

5Curriculum Map

Subject: Chemistry



Year: 10

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Content	<u>C7 - Energy Changes</u>	<u>C8 - Rates and Equilibrium</u>	<u>C9 - Crude Oil and Fuels</u>	<u>C11 - Polymers</u>	Revision of C1 to C11	Revision of C1 to C11
Knowledge	<p>Content:</p> <ul style="list-style-type: none"> - Exo and Endothermic reactions - Reaction Profiles - Bond Energy Calculations - Chemical Cells - Fuel Cells <p>Knowledge:</p> <ul style="list-style-type: none"> - How to distinguish between exo and endothermic reactions - Where exo and endothermic reactions are used in everyday life - How to draw simple reaction profiles - Calculating the over energy change of a reaction - How to write half equations for fuel cells <p>Required Practical</p> <ul style="list-style-type: none"> - Investigating temperature changes of different reactions 	<p>Content:</p> <ul style="list-style-type: none"> - Rates of Reactions - Collision Theory - Factors affecting collision theory - Reversible Reactions - Dynamic Equilibrium <p>Knowledge:</p> <ul style="list-style-type: none"> - Different ways of measuring rates of reactions - Know the factors that affect the rate of reaction - Explain how different factors affecting collision theory affect the rate of reaction - Know what a reversible reaction is and how to represent them - What happens in the energy transfers in reversible reactions 	<p>Content:</p> <ul style="list-style-type: none"> - Hydrocarbons - Fractional Distillation - Burning fuels - Cracking <p>Knowledge:</p> <ul style="list-style-type: none"> - Know the composition of crude oil - Naming and representing alkanes - Process of fractional distillation - Identify the different types of combustion - Know why we need to crack long chain hydrocarbons <p><u>C10 - Organic Reactions</u></p> <p>Content:</p> <ul style="list-style-type: none"> - Alkene reactions - Alcohols - Esters - Carboxylic Acids 	<p>Content:</p> <ul style="list-style-type: none"> - Addition Polymerisation - Condensation polymerisation - Natural Polymers - DNA <p>Knowledge:</p> <ul style="list-style-type: none"> - Drawing Addition Polymers - How polyesters are formed - Basic principles of condensation polymers - How starch and cellulose are formed - How amino acids react together - How polypeptides are formed - Basic structures of monomers that form DNA 	<ul style="list-style-type: none"> • To focus on recapping key knowledge and re-address common misconceptions • Embed additional exam practice for each chapter • Focus on key aspects of required practicals 	<ul style="list-style-type: none"> - To focus on recapping key knowledge and re-address common misconceptions - Embed additional exam practice for each chapter - Focus on key aspects of required practicals

		<ul style="list-style-type: none"> - How a reversible reaction in a closed system can be at equilibrium - <p>Required Practical</p> <ul style="list-style-type: none"> - Investigating how concentration and mass can affect the rate of reaction 	<p>Knowledge:</p> <ul style="list-style-type: none"> - Naming alcohols, carboxylic acids and esters - Drawing alcohols, carboxylic acids and esters - Understanding common reactions of alcohols, carboxylic acids and esters. - Some common uses of alcohols - How to make common esters 			
Skills	<ul style="list-style-type: none"> • Plan an investigation on identifying temperature change for different solutions. • Evaluate the uses and applications of exo and endothermic reactions when given appropriate information • Identify reaction profiles for exo and endothermic reactions • Calculate the overall energy change for a reaction • Interpret data on chemical cells in terms of the relative reactivity of different materials • Evaluate the use of chemical cells when given information • Evaluate the use of hydrogen fuel cells 	<ul style="list-style-type: none"> • Calculating the mean rate • Calculating the rate at a specific time. • Planning a practical • Interpreting graphs • Linking the changes in condition with the composition of a reaction • Evaluating the uses of catalysts 	<ul style="list-style-type: none"> • Drawing and representing chemicals • Writing balanced equations for complete and incomplete combustion • Identifying different functional groups • Writing balanced equations for cracking • Writing equations for making esters • Writing balanced equations for common reactions of alcohols and carboxylic acids 	<ul style="list-style-type: none"> • Recognize addition polymers and monomers from displayed formulae • Relating the monomer to the addition polymer • Recognizing condensation polymers from their displayed formulae. 	<ul style="list-style-type: none"> • Recalling important information • Exam Technique • Spacing • Interleaving • Elaboration • Time management 	<ul style="list-style-type: none"> • Recalling important information • Exam Technique • Spacing • Interleaving • Elaboration • Time management
Key	Why do chemical reactions always involve energy transfers?	How are reaction rates affected by changing	How is a range of useful products obtained from	How does the structure of a polymer affect its	How do I revise for Chemistry?	How do I revise for Chemistry?

Questions		conditions?	crude oil? How do functional groups affect the reactions of organic compounds?	properties?		
Assessment	C7 Diagnostic Test C7 End of Chapter Test C7 ReAct Tasks	C8 Diagnostics Test C8 End of Chapter Test C8 ReAct Tasks	C9 + C10 Diagnostics Test C9 + C10 End of Chapter Tests C9+C10 ReAct Tasks	C11 Diagnostics Test C11 End of Chapter Test C11 ReAct Tasks		Summer Mock Paper
Literacy/numeracy/SMSC/Character	<p>Numeracy:</p> <ul style="list-style-type: none"> - Recording data - Calculating energy changes <p>Keywords: exothermic, endothermic, activation energy, bond energy, electrical cells, fuel cell</p> <p>SMSC:</p> <ul style="list-style-type: none"> - Working together to plan an investigation - Could fuel cells help to reduce our dependence on fossil fuels? 	<p>Numeracy:</p> <ul style="list-style-type: none"> - Calculating Tangents - Recording Data in a table - Plotting graphs - Measuring the mass of chemicals - Rearranging equations <p>Keywords: Rate, collision theory, activation energy, gradient, tangent, catalysts, reversible reactions, hydrated, anhydrous, equilibrium</p> <p>SMSC:</p> <ul style="list-style-type: none"> - Working together to carry out a practical. - Evaluating the uses of catalysts in industry 	<p>Numeracy:</p> <ul style="list-style-type: none"> - Calculating the formulae of common functional groups - Balancing equations - <p>Keywords: mixture, hydrocarbons, fractions, distillation, alkanes, saturated, general formulae, flammable, fractional distillation, oxidise, cracking, thermal decomposition, unsaturated, functional group</p> <p>SMSC:</p> <ul style="list-style-type: none"> - Is crude oil good for our environment or should we use alternative sources? 	<p>Numeracy:</p> <ul style="list-style-type: none"> - Balancing Equations <p>Keywords: Polymers, addition, condensation, starch, cellulose, DNA, Nucleotides</p> <p>SMSC:</p> <ul style="list-style-type: none"> - Could we use natural polymers to make environmentally friendly plastics?. 		
Enrichment opportunities and futures	STEM Club Visiting the Science Museum Watching the Royal institution on Youtube Visiting the Summer Fayre at the Royal Society of Chemistry Researching the uses of Crude Oil					

