

Long Term Plan: Chemistry Year 13 (Teacher One)

Half term	Unit title	Key knowledge/ Content to learn and retain	Essential skills to acquire (subject & generic)	Link to subject ethos and driver (rename)	Anticipated misconceptions	Links to previous KS	Opportunity for stretch for high prior attainers	SMSC & British Values	Cultural Capital	Career Link
One	Physical Chemistry - Chemical Reactions II	<p>Orders of reaction, the rate constant and rate equation</p> <p>Practical determination of rate of reaction</p> <p>The equilibrium constant, and using this in calculations</p>	<p>Level three technical and practical skills, including use of advanced glassware to carry out synthesis and purification</p> <p>Accurate measurement of substances using a variety of equipment including titration</p> <p>Safe handling of corrosive and toxic chemicals</p>		<p>Difficulty changing the subject of an equation</p> <p>Unit conversion errors</p> <p>The term dynamic equilibrium and what this actually means in terms of rate of the forward and backward reactions</p>	<p>This unit builds directly on from the chemical reactions unit studied in year 12.</p> <p>Students will extend their knowledge of quantitative chemistry by studying more complex calculations including the rate and equilibrium equations</p>	<p>Multi step problems.</p> <p>Calculations involving unit conversion and use of more than one learnt equation</p>	<p>The importance of working safely and respecting each other in the lab</p> <p>The importance of disposing of chemical waste in an environmentally friendly and sustainable way.</p>	<p>The ubiquity of chemistry allows examples to be placed in a wide variety of familiar and unfamiliar contexts.</p>	<p>As the central science, chemistry opens doors to a wide range of STEM field careers.</p>

			<p>Presenting and interpreting data in graphical and tabular form</p> <p>Extended writing, including producing formal lab write ups with references and citations</p> <p>Following written methods</p> <p>Mathematical skills, including changing the subject of an equation, multi step problem solving, percentages, graph drawing, drawing tangents to a curve, ratios, using standard form, fractions and working with powers.</p>							
Two	Physical Chemistry - Chemical	Chemical cells, including electrode half	Level three technical and practical skills,		Difficulty changing the subject of an	If students have studied separate sciences - often	Multi step problems.	The importance of working safely and	The ubiquity of chemistry allows examples	As the central science, chemistry

	Reactions II	<p>equations.</p> <p>Electrochemical potentials Calculation of EMF and experimental determination of EMF</p>	<p>including use of advanced glassware to carry out synthesis and purification</p> <p>Accurate measurement of substances using a variety of equipment including titration</p> <p>Safe handling of corrosive and toxic chemicals</p> <p>Presenting and interpreting data in graphical and tabular form</p> <p>Extended writing, including producing formal lab write ups with references and citations</p> <p>Following written methods</p>		<p>equation</p> <p>Unit conversion errors</p>	<p>called Triple - then this will build on from the work they have done on chemical cells and half equations at GCSE; including qualitative assessment of EMF (though it will not have been called this at GCSE)</p> <p>If students studied combined science, then this content will be new to them.</p>	<p>Calculations involving unit conversion and use of more than one learnt equation</p>	<p>respecting each other in the lab</p> <p>The importance of disposing of chemical waste in an environmentally friendly and sustainable way.</p>	<p>to be placed in a wide variety of familiar and unfamiliar contexts.</p>	<p>opens doors to a wide range of STEM field careers.</p>
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Three	Inorganic Chemistry	<p>Transition metals, ligands and the chelate effect</p> <p>Complex ions</p> <p>Coloured ions</p> <p>Variable oxidation and redox titration</p>	<p>Level three technical and practical skills, including use of advanced glassware to carry out synthesis and purification</p> <p>Accurate measurement of substances using a variety of equipment including titration</p> <p>Safe handling of corrosive and toxic chemicals</p>		<p>Difficulty changing the subject of an equation</p> <p>Unit conversion errors</p>	<p>This unit continues where Year 12 left off, students extend their knowledge of ions by studying more complex examples, and build on previous work on redox, by considering variable oxidation states.</p> <p>They will also carry out more involved practical work, to study these things</p>	<p>Multi step problems.</p> <p>Calculations involving unit conversion and use of more than one learnt equation</p>	<p>The importance of working safely and respecting each other in the lab</p> <p>The importance of disposing of chemical waste in an environmentally friendly and sustainable way.</p>	<p>The ubiquity of chemistry allows examples to be placed in a wide variety of familiar and unfamiliar contexts.</p>	<p>As the central science, chemistry opens doors to a wide range of STEM field careers.</p>

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Four	Inorganic Chemistry	Heterogenous and	Level three technical and		Difficulty changing the	Students build on their year 12	Multi step problems.	The importance of working	The ubiquity of chemistry	As the central science,

		<p>homogenous catalysts</p> <p>Ions in aqueous solutions</p> <p>Chemical analysis and testing for transition metal ions.</p>	<p>practical skills, including use of advanced glassware to carry out synthesis and purification</p> <p>Accurate measurement of substances using a variety of equipment including titration</p> <p>Safe handling of corrosive and toxic chemicals</p> <p>Presenting and interpreting data in graphical and tabular form</p> <p>Extended writing, including producing formal lab write ups with references and citations</p> <p>Following written methods</p>		<p>subject of an equation</p> <p>Unit conversion errors</p> <p>Confusion on the correct sequencing of ion testing.</p>	<p>knowledge of catalysts to consider different mechanisms of catalytic action</p> <p>They then continue their study of chemical analysis, by expanding their repertoire of chemical tests to include testing for transition metal ions..</p>	<p>Calculations involving unit conversion and use of more than one learnt equation</p>	<p>safely and respecting each other in the lab</p> <p>The importance of disposing of chemical waste in an environmentally friendly and sustainable way.</p>	<p>allows examples to be placed in a wide variety of familiar and unfamiliar contexts.</p>	<p>chemistry opens doors to a wide range of STEM field careers.</p>
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			<p>Mathematical skills, including changing the subject of an equation, multi step problem solving, percentages, graph drawing, drawing tangents to a curve, ratios, using standard form, fractions and working with powers.</p>							
Five	Revision of content covered in preparation for AS Exams									
Six	Revision of content covered, and sitting of AS Exams									