

Long Term Plan: Chemistry Year 13 (Teacher One)

“Science is simply the word we use to describe a method of organising our curiosity.”

Half term	Unit title	Key knowledge/ Content to learn and retain	Essential skills to acquire (subject & generic)	Anticipated misconceptions	Links to previous KS	Opportunity for stretch for high prior attainers
One	Physical Chemistry - Chemical Reactions II (This topic spans across 2 half terms)	Orders of reaction, the rate constant and rate equation Practical determination of rate of reaction The equilibrium constant, and using this in calculations	Level three technical and practical skills, including use of advanced glassware to carry out synthesis and purification Accurate measurement of substances using a variety of equipment including titration Safe handling of corrosive and toxic chemicals Presenting and interpreting data in graphical and tabular form Extended writing, including producing formal lab write ups with references and citations Following written methods 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.	Difficulty changing the subject of an equation Unit conversion errors The term dynamic equilibrium and what this means in terms of rate of the forward and backward reactions	This unit builds directly on from the chemical reactions unit studied in year 12. Students will extend their knowledge of quantitative chemistry by studying more complex calculations including the rate and equilibrium equations	Multi step problems. Calculations involving unit conversion and use of more than one learnt equation
SMSC & British Values	The importance of working safely and respecting each other in the lab The importance of disposing of chemical waste in an environmentally friendly and sustainable way.					

Cultural Capital	The ubiquity of chemistry allows examples to be placed in a wide variety of familiar and unfamiliar contexts.					
Career Link	As the central science, chemistry opens doors to a wide range of STEM field careers.					
Two	Physical Chemistry - Chemical Reactions II (This topic spans across 2 half terms)	Chemical cells, including electrode half equations. Electrochemical potentials Calculation of EMF and experimental determination of EMF	Level three technical and practical skills, including use of advanced glassware to carry out synthesis and purification Accurate measurement of substances using a variety of equipment including titration Safe handling of corrosive and toxic chemicals Presenting and interpreting data in graphical and tabular form Extended writing, including producing formal lab write ups with references and citations Following written methods 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.	Difficulty changing the subject of an equation Unit conversion errors	If students have studied separate sciences - often 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) If students studied combined science, then this content will be new to them.	Multi step problems. Calculations involving unit conversion and use of more than one learnt equation
SMSC & British Values	The importance of working safely and respecting each other in the lab The importance of disposing of chemical waste in an environmentally friendly and sustainable way.					
Cultural Capital	The ubiquity of chemistry allows examples to be placed in a wide variety of familiar and unfamiliar contexts.					
Career Link	As the central science, chemistry opens doors to a wide range of STEM field careers.					

Three	Inorganic Chemistry (This topic spans across 2 half terms)	Transition metals, ligands and the chelate effect Complex ions Coloured ions Variable oxidation and redox titration	Level three technical and practical skills, including use of advanced glassware to carry out synthesis and purification Accurate measurement of substances using a variety of equipment including titration Safe handling of corrosive and toxic chemicals Presenting and interpreting data in graphical and tabular form Extended writing, including producing formal lab write ups with references and citations Following written methods 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.	Difficulty changing the subject of an equation Unit conversion errors	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. They will also carry out more involved practical work, to study these things experimentally	Multi step problems. Calculations involving unit conversion and use of more than one learnt equation
SMSC & British Values	The importance of working safely and respecting each other in the lab The importance of disposing of chemical waste in an environmentally friendly and sustainable way.					
Cultural Capital	The ubiquity of chemistry allows examples to be placed in a wide variety of familiar and unfamiliar contexts.					
Career Link	As the central science, chemistry opens doors to a wide range of STEM field careers.					
Four	Inorganic Chemistry	Heterogenous and homogenous catalysts Ions in aqueous	Level three technical and practical skills, including use of advanced glassware to carry out synthesis and purification	Difficulty changing the subject of an equation Unit conversion errors	Students build on their year 12 knowledge of catalysts to consider different mechanisms of catalytic action	Multi step problems. Calculations involving unit conversion and use of more than

	(This topic spans across 2 half terms)	<p>solutions</p> <p>Chemical analysis and testing for transition metal ions.</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>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>	Confusion on the correct sequencing of ion testing.	They then continue their study of chemical analysis, by expanding their repertoire of chemical tests to include testing for transition metal ions.	one learnt equation
SMSC & British Values	<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>					
Cultural Capital	The ubiquity of chemistry allows examples to be placed in a wide variety of familiar and unfamiliar contexts.					
Career Link	As the central science, chemistry opens doors to a wide range of STEM field careers.					
Five	<p>Revision and preparation for A-Level exams</p> <p>Revisit to subject knowledge from across the course & use of PLC to ensure that students have a good grasp of all aspects of the specification</p> <p>Use of retrieval quizzes and activities to identify gaps in SK and misconceptions</p> <p>Support students in developing summary notes, flash cards etc to aid retrieval of key facts</p> <p>Ensure that students have the necessary skills for effective revision</p> <p>CPAC</p> <p>Ensure that CPAC evidence is in place for all students for all required practical work</p>					
Six	Revision and preparation for A-Level exams					

	<p>Focus on past exam questions and papers – command words and application of knowledge Practice the application of knowledge that draws upon the practical aspects of the course Timed completion of questions to support with pace through the exam paper SLOP style activities to ensure that all are prepared for the aspects of maths that will be present on the exam papers</p>
--	--