of propan-1-ol to produce propanal and propanoic acid  CORE PRACTICAL 8: Analysis of some inorganic and organic unknowns</p>	<p>48</p>
<p><b>Term 3: April – June</b></p>	<ul style="list-style-type: none"> <li>Revision</li> </ul>		<p>104</p>
	<p>Exams</p>	<p>Exams</p>	
			<p>312</p>