Curriculum Map

Subject: Chemistry

Year: 10

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Content Knowledge	**C8 - Rates and Equilibrium** Content: - Rates of Reactions - Collision Theory - Factors affecting collision theory - Reversible Reactions - Dynamic Equilibrium Knowledge: - 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 - How a reversible reaction in a closed system can be at equilibrium - **Required Practical** - Investigating how concentration and mass can affect the rate of reaction	**C9 - Crude Oil and Fuels** Content: - Hydrocarbons - Fractional Distillation - Burning fuels - Cracking Knowledge: - 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 **C10 - Organic Reactions** Content: - Alkene reactions - Alcohols - Esters - Carboxylic Acids Knowledge: - Naming alcohols,	**C10 - Organic Reactions** Content: - Alkene reactions - Alcohols - Esters - Carboxylic Acids Knowledge: - 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 **C11 - Polymers** Content: - Addition Polymerisation - Condensation polymerisation - Natural Polymers	**C12 - Chemical Analysis** Content: - Pure Substances and Mixtures - Chromatography - Gas Tests - Testing for Ions - Instrumental Analysis Knowledge: - How chromatography can identify between pure and impure substances - How chromatography works - Tests for common gases - Common tests for positive ions - Tests for negative ions **Revision of C1 to C12** • To focus on recapping key knowledge and re-address common misconceptions • Embed additional exam practice for each	**C13 - The Earth's Atmosphere** Content: - History of the atmosphere - Changes to the atmosphere - Greenhouse Gases - Climate Change - Atmospheric Pollutants Knowledge: - Understand how the atmosphere formed - Changes to the atmosphere over time - How greenhouse effect works - The importance of peer review - How to reduce carbon emissions - Problems caused by pollutants **Required Practical** - Identifying pure and impure substances by chromatography	**C14 - The Earth's resources** Content: - Finite and Renewable energy sources - Safe Water - Treating water - Extracting metals - Life Cycle Assessments - Reduce, Reuse and Recycle Knowledge: - Know the difference between potable and pure water - How to purify water - How to make water safe for the environment - How to obtain potable water - Interpreting life cycle assessments - How reducing, reusing and recycling of materials decrease their environmental impacts **Required Practical:** - Analysis and

		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	- DNA Knowledge: - 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	chapter ● Focus on key aspects of required practicals		purification of water samples
Skills	● 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	● 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	● Identifying different functional groups ● Writing equations for making esters ● Writing balanced equations for common reactions of alcohols and carboxylic acids ● Recognize addition polymers and monomers from displayed formulae ● Relating the monomer to the addition polymer ● Recognizing condensation	● Distinguishing pure substances from impure by melting point ● Identifying formations ● Interpreting Chromatograms ● Evaluate modern instrumental methods with tradition analysis methods ● Interpreting results for flame emission spectroscopy ● Recalling important information ● Exam Technique ● Spacing ● Interleaving ● Elaboration ● Time	● Interpret evidence and evaluate different theories about Earth's early atmosphere ● Evaluate the quality of evidence in a report about global climate change	● Distinguishing between finite and renewable sources ● Extracting and interpreting information from charts and graphs ● Determining the purity of water ● Evaluating the alternative biological methods of metal extraction ● Evaluating ways of reducing and uses of limited metal ores

		carboxylic acids	polymers from their displayed formulae.	management		
Key Questions	How are reaction rates affected by changing conditions?	How is a range of useful products obtained from crude oil? How do functional groups affect the reactions of organic compounds?	How do functional groups affect the reactions of organic compounds? How does the structure of a polymer affect its properties?	How can we use chemical tests to identify unknown substances? What are the advantages and disadvantages of using industrial methods of analysis? How do I revise for Chemistry?	How are the greenhouse gases affecting the environment?	How is human activity affecting the Earth's atmosphere?
Assessment	C8 Diagnostic Test C8 End of Chapter Test C8 ReAct Tasks	C9 Diagnostics Test C9 End of Chapter Test C9 ReAct Tasks	C10 Diagnostics Test C10 End of Chapter Tests C10 ReAct Tasks C11 Diagnostics Test C11 End of Chapter Tests C11 ReAct Tasks	C12 Diagnostics Test C12 End of Chapter Test C12 ReAct Tasks	C13 Diagnostics Test C13 End of Chapter Test C13 ReAct Tasks Summer Mock Paper	C14 Diagnostics Test C14 End of Chapter Test C14 ReAct Tasks
Literacy/numeracy/SMSC/Character	**Numeracy:** - Calculating Tangents - Recording Data in a table - Plotting graphs - Measuring the mass of chemicals - Rearranging equations **Keywords**: Rate, collision theory, activation energy, gradient, tangent, catalysts, reversible reactions, hydrated, anhydrous, equilibrium **SMSC:** - Working together to carry out a practical. - Evaluating the uses of catalysts in industry	**Numeracy:** - Calculating the formulae of common functional groups - Balancing equations - **Keywords:** mixture, hydrocarbons, fractions, distillation, alkanes, saturated, general formulae, flammable, fractional distillation, oxidise, cracking, thermal decomposition, unsaturated, functional group **SMSC:** - Is crude oil good for our environment or should we use	**Numeracy:** - Calculating the formulae of common functional groups - Balancing equations **Keywords:** Polymers, addition, condensation, starch, cellulose, DNA, Nucleotides **SMSC:** - Could we use natural polymers to make environmentally friendly plastics?.	**Numeracy:** - Balancing Equations - Measuring the height of a chromatogram - Calculating the Rf Value of a chromatogram **Keywords:** Formulations, mixtures, chromatogram, retention factor **SMSC:** - Working together to investigate chromatography	**Numeracy:** - Reading pie charts - Analysing graphs **Keywords:** precipitates, atmosphere, carbon footprint, carbon storage, particulates, global dimming **SMSC:** - Evaluating evidence that demonstrates the rise of carbon dioxide leading to climate change	**Numeracy:** - Extracting and interpreting data from charts, graphs and tables - Using order of magnitudes **Keywords**: Bioleaching, life cycle assessment, blast furnace, non-renewable **SMSC:** - Working together to investigate the purity of water - Are there more sustainable ways of extracting metals?

		alternative sources?				
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					