

Curriculum Map: Chemistry year 10

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Content Declarative knowledge 'I Know'	Topic C5/6 – Energy, rates and equilibrium  Define endothermic and exothermic Know uses of endothermic and exothermic reactions Know how batteries work Know how hydrogen fuel cells work Know how ammonia is made Know how fertilisers are made in the lab and in industry. Define a rate of reaction know the factors that affect rate of reactions know what a reversible reaction is know what happens to energy transfers in a reversible reaction know the conditions needed for dynamic equilibrium	Topic C8 – Chemical Analysis Know the difference between pure substances, impure substances, and formulations. Know how to identify hydrogen, carbon dioxide, and oxygen from a laboratory test. Know some of the advantages and disadvantages of instrumental techniques. Know a use for flame emission spectroscopy. Know how melting point and boiling point data can be used to determine the purity of a substance.			Topic C9 – Chemistry of the atmosphere and The Earth's resources  Know how the percentage of the gases changed over time. Describe the greenhouse effect Know the consequences of climate change Know solutions to climate change Know what a carbon footprint is Know the products of combustion Know how different pollutants are created and their effects Can give examples of natural products and their synthetic counterparts Know what potable water is Know how water is treated Know different methods of copper extraction Know how aluminium and copper is recycled Know how rusting occurs and can be prevented Know different examples of alloys Know the difference between thermosetting and thermosoftening polymers. Know how to compare the properties of glass, ceramics and composites.	
Skills Procedural Knowledge 'I know how to'	Know how to use experimental results to determine endothermic and exothermic reactions know how to draw and label energy profile diagrams know how to calculate bond energy know how to interpret data on chemical cells in terms of reactivity of metals. Write half equations for hydrogen fuel cells. Know how to calculate rate of reaction Know how to explain the factors that affects rate of reaction Know how to use experimental data to make conclusions	Know how to Calculate percentage composition of components in a range of formulations. Know how to calculate $R_f$ values.  Know how to identify a metal ion from the colour of a flame or the colour of the hydroxide precipitate. Know how to write balanced ionic equations, including state symbols for the production of an insoluble metal hydroxide. Know how to Interpret results from flame emission spectroscopy when data is given. Know how to safely carry out a method to make a paper chromatogram. Know how to calculate $R_f$ values from given data.			Know how to distinguish between finite and renewable resources Know how to read graphs and evaluate information given to inform my answers Know how to analyse and purify water samples Know how to use a life cycle assessment to compare the environmental impact	

	Know how conditions affect equilibrium	<p>Know how to use a chromatogram to determine if a sample is pure or impure.</p> <p>Know how to write balanced symbol equations, including state symbols, for the reactions of limewater with carbon dioxide and hydrogen with oxygen.</p> <p>Know how to Safely carry out testing for carbonates, halides, and sulfate ions.</p> <p>Know how to Identify the presence of carbonate, a specific halide, or sulfate ions from simple laboratory tests.</p> <p>Know how to write balanced symbol equations, including state symbols for the reactions in the simple laboratory tests for carbonate, halide, or sulfate ions.</p> <p>Know how to Evaluate the use of instrumental techniques.</p>	
Strategies Conditional Knowledge 'I know when to'	<p>Know when fuels would be more advantageous than others</p> <p>Know how to experimentally determine rate of reactions</p>	<p>Interpret a chromatogram to identify unknown substances.</p> <p>Know which technique is suitable to identify an ion</p>	Use evidence to decide of the accuracy of theories and conclusions.
Key Questions	<p>What conditions are needed to manufacture ammonia?</p> <p>How do you measure rate of reaction?</p> <p>What factors affect rate of reaction?</p> <p>What conditions affect equilibrium?</p>	<p>How can we use chemical tests to identify unknown substances?</p> <p>What are the advantages and disadvantages of using instrumental methods of analysis?</p>	<p>How has the atmosphere changed over time?</p> <p>What effect is CO<sub>2</sub> and other pollutant gases having?</p> <p>How can we reduce the impact of CO<sub>2</sub> and other pollutant gases?</p> <p>What are examples of finite and renewable resources?</p> <p>How is water treated?</p>
Assessment topics	At the end of the term. Midpoint assessment after energy changes.	At the end of term.	At the end of term. Midpoint assessment. Midpoint assessment after atmosphere.
Cross curricular links/Character Education	<p>Maths – surface area : volume</p> <p>Biology – enzyme reactions</p> <p>Physics – graph skills</p>	<p>History – Chlorine gas used in WW1</p> <p>Art – Chromatography to analyse pigments in paint.</p> <p>Maths – percentage calculations, sig figs, unit conversion,</p>	<p>Geography – atmosphere, climate change, resources and recycling</p> <p>Design and technology – glass, ceramics and composites</p>

(\*C3 quantitative chemistry has been split between all the topics)